# THE AMERICAN GARDEN

An Illustrated Journal of Horticulture

COMBINING THE HORTICULTURIST, GARDENER'S MONTHLY, FLORAL CABINET,

AND

POPULAR GARDENING AND FRUIT GROWING

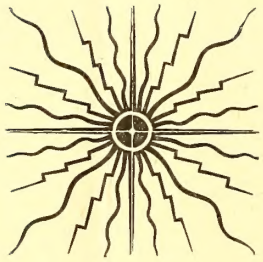
*EDITED BY*

*L. H. BAILEY and ELIAS A. LONG*

Vol. XII

Vol. XIV., Old Series, and XLV., Combined Series

NEW YORK
THE RURAL PUBLISHING COMPANY
1891



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# SEEDLING BEGONIAS

ORIGINATED ON THE GROUNDS OF MESSRS. SIEBRECHT & WADLEY, NEW ROCHELLE, N.Y.

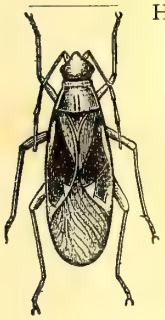
THE AMERICAN GARDEN,
NEW YORK, JANUARY, 1891.

# The American Garden.

*Vol. XII.* *JANUARY, 1891.* *No. 1.*

## HICKORY CHIPS:

OR SOME RECOLLECTIONS OF ENOCH AND ME.



I HAVE always been bothered with worms, bugs, grubs and insects. In fact, they are a great nuisance. But in the good old days, after I had served my apprenticeship under a man who knew more about gardening than all this stripling generation put together, I had very little trouble with bugs and things. Then I took the bug by the horns and pulled him off, and after I had stepped on him four or five times I knew that he was dead enough to stay. But now I am certain of nothing, except that nothing is certain. It is the fashion in these times to harness up one's self with knapsacks and pumps and squirt-guns and nozzles and poisons and apparatus whenever a bug looks over the fence, as if we were preparing for war against the Goths and Vandals. For myself, I don't believe in it; but my boy Enoch, who has graduated at the business college and has read all the bulletins from Dan to Beersheba, is full of this modern nonsense, and he wants to do everything scientifically. Now I believe in boys, and I believe that they should have a chance. It takes the conceit out of them to let them have their own way, if they fail in it, and I knew that it was only a matter of time until Enoch would come back to his equilibrium. It would never do to let some boys have their own way in following up these bug and blight professors, for they like to spend money too well and are inclined to shirk bug picking too much. But Enoch is not one of this kind. He has inherited a vigorous idea of things, and when he finds out that a thing is of no use he is sure of it.

Enoch grew potatoes. It was his way of getting spending money and getting the knack of doing things. But the bugs pestered him. At first he was taken with Professor Catchem's way of fencing out the bugs. If he could keep the bugs away, that was all there is of it; he could go fishing until digging time. I suggested that I did not see how keeping a bug away was going to kill him, for if he couldn't eat potatoes he would pitch onto the peas or devour Deacon Brown's hollyhocks. But Enoch said that he would fence in the peas too, and he didn't care anything about anybody's hollyhocks. But somehow the netting fences did not work. In two hours after they were put on and ucked up as neat as a pin "more'n a million-bugs," as Enoch declared, would be holding high carnival under the tents. Enoch said that they liked it. It kept them warm and the old gobbler could not catch them. "Grubs in the ground—eggs on the leaves—good hatchery," this was Enoch's sillygism. I suggested that he might fence them in and keep them there. This was a new idea, and Enoch took to it. This is characteristic of the family. The next morning I saw him out bright and early with mother's feather duster swinging it lustily over the vines.

"What are you doing, Enoch?" I enquired.

"Shooin' 'em in."

"What are you going to do with them then?"

"Pester 'em. Stick pins into 'em."

But before noon I saw him pulling up his "buggers," as he called his nets, and throwing them in the fence corner. There was no use asking him questions for I could not get a word out of him, and as I do not believe in being inquisitous, I stopped trying after a few days. But it was evident that Enoch's buggers didn't work!

At dinner Enoch was blue. He spilled his coffee and forgot to fill his pockets with lumps of sugar. When he got up he knocked over mother's beefsteak geranium and broke a bud off the night-

blowing serious. He dodged out the door just in time to let mother's broomstick break a window-glass, and sat down on the back steps.

"Why don't you try Professor Squirtem's rigamajig?" I asked. I had no faith in it myself, but there is nothing so good to take the conceit out of a boy as trying something and not doing anything. This cheered him up and he rigged up the platform wagon to run a pump and squirter which would kill a half acre of bugs at a time and not wet the clothing nor poison the hogs if they should break in, unless they were Deacon Brown's hogs. He spent four days fixing up this machine, and it did look ponderous. He drove it around the barn two or three times to "try the git of it," as Enoch said, and it made so much noise that Deacon Brown came over to ask what we had got a threshing machine that time of year for.

"That's a bug squirter," said I.

"You don't say!" and the Deacon watched it make another 'bout.

"Reckon it'll scare 'em out," said the Deacon, wiping his forehead with his bandanna. "Why don't you pick 'em off?"

This question was meant for me, but Enoch overheard it.

"'Cause we ain't no fogies. We are alive over here," and he cracked up the old team at a lively gait.

It would be useless to attempt to tell Enoch's experiences with that "provoker," as he called it. The first day he broke the pump handle and tipped over twice, spilling over twenty gallons of Paris green. Then it would not work on the side hill, and he could not get within twenty feet of the end where the berry bushes were, for he could not turn around; and he spoiled a rod of potatoes by turning around on them. And every time he struck a stone the provoker would whiz out of gear and throw Enoch onto the horses.

Enoch lost his potatoes that summer, and what was worse, Deacon Brown had a good crop. I knew that he dreamed about those bugs. Enoch is a somnambulist and walks in his sleep, and at such times his mind often runs to verse. It is an inherited trait. And in one of these fits he wrote on the wall,

Round and round in ghoulish dance
Do the gruesome monsters run,
And ever doth their gait enhance
Till the summer's heat is done.

These times are full of bacteria, bugs and nonsense. I had a row of young pear trees killed by frozen sap blight. There came on a sudden cold snap in November after several days of warm electric winds from the south, and the ground froze so hard that the roots could not breathe. Consequently the sap staid in the top and clogged up the pores, and when it thawed out in the spring it soured. You could peel off a strip of bark and smell it. Along in July the trees began to go, and I knew that those which had the most sap in them when they froze up died first and most. This was a clear case and I was determined not to let it be lost to science. So I dug up one of the finest young dead trees I had, root and branch, and took it over to Professor Searcher. I dragged the tree into his office and told him that I had a good case of frozen sap blight for him, and that I had studied this disease for over thirty years and knew all about it. He smiled lonesomely and said something about my being mistaken.

"Mistaken! why here's the tree—just look at it! Smell of that sap!"

"But, sir," he replied, in the most provoking way, "the ultimate cause of that abnormal condition is a germ, a specific bacterium, and during the last few years ——"

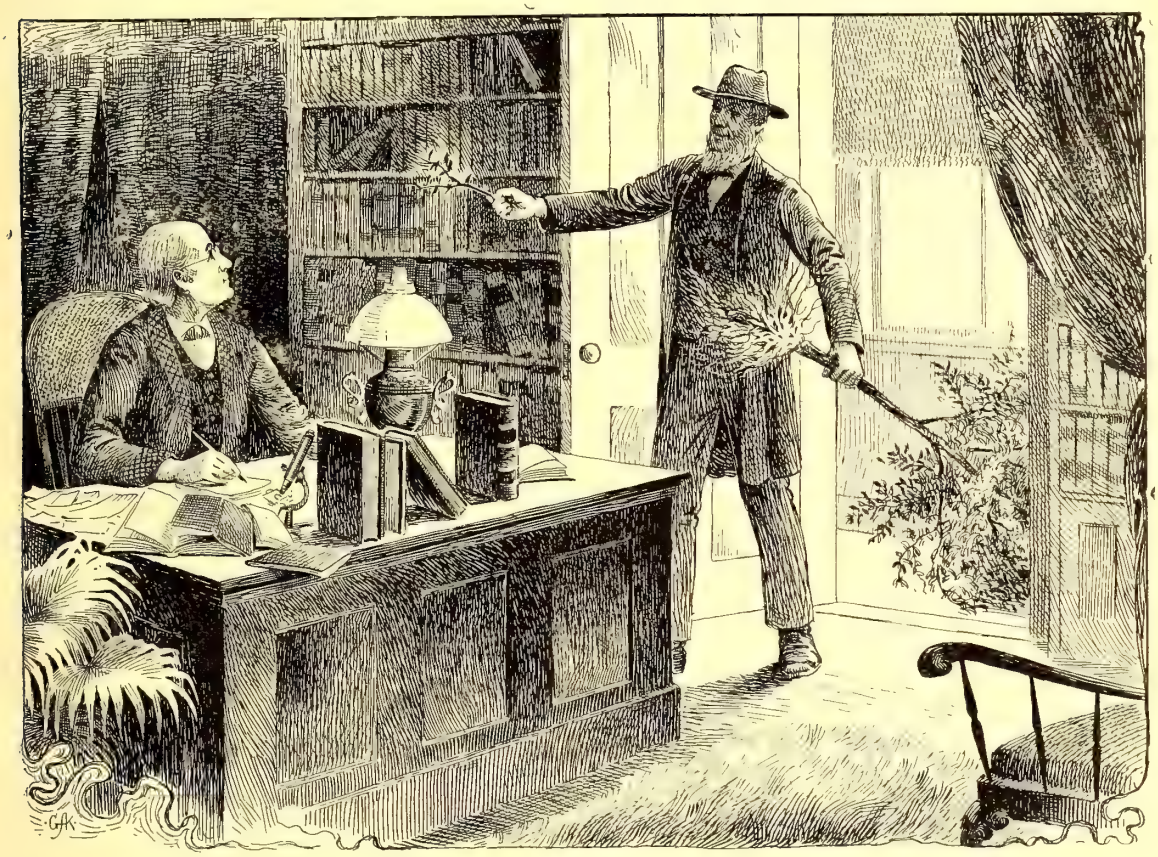
"Now see here," I said, "I am no professor, but I guess that I know frozen sap blight when I smell it, and all this talk about bugs so small you can't see 'em is nonsense, and as for bacteery—fiddlesticks." I put the tree back into my buggy and drove home. I don't think that he will dispute me again.

I do not see the use of finding things so small that you cannot see them. I do not see what good they are. And I don't believe that there are such bugs, anyway. They are only specks, that's all. If we could experiment with something of some use it would be more useful. Why don't our professors turn their attention to getting up some grand new rare novelties, or find out what good there is in cutting potatoes in all sorts of ways. I suggested some of these things long ago, but the editor spoiled it all by saying that I was writing in a sarcastic vein. [See page 350, June issue, 1890.—*Ed.*] I do not know what authority he had for saying that. I surely never told him so. After having worked for over forty years in the getting up of grand new sorts, it is discouraging to be treated in this way.

And then all this talk about names of plants is ridiculous. I, as a getter-up of new and and rare novelties, don't believe in it. I know that Shakespeare said that there is nothing in a name, but that only proves that William was never a nurseryman. If all this craziness had been known in my younger days what would have become of Choke's

Superb Incomparable Dwarf Early Cabbage, Choke's Wonderful Twenty-Eight-Day Early Cucumber, and other wonderful new novelties, just introduced, of which I told your readers last year? [See page 274, May, 1890.—*Ed.*] Why don't someone invent a brand new tomato which will climb so high that the chickens cannot roost on it, or a new apple or pear which cannot be phased by arctic cold or prairie fires?

Why don't someone invent a way of making pictures so that they will look as the thing ought to look and not be so particular about getting the exact twist on every leaf, or the correct hitch on the flower? There is no use of being so exact; it only makes useless bother and it don't pay. And why can't the professors make some arrangement to lend each other pictures of the bugs and things they catch and not tax the farmers to make a new picture everytime they find something which is not new? Why does every bulletin have a different kind of picture of codlin moth and potato bug and cut-worm, when one picture could go the rounds of the whole kit of them? I do not see. And we should be able to recognize the pests then because they always look the same anyway, and they always raise their heads and shoulders in just the same way. Really, so many cuts are confusing. I often wonder what these professors would do if they didn't have these bugs to fall back on! When the summer has been cold or the moles have run through the traps and eaten up all the potatoes—cut in only one way, too—the bugs are still there, or some new recruit has been naturalized and is going to begin business in a new line; and these can be talked about.



"AND AS FOR BACTEERY—FIDDLESTICKS!"

Since my dear Uncle Samuel came down here a year or two ago, and sat on our fence and ate watermelons while I told him how Enoch and I had been bothered by carting plants over the country in our "democrat," and he offered to take them in his bag and carry them for half price, Enoch and I have done well. When plants go by the ounce, it is not necessary to grow them big. People don't expect it, and we don't expect that they shall. I can't see

any use of these big over-grown trees and plants, so big that you cannot get them into a dinner-pail. Enoch and I got up a new kind of poke-root last year, for greens—50 cents a dozen, postpaid, to any part of the United States or Canada, with five packets of grand new unmixed flower seeds thrown in to all who order two dozen between now and the first of February—and we succeeded in growing them so small and nice that two dozen of them weighed only a cent's worth. And some of them were actually budded already to flower and make delicious greens. It don't pay to fuss too much about size, anyway. If you only have the crown of the plant, that is the vital part, and so many great sprawling roots only make so much more postage money. When Enoch and I get orders for huckleberries and toad-flax we do not bother to go to work and grow them, but go out in the cow-lot and dig them, and we can get ten dollars' worth from a square yard, and leave enough for seed. Enoch and I have sold the cow-lot clean of weeds a half dozen times already, and we have been in the business only since Uncle Samuel came down.

I hope, Mr. Editor, that you will use your influence to stop this stirring up of the good old ways. Enoch and I do not want some one asking about everything we do, and telling us just how we shall squeeze a bug so as to get the most satisfaction out of him, or that we can't name a new pink after the king of the Cannibal islands and all his family, just as if it was anybody's business what we have or what we do as long as it pays!

Enoch is fond of planning his garden and of knowing the reason for everything. He comes naturally by it. Some of his experience may be grateful at this season when folks are mapping out their gardens. Enoch was much taken with the figures in the books and catalogues about raising four or five crops on the same patch every year and making big money off every one and getting the land richer in the bargain. He wanted to plow up a corner of the cow-lot to make his new-fangled garden on, but I suggested that I did not think it a good plan to tear up all those huckleberries and mulleins which are a sure thing for half the year. So he figured out his profits on a half acre of land down by Deacon Brown's corner. He was to lead off with radishes, follow up with beets and early cabbages, with beans between the rows, and wind up with celery. He got all the plows and hand hoes and bug elixirs which were pictured in the catalogues and began operations on a confident scale. He had his profits all figured out by the end of January, and they did look convincing, especially as figures cannot lie. I looked them over carefully when Enoch showed them to me, and suggested that perhaps there might be a hitch somewhere, but he snapped up—

"Hitch? Why here are the figgers—see?"

And the figures did look handsome:

| | |
|---|---|
| Cr. | |
| 21,360 bunches radishes @ .05 | $1,068.00 |
| 11,891 bunches beets @ .09½ | 1,129.64 |
| 5,032 heads cabbage @ .06 | 301.92 |
| 53 bushels snap beans @ .90 | 47.70 |
| 6,113 crowns celery @ .11 | 672.43 |
| | $3,21 . |
| Dr. | |
| Plowing ½ acre land | $1.00 |
| Cultivating same | 5.00 |
| Seeds and bug squirters | 21.75 |
| 3 lbs. bug elixir @ .50 | 1.50 |
| Harvesting and marketing | 37.90 |
| 3 pinches of Oiler's fertilizer @ 1.00 | 3.00 |
| | 70.1 |
| Total profit, ½ acre | $3,149.5 |

But somewhere or somehow there was an aching void about it which the figures could not fill up. I figured it up several times; added it upwards and downwards and crosswise and back and forth, and although my sums were not always the same, I concluded that Enoch was right; the half-acre had certainly 21,780 square feet in it, as he triumphantly showed me, and the stuff could be easily set in it. Enoch is particularly good at figures. He comes by it.

Now that garden was better than a circus with a double ring and six clowns. Enoch had a new pocket put in his wampus so that he could carry Guessem's book on "Cash for the Pocket Book, or How to Get the Gold out of the Land." This noted author has a wonderfully practical work. Enoch's radishes came up nicely and he was beside himself with delight. He added up his figures again and was surer than ever that they were right. Yet when he went to pull his radishes he found that two-thirds of them were grubby, and he could not find a market for the rest of them. He sold a few to the neighbors and then plowed the rest up. But he was not discouraged, for he said that Guessem stated that radishes were worth three cents apiece as a fertilizer, and he would get his money back in beets. But the beet seed was not good, and after waiting three weeks for it to come up, he ordered more seed and sowed again. But only half of it came this time, and it was so late when the beets were fit for pulling that no one wanted them. Then he proposed to sell them to me to feed the cow,

but Brindle would not touch them and he had to plow them under for the beans and cabbages. Guessem says that beets contain lots of substance, which accounts for their being blood red. Enoch figured on it all one day, and concluded that that beet crop was worth $75 in gold as a manure; but he said that he had rather mine his gold and bank it in town than bury it.

The beans were all blasted by being hoed while the dew was on. This is a point which Guessem does not mention, but every old gardener knows about it. The cabbages had worms and club-root, and the celery would not bleach itself. It is astonishing how perverse some of these crops are, when the books and catalogues certainly give us the easily figured results. All that was necessary to be done to that celery was to sow it and transplant it, and it would bleach out as it went along. But somehow it didn't, though Enoch was sure he had bought the seed direct from the catalogue man who told about it.

About every two weeks Enoch borrowed a little money at the bank—on my security—to help along until the cabbages and celery were ripe. He kept his accounts right up, he said, but for some reason I could never have a chance to see them until about the next Thanksgiving, when he happened to leave his bureau drawer unlocked. And the account ran thus;

DR.

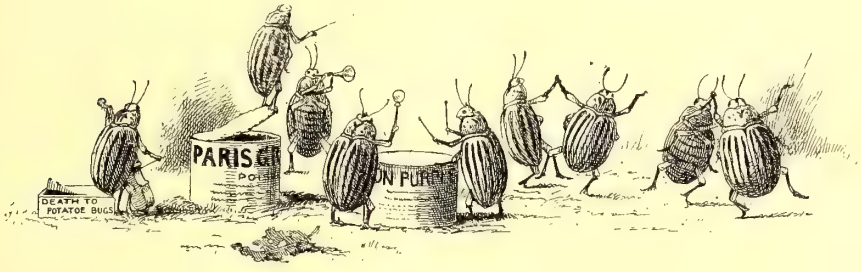
| | |
|---|---|
| Plowing land | $2.00 |
| Cultivating same | 75.50 |
| Seeds and plants | 48.25 |
| Tools and squirters | 93.00 |
| 26 lbs. bug elixir | 13.00 |
| Picking worms on cabbages | 24.50 |
| Repairs to wagon and tools | 21.60 |
| 1½ tons Oiler's fertilizer @ $60 | 90.00 |
| 6 loads ashes | 9.00 |
| Shooin' off Deacon Brown's hens | 6.00 |
| Harvesting radishes | 12.00 |
| " beets | 5.00 |
| " cabbages | 19.50 |
| " celery | 31.00 |
| Marketing crops | 61.80 |
| Express on crops not sold | 43.67 |
| 500 lbs. backache and mental tension @ .20 | 100.00 |
| | $655.82 |

CR.

| | |
|---|---|
| 130 bunches radishes @ .02 | $2.60 |
| 40 bushels beets @ .25 | 10.00 |
| 1 mess of beans sold to Mother | .10 |
| 1306 heads cabbage @ .03 | 39.18 |
| 2011 crowns celery @ .07 | 140.77 |
| | 192.65 |
| Balance in the bank (to my debit) | $463.17 |

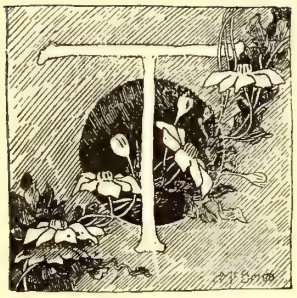
Enoch says that the cow-lot pays better. And all we shall do in the garden this year is to plant our crops and take care of them in the old way; we get something!

R. T. CHOKE.




*Round and round in ghoulish dance*
*Do the gruesome monsters run,*
*And ever doth their gait enhance*
*Till the summer's heat is done.*

# LAND, GOLD AND JOURNALISM.



THERE are two great and strong Anglo-Saxon words which mean much and with which all men have to deal. Land is one ; gold the other. We hear of gold a thousand times, however, for once that we hear of land, the greater and elder. "Land, Labor and Capital" has become a famous war-cry, to be sure, but do the American horticulturists keep sufficient track of what is being said about that from which they wrest their daily bread —the land they live upon, and hold by title-deed or lease ?

The other day I looked up this matter from a new standpoint. I took Rowell's newspaper list, turned to the agricultural pages, and then went to the libraries. I examined the agricultural papers, the outdoor departments of the dailies, the horticultural publications, the papers for bee-keepers, poultry-growers, the live-stock raisers, and in brief for all the class of men whose interests are, in the good old English phase, "landed interests." I looked at more than three hundred different publications, and I found them all filled to the brim with "good and valuable material" of a small and perennial sort, such as we all know something of, and might doubtless know more, but could possibly manage to live without if we never heard another word on the subject. I was glad to know that alum water will turn my hydrangeas blue, and that Jones Fitzmaurice has built a new orchid house, and I accumulated a great many hints, scraps, notions and fragmentary ideas from my day's reading. But one thing, I must confess, I did not find anywhere, and what that was I shall tell you presently.

Tariff discussions were there to some extent, though seldom single-hearted, and "gold," that is "money" or "profit," or "surplus," or "increase" filled up a large part of many items and articles, and I found its gleaming outcroppings on many a barren statistical ledge. I had no reason to think that the old Anglo-Saxon word in any of its wealth-meanings was being neglected.

In one sense, too, the papers published for the men who live by the soil were full of remarks about "land." Everywhere it was : "Plow your land deeply," "do not mortgage your land," "feed your land and it will feed you." I was well enough satisfied that the publications I had been studying were well up in "soils, crops, cultures," and all that. The men who wrote for them knew a great deal more in this line I did. Their readers were working hard to grow "two blades of grass where one had grown before," and to get finer roses, more luscious peaches, hardier oranges and an infinite number of other improvements.

Nevertheless I laid down the three hundred journals referred to with a very profound sense of surprise, which, instead of dissipating with reflection, has only deepened. I found in all these pages so few and such slight allusions to the fact that the whole land-tenure system of the civilized world is under discussion, that if I had not otherwise known it, I would not have understood any of these vague hints about Bellamy and Henry George. As for the enormous and constantly increasing list of other persons who are attacking or defending the present land-tenure system in articles, books, and editorials, the class that at present considers "private ownership in land" as one of the fixed and unalterable facts of the universe, appears from its own journals to have heard very little, and to care much less.

Now was there ever, since the world began, a stranger or more interesting sociological fact than this lack of knowledge of a movement which must affect for good or evil whole classes of men, and many generations ? Nationalism, and the single tax idea, though so different in their aims, alike work for changes which every land owner should understand and either help forward or oppose to the end. In the long run he must take sides, and all the new movements hope for his ultimate support ; but why is not the whole atmosphere of the publications that go straight to the land-owner full of the growing, broadening spirit of the ethical, historical and economic questions which are bound up in this discussion on "land ?"

That discussion was in the universities long ago, where men study the books of Maine, Seebohm, Laveleye and the whole group of writers upon early

land tenure, and range themselves under many and opposing standards. It has reached the reviews, quarterlies, great popular magazines, and literary and religious weeklies. To some degree it tinctures politics, and that curious compound of iron, brass, and clay which we call the modern sensational newspaper. But the man who should be the most interested in the affair goes steadily ahead, plants turnips, hoes potatoes, sprays fruit-trees, gathers cucumbers, hybridizes roses, digs angle-worms and goes "fishin' up the crick." Is it stupid indifference, or stupendous folly, or sublime wisdom?

It needs not that I take sides in this article, for it is not meant for the discussion of a problem, but simply to point out the curious absence of such discussion. Beyond a doubt, great social changes are now in progress, and their seeds are sown broadcast on every wind. The men who till the land can do much to determine the nature and extent of such changes. The nationalist says that the "producing classes" will unite to give the modern state power to do many more things than those for which corporations are now organized, and, to distribute equally among all the fruits of the labor of all. The single tax man looks to the land-owner to aid in the movement to have society take to itself the rent-value of land, and abolish all other forms of duties and taxes. Christian socialism has an especial word for the land-owner, and so has each and every reform movement of the age. Is it conceivable that all the confused noise of conflict can go on much longer about the land owner, without arousing him to examine the grounds of his tenure, and make his choice among the social creeds?

Our German ancestors, the freemen of the forests, the "children of the mark," with their common lands and their famous "three field tillage," accepted the fair promise of the feudal order, and gave up their ancient system. Again, when the feudal order decayed and individual ownership of land grew—it also full of fair promise—the unnumbered millions of tillers of the soil slowly forgot that any other land-tenure had ever existed. Perhaps it will be so again. Changes in the social order may even now be going on which will more profoundly alter the relations between the man and the "land." Land tenure is a more vital question to the man who tills the land, than is the sum-total of all the other discussions which appear in his agricultural or horticultural journal. Whatever affects land-tenure, affects his interests in the same degree. Farm-mortgages, the drift of energy from the country to the city, the lack of growth in many rural communities, the increased number of renters of farms—all are subjects of immense importance, but at the very root of the whole social order lies the land tenure question. It can only be decided upon grounds of justice, and every man who owns or tills a piece of land must work out the problem for himself.

*California.* CHARLES HOWARD SHINN.

# THE ECONOMIC PLANTS OF JAPAN—I.

PHYSICAL FEATURES OF THE ISLAND EMPIRE—POMACEOUS FRUITS.

A SOJOURN of nearly four years in Japan—from the beginning of 1886 till the autumn of 1889—as professor of agriculture and horticulture in the Imperial College of Agriculture at Tokio gave the writer unusually good facilities for the study of economic plants peculiar to that country, and being a subject of extreme interest, he applied himself with some assiduity to the task of learning something of their character, uses and culture, so far as they are cultivated at all. It is now proposed to give the readers of THE AMERICAN GARDEN the results of these observations in a series of papers, which it is hoped, may prove, in a degree, both interesting and instructive to all progressive Americans.

The better to understand the conditions under which the plants grow, it may not be out of place to revive in the reader's memory the situation of Japan, and point out some of the physical features peculiar to the country, which, in large degree, determine the character of the flora.

It will be seen by a glance at the map (Fig. 1.) that Japan has no connection with the main land of Asia. It is an elongated group of islands in the Pacific ocean, strecthing out over many degrees of latitude in a northeasterly and southwesterly direction. All together, the Mikado's empire is said to contain some three thousand islands and to reach over twenty-seven degrees of latitude. For the purposes of the present sketch, however, we need to consider only the four chief islands, about which most of the smaller islands cluster like goslings about their parents; namely, Yezo, in the north; Hondo, the main island, in the center, and to the south of it the two smaller ones, Shikoku and Kiushiu.

From the northern point of Yezo (45.30° N.) to the southern point of Kiushiu, these islands extend over about fifteen degrees of latitude. It will thus be seen that the range of temperature must be considerable. In the north the winters are severe, the snow-fall deep and the summers comparatively cool; in the south, sub-tropical products of all kinds thrive to perfection, the climatic conditions corresponding nearly to those of Florida and Key West. It will also be seen that Japan is not a tropical country, a notion not uncommon in America. It is, however, true that owing to the insular character of the country the winter climate is much ameliorated, especially on the Pacific coast, where this amelioration is still greater under the influence of the Japan current, and that for this reason many plants are hardy and flourish in Japan on latitudes farther north than they do in America east of the Rockies. But the reverse is true if we compare Japan with western Europe. It will then be found that lines of equal temperature will strike Europe in latitudes much farther north than they do in Japan. To give an idea of the temperature and rain-fall at some of the extreme points I take the following figures from an official publication (Résumé Statistique de L' Empire du Japan) for the year 1886. Sappora is in the western part of Yezo; Tokio on the east coast of central Japan; Kanazawa is nearly opposite Tokio, on the coast of the sea of Japan, and Nagasaki on the western coast of Kiushiu:

| | TEMPERATURE, F. | | | | Rainfall, inches. | No. of Rainy Days. |
|---|---|---|---|---|---|---|
| | Maximum. | Date. | Minimum. | Date. | | |
| Sappora . . . . | 90.8 | July 21 | .—9 | Jan. 24 | 38.4 | 157 |
| Tokio . . . . . | 97.8 | " 14 | x19.2 | Feb. 3 | 50.8 | 129 |
| Kanazawa . . | 93.2 | Aug. 2 | x23.9 | Jan. 14 | 102.8 | 204 |
| Nagasaki . . . | 95.1 | " 11 | x23.2 | " 13 | 86.7 | 178 |

The temperature fell below zero at Sappora. At the other places, it will be noticed, the climate is not severe. The precipitation, which is everywhere abundant, is greatest on the west coast, where, at Kanazawa, it amounts to over 100 inches. The snow-fall is also greatest along the west coast and in the north. At Tokio the snow is light and only remains on the ground three or four days usually, except in shaded places.

In regard to the topographical features of Japan, the maps give us but little information. From north to south, the interior of the country is one jumble of volcanic mountains, with only here and there a plain suited to agriculture. Many of the mountains are still active volcanoes. They can scarcely be said to be arranged in chains, for they are piled together in more or less closely connected groups, which occupy about seven-tenths of the whole area of the empire. The peaks are not high, compared with continental mountains. Fuji-sau, an extinct volcano southwest of Tokio, and the highest peak in the country, measures 12,365 feet, and a few others approach 10,000 feet, but the great majority will range from 5,000 to 6,000 feet in height. They are, for the most part, covered with vegetation to their summits, and under these jungles of vines and evergreens leap and roar numerous and noisy torrents into the picturesque valleys below, where the people tame them to turn mills and irrigate rice fields on their course to the sea. Though the scenery is not of the grandest, such as may be found in the Rockies, the

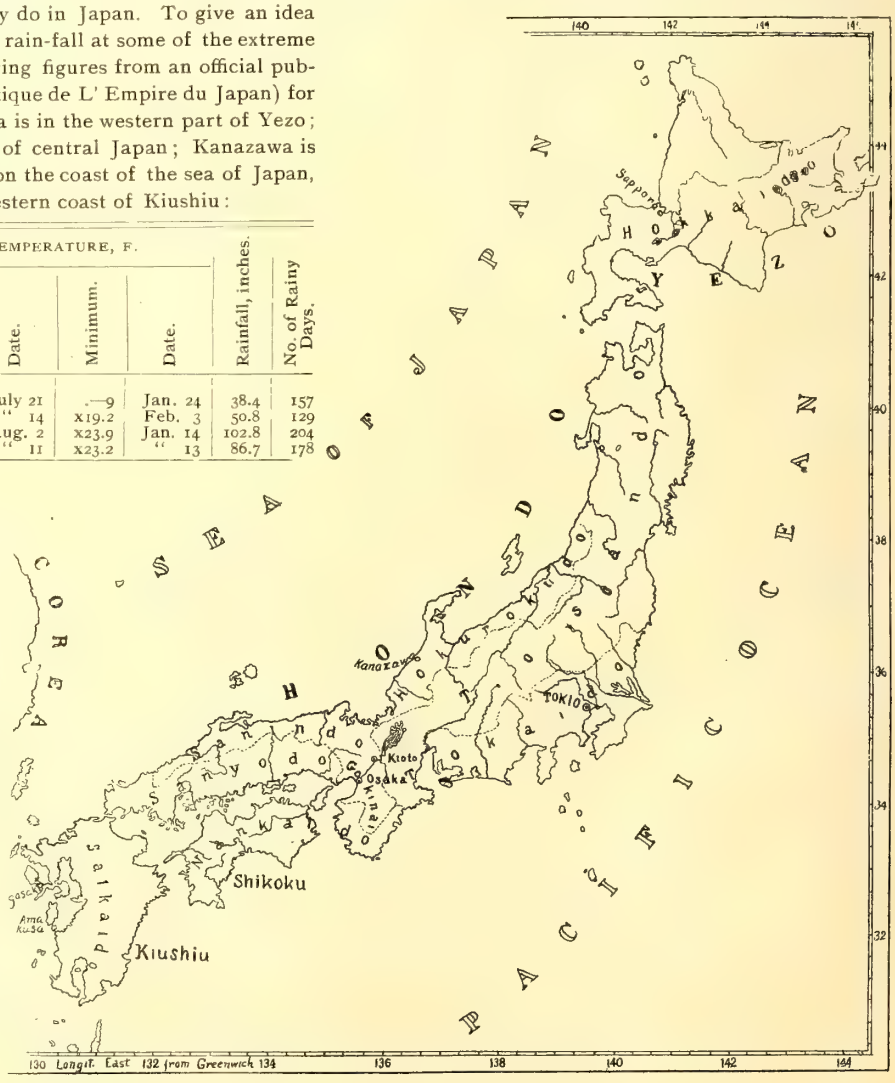



FIG. 1. THE ISLAND EMPIRE.

Andes, and the Alps, still there is a wildness in the view, tempered by an abundant and charming vegetation, which is most gratifying to the beholder.

This wilderness is seldom penetrated by the foreign traveler and collector, except over the beaten routes, and it would not be surprising if it should contain horticultural treasures of great value yet undiscovered.

The inhabitants of Japan are huddled together in populous towns, mostly situated along the sea-board, and around which, by slow and laborious processes, they cultivate the best land. According to the statistics already quoted, the total area of the main islands shown in the map is 112,000 square miles, but of this total, 68,000 square miles are entirely unproductive mountain and desert lands, and 24,000 square miles more are in forests and uncultivated agricultural lands, making a grand total of 92,000 square miles of unproductive land. The remaining 20,000 square miles contain the 40,000,000 inhabitants of the country, which thus gives an average of 2,000 people to the square mile. Kansas contains 81,000 square miles. If her people could live as the Japanese do, she could sustain 40,000,000 souls and still leave three-quarters of her territory a wilderness!

The character of the soil should be mentioned, for it is peculiar. The soil of the large plain on which Tokio stands may be taken as the type. It is a volcanic tufa, naturally of a brown color, but the surface soil has become almost black by the admixture with the accumulated humus of ages. It is very light and very porous, permitting the percolation of water as freely as does sand, and never packing hard; but it is not sand. When dry, it is dust, and is blown about by the wind in great black clouds, which obscure the sun, and the particles drift in through the smallest openings and cover the floor and collect on furniture to the vexation of house-wives. It is well suited to root-crops and rice; bamboo luxuriates in it, and stone fruits do well, but it is too light for apples and pears. In the mountain valleys the soil is exceedingly varied, consisting, as it does, of the washings from the hill-sides. This variation is one of the reasons why particular localities are noted for special crops, which, as we shall see, is often the case.

Having thus thus taken a bird's-eye view of the country and noted its leading physical characteristics, we may proceed to the consideration of our subject proper—the economic plants peculiar to Japan.

## POMACEOUS FRUITS.

Apples and pears receive the first consideration in the estimation of most American fruit-growers as the leading fruits, and I will, therefore, mention their classes first. It would, however, be wrong to suppose that they also stand first in the estimation of the Japanese. No fruit can rival the kaki (persimmon) in their judgment. Next comes, perhaps, the nikan (orange),

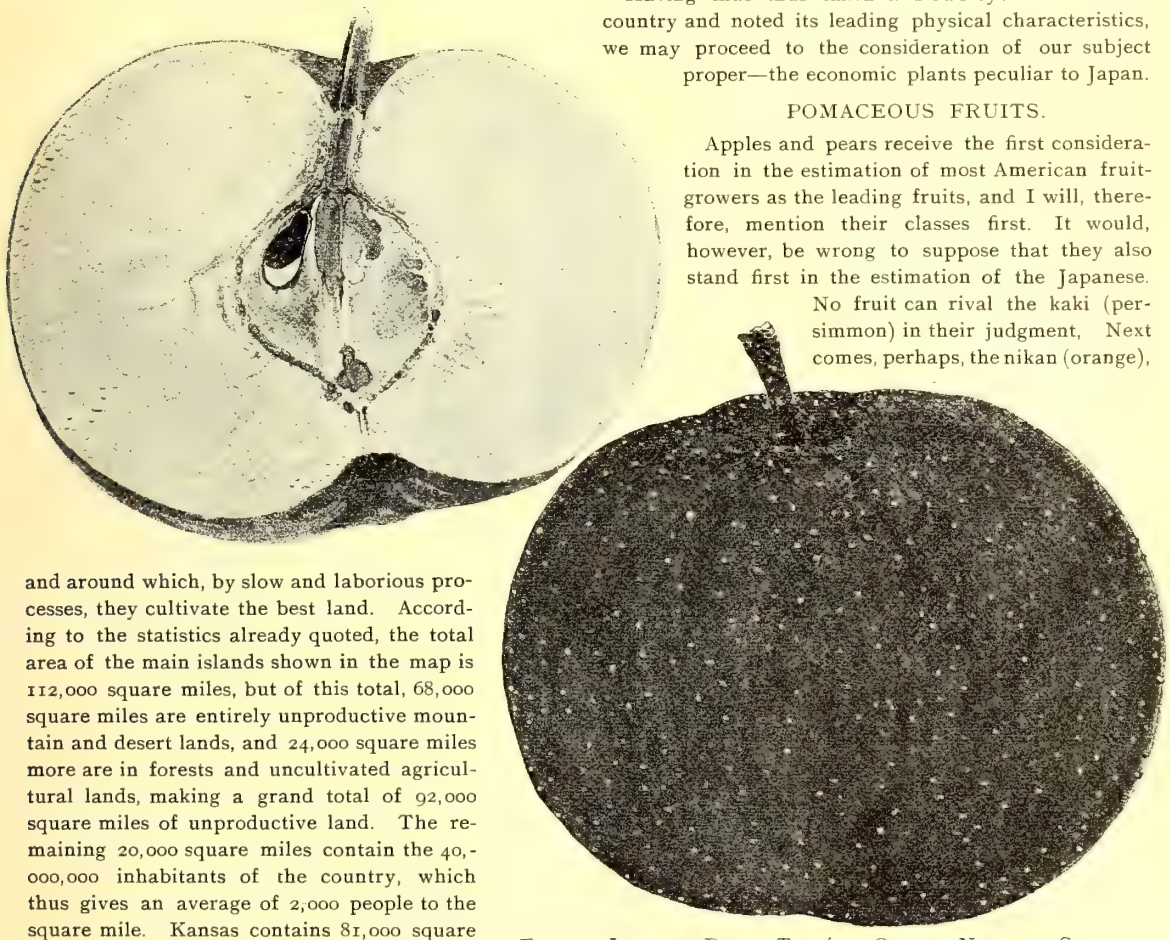


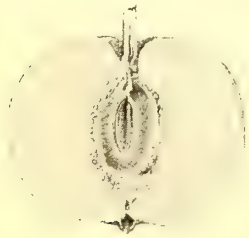
FIG. 2. JAPANESE PEAR—TAIHÉ OR OIRAN. NATURAL SIZE.
(See page 10.)

and then grapes and pears occupy places of about equal importance. Apples are scarcely known and rarely cultivated, though there are a few native varieties. They succeed best in the northern island, where foreign varieties have been introduced.

PYRUS USSURIENSIS, Maxim. (*P. Sinensis*, Lindl.; *P. communis*, Thunb., var. *Sinensis*, C. Koch); Japanese name, *Nashi*.* All the native varieties belong to this species. The fruit has scarcely any resemblance to the

* Hemsley, in his recent enumeration of Chinese plants, uses the name *Pyrus Sinensis*, of Lindley, for this Japanese pear, and proposes the name *Pyrus Cathayensis* for the quince, or *Pyrus Chinensis*, of Poiret.—ED AM. G.

pears of this western hemisphere. In shape, it resembles an apple more than a pear; in color, most kinds are of a dull greenish-russet, with minute yellow specks and a rough skin, and in quality they are coarse-grained and watery, without flavor or aroma. This is not giving them a high recommendation, but my object is to tell the truth, be it favorable or not to the subject treated.



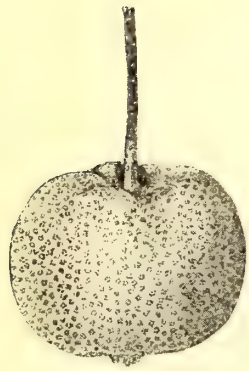


FIG. 3. SEEDLESS JAPANESE PEAR.

The trees are vigorous, and attain a good size when grown as an orchard tree is with us. They have mostly an upright habit, but several varieties have spreading and drooping branches, perhaps the effect of ages of horizontal training. The leaves are large, shining, ovate, with finely serrate margins; the buds large and prominent; flowers white, in corymbs, but differ in size with the variety, some being very small, others large.

The four accompanying illustrations are representative types of the fruits of all the varieties that have come under my observation. The drawings of these, as of all other specimens used in the illustration of these papers, were made by a native artist, an old gentleman, who had attained marvelous skill in portraying plants, flowers and fruit, of which subjects he made a specialty. His only tool was a small, pointed brush, and often have I been lost in admiration of his skill in wielding it, while portraying the specimens I brought him.*

Fig. 2 (page 9) represents the Taihé (syn. Oiran), the variety which the Japanese prize above all others. It has an attractive color, and even at times a slight reddish blush, and it is sweeter than most other varieties and very juicy; but aside from this, the description already given to the class applies also to it. It is hard, coarse, and without flavor or aroma. It ripens in the beginning of October and does not keep long.

Fig. 5 (page 11) shows the Mino (syn. Okago), which is the largest and, in my judgment, also the best of all that have come under my observation. The natives, however, call it poor. What distinguishes it from the others is that it has a fine-grained, pure white flesh, though somewhat spongy. Its juice is pleasantly sweet, yet slightly acidulated. It is the only variety that would be likely to meet with favor in this country. It ripens in October and keeps a couple of months.

In Fig. 6 (page 13) is shown a variety called Akatsupo (syn. Akato), which is quite common about Tokio. It is rather elongated in shape, compared with the others. It ripens in August.

Fig. 7 (page 15) shows the Shiri-yuki, a flat medium-sized variety with coarse watery flesh. It ripens in August.

Other varieties in common culture are: Asa-shimo, round, reddish, much grown; Tsuronoko, small, pear-shaped; Naga-nashi, long, oblong; Dai-koko, round, poor; Tora-fu, round, bluish, good keeper; Shiodai (syn. O-nashi), large, pear-shaped, short stem, good keeper; Kozo, ripe in September, has a very broad leaf and zigzag shoots; Waseaka (literally meaning "early red," but it is a late variety), a good keeper and heavy yielder; Nakaza, ripe in September; Shinchiu, ripe in July, small, and no better than a turnip, is used to offer to Buddhist idols by the faithful; Waseruku, ripens early in August; Okuroku, ripens last of August; Yedoza, ripens last of August; Jobana, ripens early in September; Heishi, ripens middle of September; Rikiya, ripens last of September; Akariu, late and splendid keeper—packed in tubs it will keep till June the following year; Maribaka, also a late variety and good keeper. Of these, the Taihé, Akatsupo, Kozo and Waseaka are favorites with the growers.

Fig. 3 represents a seedless pear, natural size, that I found at an agricultural exhibition in Tokio. It was labeled Inu-nashi (literally, Dog-pear). It is evidently of the same class as the others, but differs in that it had a delicious flavor, was soft and fine-grained and seedless. This list comprises all the most important varieties grown in central and northern Japan. Many of them appear under different names in different districts.

FIG. 4. JAPANESE APPLE.—BENI-RINGO. (See page 12.)

Pears are cultivated somewhat extensively in certain districts, where the soil is suitable to the growth of the trees. One of these places is at the village of Kawasaki, situated midway between Yokohama and Tokio. Another place is at the town of Ogoki, in Gifu

* Figs. 2 and 5 were made in colors, and in the reproduction the effects were partially lost, so that the fruits look flat—Ed. AM. G.

prefecture, where it is said that the best pears in Japan are grown. So also in Shiwosa, a district in the peninsula east of Tokio, and other places.

There are two features of interest in connection with the culture of these pears. One is that for stocks they use quite generally a kind of wild pear which strikes root readily from cuttings, so that this is quite the ordinary method of propagation. I suspect that it is the wild form of the species; but I am not certain of it, as I have been able to see only very small trees. The gardeners and nurserymen to whom I went for information invariably told me that it was the "Yama-nashi," that is, wild pear or mountain pear. The stocks I saw growing had thinner, narrower and more deeply and irregularly serrate leaves than the cultivated forms. But several of the latter, if not all of them, also take root readily from cuttings, and are often used for stocks. For this purpose they use branches three-fourths to one inch in diameter, cut in lengths of about two feet. Stuck in the ground early in spring, they soon develop roots and top, and often make respectable trees at the end of the first year. These are sometimes planted in the orchard without grafting, and sometimes grafted with other sorts.

The other feature which strikes a foreigner as peculiar is their method of training. The Japanese pear grower almost invariably trains his trees on a horizontal trellis made of bamboo poles, and erected about five and a half or six feet from the ground. The trees are planted at varying distances, but usually about twelve feet apart each way, and made to form a whorl of leading branches at a height of four to five feet. As soon as they reach above the trellis they are bent down and secured to the poles, and thereafter pruned with a care and system which rival the art of the masters in espalier training of the West.

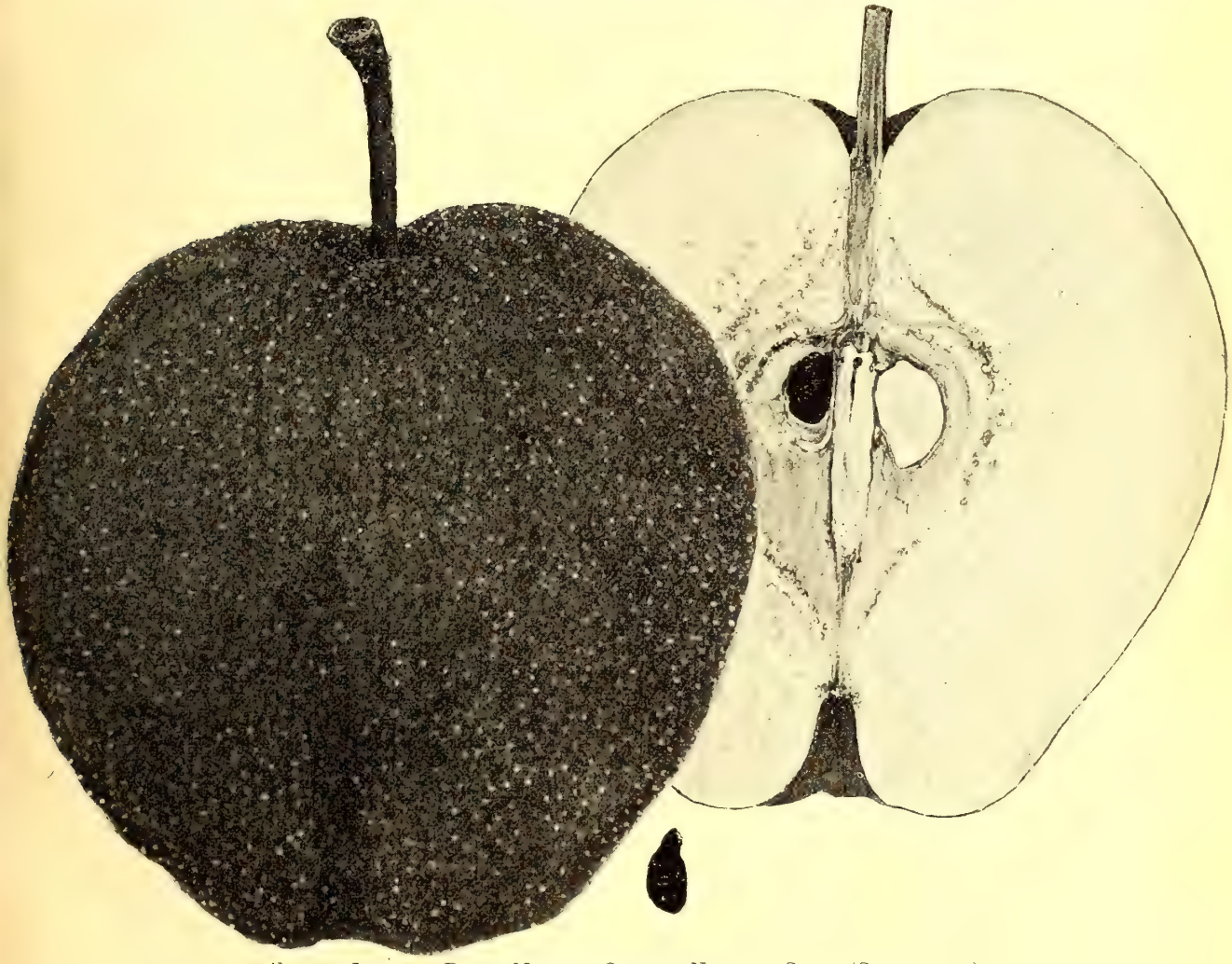


FIG. 5. JAPANESE PEAR—MINO OR OKAGO. NATURAL SIZE. (See page 10.)

The growers advance many reasons for their adherence to this system. They claim that the trees yield more and larger fruit than free-standing trees would—a

claim in which I am inclined to concur up to certain limits. The regular and severe pruning keeps the formation of superfluous wood in check and impels the energies of the tree toward the production of fruit. Again, the fruit does not blow off, it is more easily thinned and picked, and insect pests, which are numerous, are more readily kept under control.

A brief description of a visit to a pear grower in Kawasaki may serve to give an idea of the condition of this branch of the industry there, and it is, in the main, the same elsewhere. In company with several students of the college, we made our way to the village and inquired for one of the most prominent pear growers. He and his landlord (for we discovered that the cultivator had leased the orchard) were soon found, and, leading the way to the orchard, they courteously answered all our questions. The landlord owned an orchard of fifteen tan (3¾ acres—a tan is nearly ¼ acre), all of which was rented by our host. It was a young orchard in full bearing, comprising many varieties. The trees were vigorous and healthy, and showed skill in their management, and all were trained on the horizontal trellis, which formed an uninterrupted network over the whole area. The ground was bare, and broken only often enough to suppress weeds, but nothing was cultivated between the rows. The yearly items of expense per tan were given as follows:

| | |
|---|---|
| Rent | *Yen 5.00 |
| 40 tubs nightsoil applied about trees | 3.00 |
| Bamboo poles to repair trellis | 2.00 |
| Straw rope to tie with | 1.00 |
| Cost of tying and pruning | 2.50 |
| Picking insects, first time (trees in bloom) | 7.50 |
| " " second time | 3.00 |
| Weeding | 2.50 |
| Total cost ¼ acre | 26.50 |

* The silver yen is of the same value as the Mexican dollar.

To offset this the gross receipts varied with the season from 40 to 60 yen per tan, or sometimes more, leaving in round numbers a profit of from $55 to $135 per acre. He paid the laborers 25 cents per day, and they boarded themselves.

The heaviest item of expense is for the destruction of insects. Using no poisons, and having no spraying pumps, the work is done by hand. A moth lays its eggs in the flower at the base of the pistil, and the larva is removed as soon as it hatches, before it has buried itself in the young fruit. This is delicate work, and as I was told, could not be trusted to women and children, who could be had cheaper than men; but the work richly repays the outlay. It is to be regretted that so much skill and patience should be expended on so poor a quality of fruit. The people, however, relish these pears, which may be found on the fruit stands from July of one year till June of the next, selling for one to three cents each.

PYRUS COMMUNIS, L. Jap., *Seiyu-nashi.*—The common pear. It has been introduced from the west, and is grown here and there, chiefly around the open ports; but the fruit is never seen in the market, and is practically unknown to the people.

PYRUS MALUS, L. Jap., *Seiyu-Ringo.*—The apple. It is said that this species is indigenous to Japan, but if so, it has never been improved. American varieties were introduced some years ago, and for a while propagated on an extensive scale by the Colonization Department, a department of the government organized and conducted with a view to facilitate the settlement of the island of Yezo with Japanese, and large numbers of trees thus raised were planted at the centres of settlement. These trees are doing well, and a large portion of their fruit is shipped down to Tokio every fall, where it meets with a ready market.

Canadian and Californian apples were also shipped to Japan, and could at times be had in Tokio. They sold for the enormous price of from fifteen to eighteen cents per pound, and were thus a costly luxury for the foreigners living there. Apple trees, which also originated from the source mentioned above, could be found now and then in the neighborhood of Tokio, but they were poor bearers and short-lived in the light, porous soil.

PYRUS MALUS, var. TOMENTOSA, Koch (*P. præcox*, Miq.). Jap., *Ringo.*—This form, a kind of crab apple, is indigenous and is sometimes cultivated. There are several varieties, all with small long-stemmed fruit, without much merit. One of the best, called Riukiu or Beni-Ringo, is illustrated in fig. 4, page 10. It is grown somewhat in the province Aidzu, is bright red, with fine, crisp flesh and fair flavor, but does not merit special attention.

PYRUS TORINGO, Sieb. and Zucc. (*P. Sieboldii*, Regel). Jap., *Dzumi*, *Odzumi*, *Yatsu-momo.*—This is an indigenous species with very small, long-stemmed apples, which it bears in great abundance. Fig. 9, page 17, gives an illustration of a bearing twig. They are not edible till after frost, when they fall off. They are then gathered and packed in salt for a season, after which they are eaten. A tree of this kind may be seen now and then in rambling through the country, but not often. There are at least two varieties, one with red fruit and one with yellow. The bark of both kinds is used as a yellow dyestuff. These little apples are sometimes grown for ornament in Europe, particularly the red variety, which, when loaded with fruit, is a striking object in an autumn landscape.

PYRUS CYDONIA, L. (*Cydonia vulgaris*). Jap., *Marumero.*—The Quince. The common quince of the west has been introduced, and may occasionally be seen growing about Tokio, but it can scarcely be said to be known outside of experimental and scientific collections, except perhaps, in the northern island, where, as already mentioned, foreign fruits have been planted somewhat largely under the auspices of the Kaitakushi (Colonization Department), which is now abolished.

PYRUS JAPONICA, Thunb., var. GENUINA, Maxim. (*Cydonia Japonica*, Persoon; *Chænomeles Japonica*, Lindley.) Jap., *Boké.*—A description of Japanese fruits would not be complete without some mention of this shrub, or Japanese quince, as it is sometimes called, though being

already well known in America, it needs no specific description here. The natives use the fruit sometimes, but no effort is made to cultivate it for that purpose. It is, however, grown for ornament, as with us. They have several varieties, the typical one having large, bright red flowers; another has white flowers, and still others have flesh colored or nearly orange colored flowers. The plant is also occasionally used for hedges, for which it seems well suited, forming a thick growth of stiff, thorny branches, some four to six feet in height. It is claimed that the fruit is equal to the quince for culinary purposes.

A smaller kind, closely related to the foregoing, is the var. *pygmæa*, Max.; Jap., *Kusa-Boké*. This is an exceedingly dwarf, woody, thorny plant, only three inches to one foot tall, which is very abundant on the plains of central Japan. In early spring it dots the landscape everywhere with its pretty red flowers, shining like bright eyes from the green grass. It has a small fruit resembling that of the larger form and is also occasionally utilized, but not cultivated.

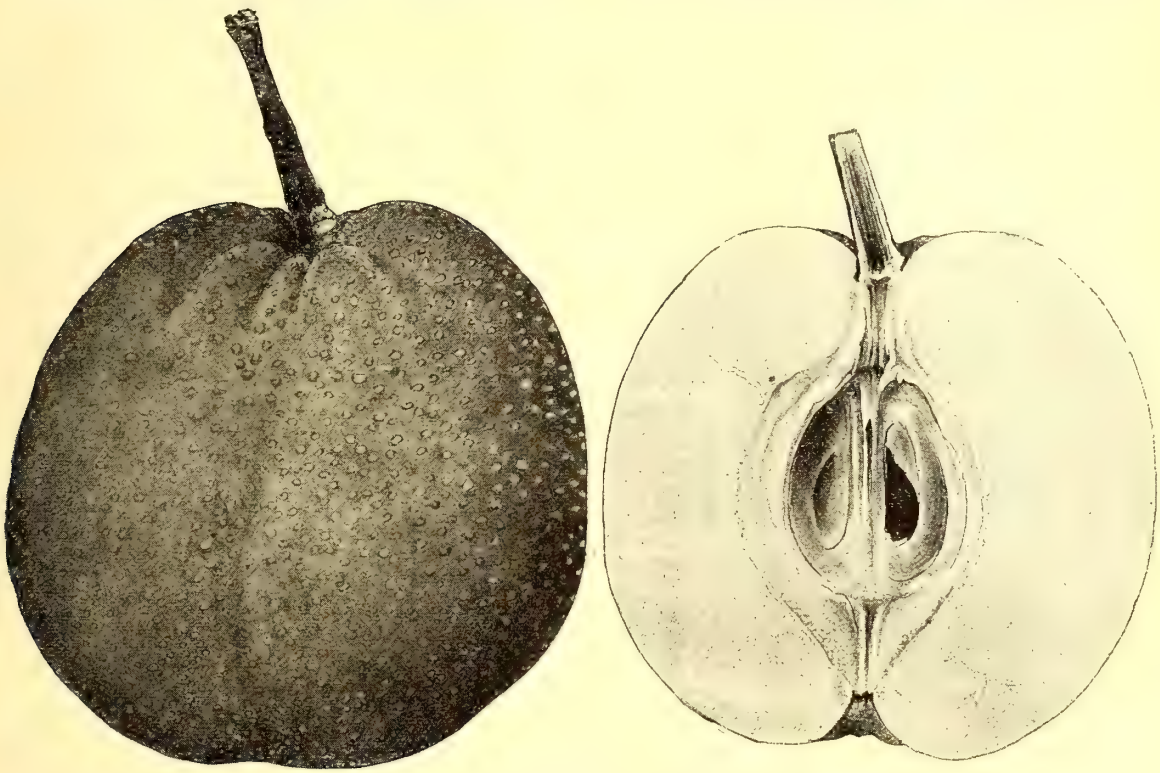


FIG. 6. JAPANESE PEAR, AKATSUPO OR AKATO. (See page 10).

PYRUS CHINENSIS, Poir. Jap., *Karin*. The Japanese or Chinese Quince. It is an introduced fruit which, however, is known and sparingly cultivated all over the country. The tree attains a height of from thirty to forty feet, has a close, upright, bushy growth, but without thorns. The bark is gray, close and smooth, scaling off in patches, somewhat like the sycamore. The leaves are oval or obovate, dark green, stiff, the edges turning up; margin sharply serrate.

The flowers are pink or rose colored, large, sweet-scented, appearing after the leaves; stamens five, united to the base; the stigma is broad, three-lobed. The fruit is large, varying much in size. Four inches in longest diameter is an average-sized fruit, but it is often as large as two clinched fists; oval or sometimes rounded in outline, often unequal, both basin and cavity usually shallow; color a greenish yellow, skin rough and slightly tomentose. Flesh hard, sour and astringent, not edible till cooked; core large, open, with numerous gelatinous seeds packed closely in a double row in each cell. Fifty to seventy-five seeds are common in a sound fruit. It has the same qualities as the quince in an intensified degree, and makes a beautiful jelly; but the skin must not be used in cooking, as in the case of the quince, it being too astringent. It is used by the Japanese chiefly as a domestic remedy for coughs, for which it is said to be an efficient remedy. It has many qualities which recommend it for culture, The large fruit, the size and vigor of the tree, its hardiness and easy culture would render it a formidable rival of the quince in America, and undoubtedly the austere nature of the fruit would be ameliorated by careful culture. At any rate it would be well worth experimenting with, to ascertain if it is amenable to improvement. Although planted by the Japanese, the tree receives but little care, and is virtually

in a wild state. Fig. 8, page 16, shows a twig and flower of this tree, natural size.

The foregoing brief sketch covers about all of the pomaceous group peculiar to Japan which can be classed as fruits of sufficient interest to merit mention here. Based upon the extent of their culture and general appreciation, this group will, as already intimated, rank only third or fourth in their catalogue of fruits, being preceded by the persimmon, the orange and, perhaps, the grape. But aside from these leaders there are many other fruits peculiar to the country, of more or less local habitation and culture, which, though without any recognized status in the market, will have more less interest to us. I will mention a couple of these here. One of them is already known to some extent in the south. I refer to

### THE LOQUAT.

PHOTINIA JAPONICA, Fran. and Sav. (*Mespilus Japonica*, Thunb.; *Photinia Eriobotrya*, J. Hooker; *Eryobotrya Japonica*, Lindl). Jap., *Biwa*.—This is an evergreen fruit tree. It is not a large tree, as it is rarely seen taller than twenty-five or thirty feet, but it has a thick, spreading, rounded head. The illustration (fig. 10, page 19) shows a twig with some leaves and a few fruits of the native variety, natural size. These top leaves are somewhat small and narrow; further down the stem they are considerable larger and broader. All are thick, dark green, rough and crimped. The young wood is very woolly, the shoots short and thick, and the branches crooked. One fact peculiar to this tree, which may not be generally known in America, is that it blooms in the fall, and for this reason it cannot be a success as a fruit tree where the winters are at all severe. It stands the cold, and fruits well at Tokio and some distance further north, and we have seen that the temperature falls there to about 20° F. at times, hence it cannot be called tender; and but for this peculiarity it might no doubt be fruited much farther north in this country than is the case. I do not recall having seen it in fruit further north than central Texas. It begins blooming in November, when the small yellow flowers form in thick clusters on the ends of the branches, and the young fruit, which takes shape a month later, remains all winter almost stationary, after having thus started, ready to take advantage of the first warm spring weather. It ripens in June. It is a yellow, globular or slightly oblong berry, with a thick woolly skin, and containing four large seeds, though often one or more seeds are abortive. The small amount of yellowish flesh in which the seeds are embedded is very juicy and exceedingly refreshing and pleasant. Besides the one shown in the illustration, which is the biwa proper, they have another variety called the To-biwa, said to have been introduced from China. It has a larger fruit, but the seeds being also larger, there is no gain in flesh, and what there is is of a less delicious quality. The leaves of this variety are also larger and coarser than those of the native. The peddlers tie the fruit in bouquet-like bunches, surrounded by a rosette of leaves. It is a favorite with everybody while it lasts, but the season is short.

I have never seen the trees planted in orchards, but only a few specimens here and there about the dwellings, apparently as much for ornament as for the fruit. In proper places it is an effective ornamental tree, but in dry, dusty locations the rough leaves soon become loaded with dust, and the result is not happy. It is propagated by seeds.

*Kansas Agricultural College.* C. C. GEORGESON.

## ESPALIER AND WALL TREES.

SOME time last year an article appeared in THE AMERICAN GARDEN (April, p. 232) briefly describing the methods of training espalier and wall trees in Europe, and stating that, although the methods were excellent there, they are usually impracticable in this country. It has occurred to me that in many instances the methods could be successfully employed in this country. In the south of France the sun is sufficiently powerful to injure the bark of the trees, and so the employment of means to protect them is necessary. The injury to the bark is often urged as a drawback to growing the trees in this country, yet we often see apple trees that are held up as models of pruning or training that have naked stems two feet or so in height and three or four branches three or four feet in length without a single leaf, and the ends of the branches much resemble a half dozen twigs. I am puzzled to see how it is that such trees pass through the summer without injury. I would rather have twenty-five espaliers than sixty such leafless or limbless trees.

In France many of the finest varieties of pears are entirely cultivated upon the espalier system, and it is generally acknowledged that the fruit of all varieties when grown upon the espalier system is far superior, both in size and quality, to that produced by trees growing on the natural or standard system. When the producers of choice fruits become more numerous, and the attending competition renders it more difficult to obtain high prices for extra fine samples produced on the natural or let-alone plan, an endeavor will be made to produce still finer samples that shall be the very best of their kind, as well as the highest achievements of skill. How will this be done? Why, growers will begin cutting their trees, and then some one will find that this

espalier method, hitherto considered unpracticable, is remunerative, and it will speedily have its advocates.

When grown on a wall in this country, the trees should be trained at least six inches from it, so as to allow of the free circulation of air among them during the summer time, and in the winter they should receive some protection from the sun's rays, otherwise they will sustain injury through the alternate freezings and thawings to which they would otherwise be subjected. In the middle and southern states some protection would be of great service to them during spells of sunny weather in the winter time. This covering would here be employed to retard the growth of the trees as much as possible until after the usual time of the last frost.

The method of espalier or wall training offers inducements in a variety of ways. Pears that are too early when grown as standards can be easily protected with canvas, netting or boughs at the time of blooming when grown on walls or as espaliers. The fruit, too, may be supported so as to enable it to attain its largest possible size. Early varieties of pears or other fruits may be made to give their crops before the market is glutted. Pears that are too late when grown as standards might be made to produce a crop if grown on a wall having a southwest frontage. The walls might also be used for the purpose of retarding the ripening of certain kinds of fruit, so as to have them on hand when the glut is over.

Greater objections can be raised to the wall tree than to the espalier. The latter stands free, and is, as a rule, well supplied with leaves. I believe that many varieties of pears could be successfully grown as espaliers, and if they were planted in rows six or eight feet apart, and running north and south, they would naturally shade those parts that are usually exposed to the full action of the sun. If one could find valuable varieties that would thrive as espaliers, it would be a great advantage to garden truckers and others, who could, by this means, add to their income. We know that in France all varieties will not thrive on the various systems adopted there, and there are some varieties, I believe, that even there require to be grown on a very hot wall to bring them to perfection. Some of these varieties one would be led to imagine could be induced to thrive on the walls or as espaliers in this country.

Many walls and waste places could be utilized for the production of fruit by various modifications of the systems noticed. Perhaps the cordon system would be found the most valuable.

There is no doubt that on the western, eastern and northern aspects of walls and houses in the middle and southern states several varieties of the orange and other similar fruits could be successfully grown where the mere suggestion would be ridiculed; yet in time to come not only will the orange be so grown, but many other semi-tropical and tropical fruits will be successfully grown and cultivated, and by this means no small amount of revenue will be afforded to the various states. In the south, doubtless, many varieties of pears could be successfully grown on northern aspects, where now they are failures. It is quite possible that in time to come these methods may be extensively employed in California, and it is very probable that in a few years these various methods will force themselves upon the observation of the fruit grower.

*Baton Rouge, La.* H. W. SMITH.

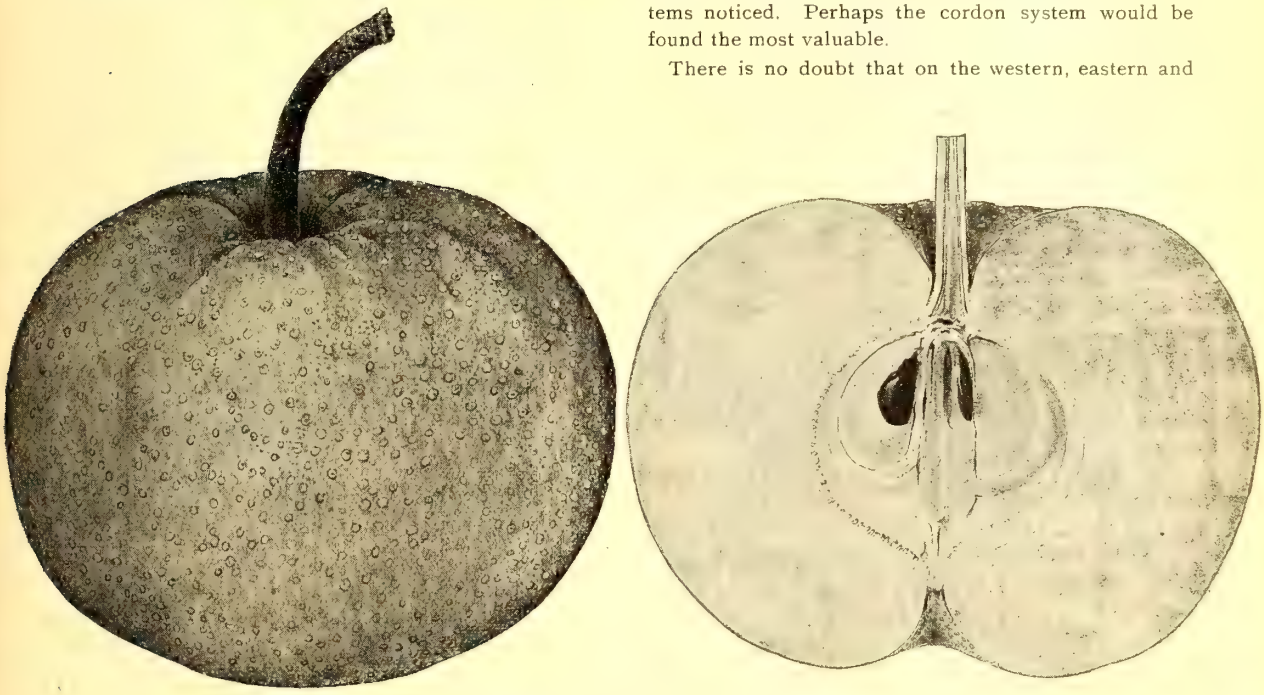


FIG. 7. JAPANESE PEAR, SHIRI-YUKI. (See page 10).

FIG. 8. FLOWER AND FOLIAGE OF THE CHINESE QUINCE. (See page 13).

## PROMISING WILD FRUITS—IV.

MANY DIRECTIONS FOR RESEARCH.

GOOSEBERRIES.—The improvement of our American gooseberries has only begun. When we think of the wonderful results obtained from the wild gooseberry of Europe, we have no need to remain satisfied with the degree of success obtained in this country, where we have at least a dozen species nearly equal to the *Ribes Grossularia* of the Old World. We need varieties of compact upright habit, able to withstand drought, free from spines and prickles on fruit and bush, the fruit of large size, and produced in such abundance as only gooseberries can be. Why may we not also have gooseberries cultivated for use in the ripe condition? A little more of the gooseberry flavor and rather fewer seeds would make them an excellent dessert fruit to use ripe. Has not fashion something to do now in the almost exclusive use of gooseberries in the green state? Or is it because we have not learned the delicious flavor of some of our native gooseberries when fully ripe?

For the improvement of our wild species, selection and continued planting from seed is all that is neces-

sary. Further improvement might, perhaps, be obtained more quickly by additional crossing with foreign varieties, as has already been done, but a more perfect adaptation to our climate may be looked for from selection alone, and the seedlings are sufficiently variable to promise abundant success by this method.

JUNEBERRY (*Amelanchier Canadensis*, var.)—The success of the dwarf Juneberry is no longer doubtful. Its earliness, ease of culture and prolific bearing insure it a permanent place among our small plants. It is very susceptible to differences of soil and climate, however, and attention should be given to the production of new varieties adapted to different locations. It will doubtless continue to be, as it is, most popular in the west, on account of its hardiness and ability to stand drier climates than some of our other small fruits. It is somewhat lacking in flavor, especially at the north, and until fully ripe the color is not as attractive as it should be. In these particulars improvement should be sought.

MULBERRY (*Morus rubra*).—While the mulberries of the Old World have been extensively introduced into the United States for the purposes of silk culture, timber and fruit, our native red mulberry has been strangely overlooked. For the purpose of fruit production, however, this native species is well worthy of attention. It is found as far north as latitude 43°, but its fruit is larger and of better quality in the southern states, especially through Tennessee and the northern portions of Georgia, Alabama and Mississippi. In this region the fruit of the wild mulberry was a favorite food of the Indians. Bartram, La Salle, De Soto and other explorers make frequent mention of its use and describe two or three varieties, differing in the color and quality of their fruit.

Mulberries are said to have been more highly esteemed by the Romans than any other fruit, but in this country, at least, attempts to introduce the general cultivation of the mulberry for fruit have not been very successful. Apparently valuable varieties for this purpose have been originated here and introduced from Europe, but their cultivation has always been limited. The Russian mulberry, extensively advertised and sold in the northwestern states as a fruit and timber tree, is little if any better as a fruit than our wild red mulberry. If the mulberry is to become an important fruit in this

FIG. 9. PYRUS TORINGO. (See page 12.)

country, where other fruits are abundant, varieties must be produced for that special purpose, and their culture confined to those regions where the fruit will properly develop and ripen. The attempt to introduce little known fruits into unfavorable climates discourages their cultivation in localities where they might be grown with profit.

Huckleberries (*Gaylussacia* and *Vaccinium*). Over twenty species of huckleberries are found in the United States, besides numerous varieties. They occur in greatest number and abundance in the northeastern states, especially in New England, New York, Michigan, Wisconsin, New Jersey and the Allegheny region. Several of the species, including the well known *Vaccinium corymbosum*, live only in swamps, while most of the others thrive best on light sandy or rocky soils, but where the air is cool and moist. Huckleberries are probably more popular and more largely consumed than any of our other wild fruits. It would be difficult to estimate the annual value of the huckleberry crop of the country. Twenty years ago it was believed to be greater than the strawberry crop, but it probably is not now, though it doubtless exceeds that of the blackberry crop, both wild and cultivated. A New York commission merchant estimates the New Jersey huckleberry crop at "millions of bushels" annually. Six hundred and fifty bushels per day have been brought by the American express company into New York city from Ulster and adjoining counties, and the total daily receipts in that city from all sources in the height of the season is said to exceed 2,000 bushels. The annual value of the huckleberry crop of Washington county, Maine, is estimated at $10,000. One railroad station in northern Michigan shipped in one season over 1,000 bushels, and another in southern Michigan 1,500 bushels. One commission firm in Detroit handled, in 1889, 2,000 bushels, mostly from northern Michigan. The annual huckleberry crop of Wisconsin is estimated in a report to the American Pomological Society at 20,000 bushels, valued at between $60,000 and $80,000.

All this fruit was produced on wild land, much of it too sandy or rocky for profitable cultivation. The abundance of the fruit in the wild state in many places has left no inducement to undertake its cultivation, but these regions are comparatively limited, and are being yearly reduced through the clearing up of the country, so that the question of the cultivation of the fruit, if not already an important one, is likely soon to become so. Attempts at cultivating the huckleberry have been made, both in this country and England, but without permanent success. Tusser, in his "Five Hundred Points of Good Husbandry," published in 1573, speaks of "hurtilberries" as being grown in British gardens. Between 1761 and 1796 fifteen kinds were introduced into England from the United States. Some of these may now be found in England in a wild state, but no huckleberry is now regularly cultivated there for its fruit. The prevailing wild huckleberry of Europe, *Vaccinium myrtillus*, generally called bilberry in England, is quite largely gathered for its fruit, but it seems to be less popular than the huckleberries of this country. The only really successful attempts to cultivate the huckleberry in the United States seems to have been made in New England, principally in Massachusetts, and have consisted merely in transplanting into open pasture land sods containing the bushes with their roots undisturbed. Repeated failures have attended efforts to grow huckleberries with ordinary garden cultivation. The most nearly successful of these have been where mulching was resorted to for the first year or two. The uniform failures, so far as known, which attended the trials of the "blueberry" plants sent out by a certain Michigan man a few years ago may have been due, as was claimed by purchasers, to the inferior character of the plants furnished, but it was probably largely owing to the difficulty of growing these plants in ordinary cultivated land. Cutting back the plants at the time of setting to prevent the formation of fruit the first season, in addition to mulching for one or two years, seems to offer the best general treatment in transplanting huckleberries. It is quite probable, however, that few, if any, of the species can be successfully brought into cultivation without special attention being given to their requirements in the way of soil, as has been done with the cranberry. This will doubtless prove no less true with the upland species than with the swamp huckleberries, especially since it is noticed that, unlike the blackberry and red raspberry, they are generally inclined to disappear instead of increase with the clearing up of the surrounding forests

Black Walnut (*Juglans nigra*). The planting of this nut with any special reference to its fruit is practically unknown. The tree is easily grown, bears young, is adapted to a wide extent of territory and the nuts are relished by almost every one, being fully equal to the so-called English walnuts. The chief objections to them are their hard shell, and perhaps their black color. The nuts vary greatly in size and shape, and in the thickness of their shell and husk. Where walnuts are planted for timber, it would be at least worth while to select the seed with some reference to the character and quality of the nuts. The varieties seem to be inclined to come true from seed, since all the trees of a particular grove or locality frequently bear nuts of one kind. There is also much difference in the rapidity of growth, and other characters of the tree, between different varieties. Some are more inclined to grow tall and straighter than others.

Butternut (*Juglans cinerea*). This is nowhere so abundant as the walnut; it is better adapted to poor and rocky soils; grows at higher altitudes and in more northern latitudes; ripens its fruit earlier in the season, and does not form so large nor so upright a tree.

As the tree is less valuable than that of the walnut, it is seldom planted for timber, and there seems little prospect at present of its being grown for its fruit. The nuts, however, are very rich, and have the merit of being able to be cracked with little danger of injur-

ing the meat, a point which recommends them to the confectioner.

Shag-bark Hickory (*Hickoria ovata*). This is without doubt the best and most popular of our wild nuts, though its thick shell prevents its use for ordinary dessert purposes. The nuts are smaller than those of the mocker-nut, or thick shell-bark (*Hickoria sulcata*), but they are better in quality, and have a thinner shell. The true shell-barks, however, vary in size and shape, and in the thickness of their shell, and probably varieties could be developed having shells sufficiently thin to enable them to be used for dessert purposes. This might, however, be at the expense of their keeping quality, which is doubtless largely due to their thick, hard shell.

This hickory has a somewhat similar, though wider, range than the chestnut, but prefers heavy instead of sandy soils, and is sometimes found in hard-bottomed swamps, which are dry a portion of the year. The presence of the hickory is generally considered as a "sign of good land." Like the chestnut, it reproduces itself from sprouts, if the trees are not too old, a fact which enables a plantation to be quickly renewed when cut for timber.

The Pecan (*Hickoria Pecan*). This nut is now being introduced into cultivation with remarkable rapidity. It is found native from southern Indiana and Illinois to the Gulf of Mexico, but its cultivation is being most largely undertaken in Louisiana, Mississippi, Alabama and northern Florida. Valuable new varieties are being obtained, which are propagated by grafting, and for which fancy prices are obtained in market. This tree is known in our botanies as *Carya olivæformis*.

The Hazel (*Corylus Americana*). No attempt, so far as known, has been made to improve our common native hazel. The species, however, is fully as promising as the wild *Corylus Avellana* of the Old World, from which the cultivated filberts are derived. Our hazel varies in the size of the shrub, character of husk, size and shape of the fruit and thickness of the shell The nuts are fully equal in quality to the imported filberts, and though only about one-half their size, they are gathered in some localities for market. There is no apparent reason, unless it be the present high price of labor, why, with proper attention to cultivation and selection, our markets might not be fully supplied with native hazel-nuts, fully equal to the imported filberts. The cultivation of English varieties of the filbert has frequently been attempted in the United States, but the results, for some reason, have not been sufficiently encouraging to lead to their extensive practical cultivation for market.

Fig. 10. Loquat. (See page 6)

The late Patrick Barry, of Rochester, said: "I cannot account why the cultivation of the filbert has not made more progress in this country, except it be that chestnut and other nuts are so abundant and cheap every

where. Formerly it received much more attention in our nursery than it does at present. We had at one time a fine collection of varieties and gathered good crops from them every year. From this I infer that our climate here is not too cold for them. I believe that the filbert can be successfully grown here, and have no doubt that on cheap lands in Delaware, Maryland, Virginia and neighboring states it may be grown with profit."

Whether our native hazel will furnish varieties more profitable for cultivation than the filberts already introduced can only be determined by trial. It is generally believed that our native hazel is more hardy than the imported varieties of the filbert. It is at least probable that in some respects it may be found better adapted to our climate than the foreign species. Our hazel thrives on any good soil, but in some sections, at least, it is most productive on sandy lands. An important point in favor of the hazel or filbert is its long-keeping quality. When well-dried, it has been preserved in good condition for two years, while it is difficult to keep the chestnut more than three months. The hazel is practically free from enemies of all kinds; is easily cultivated and cared for, and will doubtless ultimately occupy a permanent place in cultivation. A. A. CROZIER.

*Michigan.*

## 'S AND YELLOWS IN THE CHESAPEAKE COUNTRY.

'EAR (March, p. 129) I
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large peach trees in Michigan as I have in Maryland, but there are fewer of them. It is only now and then a tree in some partially neglected yard or in some fence corner which attains the size of the more southern trees. Why it is that these half neglected trees should attain greater size than others is a disputed point, but on the
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those in Michigan. We should expect this, from our knowledge of the influence of climate. Dr. Smith, the Department of Agriculture agent in charge of the yellows investigation—his portrait in Fig. 2 is admirable!—tells me that the trees in the Chesapeake region average larger than in any country he has seen, even larger than in Georgia. He thinks that the largeness is due in great part to the comparatively moist climate, which enables the trees to grow more rapidly, and more continuously throughout the summer, than elsewhere. But whatever the particular causes may be, this record of the effects of climate may prove useful.

All this region of southern Jersey, Delaware and eastern Maryland is a natural peach country, and it is probably the most important one in the world. The great markets—New York, Philadelphia, Baltimore, Washington—are in easy reach, and the business is extensive enough to attract evaporating establishments, canneries, and all the incidental advantages which aid in disposing of large crops. The orchards, especially in Maryland, are much larger than in Michigan and New York. This is due largely to the fact that the style of agriculture is rather more extensive than northwards; it lacks condensation. Orchards of 100 to 200 acres are not uncommon along the east shore of the Chesapeake. Peach culture has been profitable in these regions, but it has passed its palmy days.

FIG. 1. A SIX-YEAR-OLD MICHIGAN PEACH ORCHARD.

The yellows is now over-running the country with terrible havoc. The upper half of Delaware is turning its attention elsewhere, and peach culture is going southwards, ever pursued by the scourge. There are large tracts of open fields north of Dover which were once busy orchards. But now the orchards are rare, even so far south as Dover, in which the disease is not abundant and destructive. Orchard after orchard is hopelessly ruined, and the rows of stumps and windrows of tree tops mark the downfall of a beautiful and lucrative industry. Fig. 3 (page 23), made from a photograph taken near Dover, shows a common scene. In Kent county, Maryland, lying across the Chesapeake from Baltimore, the yellows now has the mastery, and in Cecil county, to the northward, it has well-nigh ruined the peach business.

Everywhere this yellows has the same appearance as it does in New York and Michigan; it is the same disease. But in Michigan it has been quarantined, while southwards it has been neglected. I visited scores of orchards in which half or more of the trees were badly diseased, and yet the owner made no attempt to remove them. Such a condition of affairs is unintelligible to a northern peach grower. Of course there are some who cut them out diligently, but it is of little avail amid the general neglect. Many growers intend to cut out the diseased trees, but they never get to it. In spring, they will be cut out in fall; in fall, they will be removed in winter; but other business always interferes. "How soon would you cut them out—the next fall?" asked one. "The next hour," I replied.

But it is not strange that the disease should be misunderstood, and consequently often neglected. It does not appear suddenly, with striking symptons which would attract a casual observer, nor does it always kill the tree within a definite time. It is obscure and mysterious, and therefore provokes almost endless debate. It is natural that at first local conditions of soil or climate or treatment should be regarded as the cause of it, but it would seem that the facts now evoked by the discussions at societies everywhere, and by the observations of trained students, are sufficient to show that yellows is not a local trouble or condition, but a wide-spread disease of immense importance. We must look over the fence and enlarge our views. And there is no better proof that it is a specific disease than the fact that its symptoms are essentially the same everywhere, in all soils and all conditions. If it were a local matter it would not only occur alone in restricted areas, but the symptoms would vary with the locality. But definite records are now indisputable that the disease occurs on all soils, under all methods of treatment, and they indicate that it may occur in any region. It is probably only a matter of time until it will appear west of the Rocky mountains. It was once supposed that the disease could not occur in the virgin soils of the Michigan shore, but the experiences of the last twenty years have sufficiently overthrown that dogma. Peach growers have been separated upon the yellows question, every man endeavoring to prove himself to be right. But it is now time that we work together for the truth, independently of any man's assumptions. Certainly the condition of the Chesapeake orchards is bad enough to call loudly for help.

Into this distress has come one of the most patient and careful investigators who has ever studied diseases of plants. Erwin F. Smith, the agent of the Department of Agriculture, has been working here and in Georgia, Michigan and Kansas for three or four years in a quiet, but I am convinced in a most efficient way. The amount of his work is enormous, and I think that he has settled many of the disputed points. To be sure, he has not discovered the cause of the disease, but he is constantly eliminating probable causes. But the ultimate cause is really less important in a practical way than most people imagine. It is by no means probable that we shall be able to cure the yellows when the cause is known; but we shall, perhaps, know better how to control it. Dr. Smith's field experiments with fertilizers number 100, and cover 40 acres of orchard in Delaware and Maryland; and 40 acres more are reserved as checks. These experiments cover the whole range of special and general fertilizers, in all combinations. Potassic, phosphoric, nitrogenous, and all manner of compound fertilizers have been employed. The experiments are now two seasons old, and they have been made upon sick orchards to cure them and upon well orchards to protect them. All the special compounds and nostrums which have ever been recommended are used. Many of these fertilizers have produced most marked effects upon the trees. The nitrogenous compounds often add almost wonderful vigor and color.

But there is not one material which has had the least effect upon the yellows, either in curing it or in keeping it away. And these tests have been made upon a scale and with an exactness never before approached. I visited the larger part of these test orchards and examined them critically, and I was totally unable to detect any modification of the disease which could be attributed to fertilizing. Continuous cropping of poor soils, with no fertilizers, has failed to augment the disease. I am satisfied that the soil exhaustion and special fertilizer theories are irrevocably overthrown.

This is but a sample of the work under way. A series of tests upon cutting off the first diseased twig as soon as it appears, have shown that the tree is even then constitutionally diseased, for such trees invariably die. In only one or two cases has it been found that the disease does not again appear until the second year. It seems as if the whole tree is diseased before any symptoms are seen. Experiments upon the use of various stocks are in progress. I saw one peach orchard grown upon plum stocks in order to ascertain if the plum would afford immunity from the disease. This is a young orchard and results cannot be announced yet. Various budding and inoculation experiments are in progress, from Georgia to Michigan.

One of our best horticultural writers has said that tobacco applied to the soil will cure the yellows. The investigation of this point has resulted in a most im-

FIG. 2. A SIX-YEAR-OLD CHESAPEAKE PEACH ORCHARD.

portant discovery, nothing less than a new insect. This is an aphis (*Aphis Persicæ niger*, E. F. Smith, "black peach aphis") or louse which works both upon the foliage and root of the peach tree. Upon the root it is particularly noxious. The great colonies of insects so dwarf the tree that it may make scarcely any growth for many years. The tree looks yellow and sickly, and it is not strange that such a one should be mistaken for a yellows tree. It is highly probable that the isolated, stunted peach trees which we sometimes see in orchards are attacked by this root louse. It is abundant in the sandy lands in the Chesapeake country, and Dr. Smith has found it in Michigan. A liberal dose of tobacco will kill this insect. I saw some wonderful recoveries of aphis-infested trees from the use of tobacco.*

Laboratory cultures from diseased trees have given various results. Sometimes no germs are present, and sometimes many are found. The disease is far more obscure than pear blight, and results will come slowly. Those who have no intimate knowledge of the difficulties of such work can form no idea of the labor and patience involved.

Michigan, New York and Virginia have definite yellows laws, and Delaware has one which applies to the lower half of the state. In many parts of the middle states the orchards are so large and the homesteads so isolated that laws cannot be promptly enforced. But the value of eradication, enforced by law, is illustrated in Michigan, and the absence of it is painfully apparent in this beautiful Chesapeake country.

*New York.* L. H. BAILEY.

*Full descriptions of this pest, with remedies, can be found in Entomologica Americana, VI, Nos. 6 and 11, and in Bull. 72, N. J. Exp. Sta.

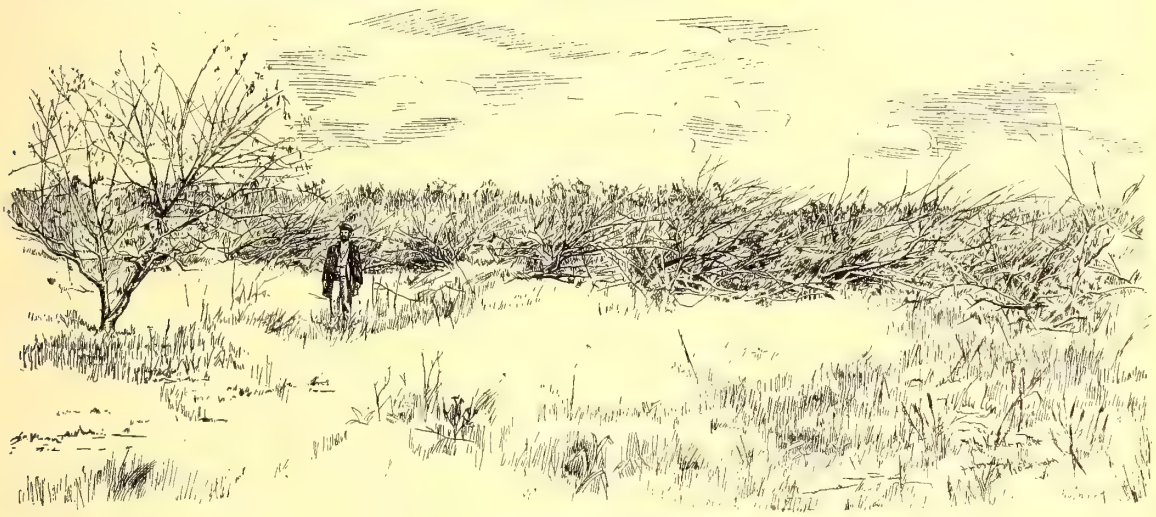


FIG. 3. THE BESOM OF DESTRUCTION.

# THE TUBEROUS BEGONIAS.

OPINIONS AND EXPERIENCES CONCERNING ONE OF THE MOST ATTRACTIVE GROUPS OF PLANTS IN CULTIVATION.

*Fig. 1, Frontispiece.*

New Named Begonias—Upper left hand specimen, *American Garden;* lower left hand, *Fascination;* upper right hand, *New Rochelle;* lower right hand, *Rose Hill.*

THE tuberous or bulbous rooted begonias are so called from the fact that they have a tuberous root. The tubers increase in size every year, and are largely used in the propagation of the plant.

When these begonias were first introduced, they were esteemed only as a rather expensive novelty. But when cultivated, they have shown themselves to be capable of great improvement in character and habit, and in the size and color of the flower. The species are also easily crossed, and thus an endless variety may be obtained. It is not strange, then, that they are so rapidly becoming popular, and one would be safe in predicting that, in the near future, they will be grown more extensively than the now so common geraniums.

The season of flowering is fully six months long. The first blossoms appear in early spring, and until late in the fall flowers are continuously produced. They are of the richest colors, embracing every shade of white, rose, pink, red, scarlet, crimson, maroon, lake, yellow and orange, and

combine the richest shades and the intermediate colors—certainly a point greatly in their favor.

Tuberous begonias are well adapted to almost every kind of culture. They may be grown in pots, boxes or baskets, out of doors, or under glass, or in the open ground. The thick structure of the plants enables them to withstand wet and stormy weather as well as tropical heat and drouth. Even at this late date (October 2d) we have thousands of plants as plentifully covered with flowers of every shade as during the summer, notwithstanding the rain storms and cold nights to which the geraniums, coleus and many varieties of summer-flowering plants have succumbed.

Another valuable feature of these begonias is that they possess the beautiful and abundant foliage which is characteristic of the family. With the exception of the geranium, there is no plant that can produce so gorgeous a display of rich and varied colors as the begonia when grown in masses, and all who grow them will come to this conclusion.

Only a few people as yet recognize the value of begonias as bedding-out plants, but their general adoption for this purpose is only a matter of time. In some places they are already quite extensively used, and still their availability in this direction is far from being fully understood. They contrast so beautifully with other plants that they will not be discarded after a fair trial is given them. When grown in masses, the different kinds can also be arranged with good effect.

Begonias should be grown in a loose rich soil. There is no danger of their running to leaf, even in wet and sunless weather. During weather that would ruin the looks of geraniums they grow steadily and produce flowers at every joint, and instead of appearing battered and bruised after a storm, the plants appear actually refreshed. No insects prey upon them, so their leaves and flowers are mostly perfect, which can be said of very few plants. This fact alone greatly reduces the labor and expense of growing them.

It is not near so difficult to cultivate tuberous begonias successfully as has heretofore been supposed, and if the following instructions are followed success is assured:

If the plants are intended for pot culture, either for greenhouse, conservatory or window, it is better to use bulbs or tubers. These should be obtained from a reliable source, say in February or April, while in a dormant state. They can now be obtained at a moderate price, but it must not be supposed that the choice varieties will be found in the cheaper collections which are offered, for as in all other classes of flowers, the choicer sorts are selected according to their merits and included in the superior and more valuable collections; and these are certainly preferable for pot culture.

For early flowering it is advisable to start the bulbs in February or March, either in small pots or shallow boxes in a greenhouse, conservatory, or in the window. The soil should be composed of loam, sharp sand and leaf mould. The pots should not be much larger than the bulbs, and should have good drainage. The bulbs should be lightly covered, and if started in boxes, the soil should not be over two and one-half to three inches in depth. Set the bulbs the same as in pots, taking care that the drainage is perfect; they can be planted very close together. As soon as the bulbs are planted, water lightly with a sprinkler, so as to moisten the soil thoroughly and equally, and a moist but not wet condition should be maintained. The temperature in which the bulbs are started should be from 60° to 65°.

After growth has started, give regular but moderate ventilation, and a somewhat cooler temperature, avoiding, however, all cold drafts. After leaves have formed the plants should be carefully repotted, or if started in boxes, be carefully lifted and potted into suitable sized pots. Do not make the mistake of over-potting. The soil should be the same as that used before, except that a larger proportion of loam, and a little well-rotted old manure be added; continue the treatment as above directed.

Should it be desirable to start the bulbs in hot-beds, which can be safely done in March or April, the same line of treatment can be pursued, avoiding, however, the steamy atmosphere which may collect in a hot-bed and cause the bulbs to rot. All "coddling" should be carefully avoided.

As soon as the roots of the plants have filled the four or five-inch pot in which they are now growing (which can be easily ascertained by turning up the pots for examination) they should finally be potted into six or seven-inch pots for flowering. This should be done before they have become crowded with roots. A still stronger loam or soil may now be used, and the plants potted a little more firmly than before. This will induce a firmer growth and more lasting qualities in both plant and bloom. The plants should now have all the light and air possible to promote and maintain a healthy condition, and the soil should never be allowed to get dry, though on dark and cloudy days water should be judiciously given. The same temperature as heretofore may be continued.

Should large specimens for exhibition be desired, then the plants may again be re-potted into still larger pots and the same potting material be used. Remove the first flower buds in order to promote a continuance of growth, instead of immediate bloom. After the plants become established in their blooming pots, they may be treated to a weak liquid manure. Sheep manure soaked in water is the best. This may be applied once a week, and care should be taken not to have it too strong. For bedding-out purposes seedling plants, as well as bulbs or tubers, can be used, providing they are of a first-class strain; it is of great importance to obtain them from a reliable source. Bulbs or tubers, however, are preferred if early flowering plants are desired; plants grown from them will bloom more abundantly in the early part of the season, since they have the strength of the already formed bulbs to start with. Such flowering plants, whether grown from seeds or from bulbs, may be planted as early as the middle of

May or the beginning of June. The only preparation necessary for these plants is the same as is usually made for all other bedding plants The best sized plants for bedding are those growing in three-and-one-half or four-inch pots. When bedding out, the earth in every pot should be thoroughly moistened by abundant watering or by dipping the pots into a bucket of water, so that the plants will not suffer from drought before their roots are able to take hold of the soil in the bed. A slight shading, just enough to break the direct rays of the sun, for a few days after planting, will be of material benefit to the plants, as it enables them more quickly to recover. Light canvas, branches of trees, etc., are excellent. Now, all that is needed is to see that the plants never suffer for the want of water, and it may be necessary to give them an occasional watering in any dry spell which may occur during the hot summer months; such waterings, however, should always be done in the evening. As regards the arrangement of these beautiful begonias in bedding out, the same ideas can be followed as with geraniums, coleus or other bedding plants. Masses of solid crimson, scarlet, pink, rose, yellow, white, and the various intermediate shades, can be worked out to suit the taste. If the foregoing directions on the cultivation of these most satisfactory plants are followed, the beds or groups of tuberous begonias will surpass all other bedding plants. Not only are the plants superior for bedding purposes, but for cut flowers they are as good as anything that can be had, and one need never be without flowers on the table while having a bed of these beautiful, most satisfactory and abundantly-blooming plants. The plants can be purchased as reasonably as almost any other class of bedding plants. When once obtained, the bulbs or tubers which are produced over the roots and under each flower stalk can be used year after year, producing stronger and more vigorous plants every successive season. The tubers, or bulbs, should be lifted, after the first frost, and stored away in the same manner as dahlias, gladiolus or cannas.—H. A. SIEBRECHT, *New Rochelle, New York.*


FIG. 2. SINGLE TUBEROUS BEGONIA.

TUBEROUS BEGONIAS—SPECIES AND CULTURE.—Tuberous begonias are truly gardeners' plants. The race has been obtained and established by the florists within a short time. The present strains have been produced from *Begonia Boliviensis*, *B. Pearcei*, *B. Veitchii* and *B. Davisi* as the parent stocks, by hybridizing, selection and cross-fertilization: it is doubtful if the blood of *B. Roezli*, *B. Weltoniensis*, *B. diversifolia*, etc., enters into them, and no hybrids have been obtained with the non-tuberous varieties. The present perfection and development is largely due to Veitch, Laing, Cannell, in England, and to Van Houtte and Lemoine with others on the Continent.

Tuberous begonias are certainly a charming and desirable class of plants, showing a wide range in color from the pure and creamy whites, through the pinks and

salmons, up to scarlets and deep crimsons. The foliage is fine, and presents good variety; the habits of growth are good, and there is comparative freedom from insects. We do not grow them so extensively as they are grown abroad, probably because they are little known, because they do not succeed as bedding-out plants in our hot, sunny, summer months, and because there are some difficulties in propagation, and in handling during their period of rest.

They seem to be best fitted for greenhouse decoration during summer and early autumn, and for growing in pots in the house and on the piazza at these seasons. If they are to be used as bedding plants, a rather shady and well protected situation is advisable, and plenty of water must be given.

The cultivation is not very difficult. Use well drained pots, in size proportioned to the size of the tuber. The soil should be light and contain good gritty sand and plenty of well-rotted leaf-mould; the manure also should be well-rotted. Pot firmly, and leave room for copious watering. Start into growth during February and March, for a succession. The temperature in which they are grown should be 50°–60° F., and if the pots are plunged in moss in bottom heat, so much the better. Water sparingly at first, but after growth begins in earnest, never let them get at all dry. Shift as the growth demands, and after each shift keep close and a little warmer for a day or two. Liquid manure may be used carefully on well-rooted and established plants. When, at the end of the season, the leaves turn yellow and the plants show that growth is complete, withhold water gradually, and pot them in winter quarters. Keep them in the pots, which should be placed on their sides under the benches where there is little drip. Place them so that those ripening first can be picked out for starting early the next season.

I advise propagation by seed. Like pansies, cyclamen, cineraria and herbaceous calceolaria, the good strains from reliable growers are so well fixed that a large proportion of the seedlings will give plants of good habits, showing a wide range of color and foliage, and producing large flowers. Bud propagation is not necessary except in special cases, such as for saving seed and for exhibition. Seeds sown in February and March, if well grown, give blooming plants the following September. Sow the seed thinly, in well-drained pans or boxes, which may be plunged in bottom heat; 60° F. is a good temperature. The soil should be light and contain plenty of sand. Leaf-mould is recommended, but it should be fine and old. Bring the soil up almost level with the rim and make it pretty firm. Use no soil to cover; a light watering will be enough, but a pane of glass should be kept on the pan until the seedlings are well established. Pinch off when large enough to handle, and continue this careful treatment until the plants are large.

There is always some difficulty in growing plants from seed when the seed is small, and they are slow growers; the trouble comes from damping off. Last year I tried sowing in chopped sphagnum with meagre success. Next spring I shall try pure cow-dung from the pastures, as old as possible, dry and fine. We succeeded admirably this summer, using this for cinerarias, calceolarias, etc.

The tuberous begonias can easily be propagated by cuttings, but the result is often a plant which does not make buds, and so cannot grow the second season. This is not uncommon in plants like dahlia and *Salvia patens*. When the cut is made at the base of the nods just under the leaf, and not planted too deeply, a perennial plant is produced, if this bud is a growing and not a blooming bud. If several shoots start from the base, they can be slipped off and used for cuttings with the same result. These facts may account partly for the trouble in carrying the plants through the winter. I have never tried leaf cuttings; but a whole leaf, bud, and small portion of the stem will succeed.—B. M. Watson, Jr., *Bussey Institution.*

Tuberous-Rooted Begonias.—In Europe, at the present day, the tuberous-rooted begonia is receiving a large share of the attention of skillful cultivators, and no plant better repays the cultivator who devotes his time to hybridization than does this one.

The colors of its flowers, both double and single, are of the most vivid scarlet, beautiful pink, and pure white, the flowers often measuring two inches or more in diameter. The individual flowers of the double varieties are often as large as the carnation and more brilliant in their color.

Begonias are splendid plants for conservatory decoration during the summer months, the plants being literally covered with blossom the entire season. It will be necessary to shade the greenhouses from the direct rays of the sun.

If planted in June in a sheltered place in the open ground where the plants do not get the direct rays of the sun, they make a most beautiful show, their bright colored flowers attracting universal attention. As yet they have not been largely planted in this country, but in Europe they are extensively grown.

These begonias can be raised from seed sown in January or February, on a light soil, such as is used to sow fern-seed on. The seed and young plants will want careful watching, for in the close atmosphere necessary for germination, fungus is likely to appear and destroy the plants as they first come up.

As soon as they can be handled the young plants should be transplanted into shallow boxes of light soil that will drain rapidly; shift into small pots as the seedlings require.

By September, the plants can be laid on their sides under the bench of the greenhouses in a dry place, until the bulb starts to grow, which will be in February or March. Shake off the old soil and repot. The plant should be in flower by June, and will remain in flower until October, when the bulb can again be dried off. The bulb will last a number of years.—James Dean, *Bay Ridge, N. Y.*

The Culture of Tuberous Begonias.—There are

few plants that have improved as much in the past few years at the hands of the hybridizer as the tuberous rooted section of the popular begonia family, and fewer still that present more just claims for admiration, and a more extended cultivation. They have been grown in Europe for several years; so much so that a few prominent houses in England and elsewhere have made a specialty of them, and plants are raised in large quantities for the home market as well as a large export trade. Their great range of color and general usefulness have within the past few years made them favorites in this country, and their cultivation is annually on the increase.

Among this class of plants the hybridizer has achieved the utmost success, the result being flowers of both double and single varieties of innumerable shades of color, from pure white through rose and pink, to intense crimson and fiery scarlet, and from the deepest yellow to tawny brown and brilliant orange, presenting in all a bewildering variety of the most beautiful tints and shades.

The tuberous begonias are desirable either as a summer bedding plant or for greenhouse and conservatory decoration through the summer months. If intended for out-door cultivation a position where the plants will receive partial shade from the mid-day sun should be selected, also where they will have an abundance of moisture. They succeed well in a rich loam of a loose, friable nature; if the soil is stiff and clayey a liberal amount of leaf mold and sand should be added. In the northern states it is desirable to start the tubers in pots in the greenhouse and transfer them to the beds in the open ground at the same season as all other tender bedding plants are set out. We have, however, in this latitude, obtained excellent results by planting the tubers in the beds where they are to bloom, after all danger of frost is passed. The tubers are planted not more than three inches below the surface of the bed. Avoid overwatering until they have started into a vigorous growth. A slight mulching of fine manure or other material to prevent the ground from becoming hard, as well as to check evaporation through July and August, will greatly benefit them.


FIG. 3. DOUBLE TUBEROUS BEGONIA.

If desired to be grown in pots for the summer decoration of the porch or conservatory the tubers may be started any time after January. Pots just large enough to contain the tuber are sufficient for this purpose. A little mixture of fibrous loam, leaf-mold and sand makes an excellent compost to start them, but as they advance in growth more loam should be used for the final potting, taking care to secure complete drainage and never shift into a larger size pot until the growth and vigor of the plants demand it. Liquid manure may be given to advantage when the plants have received their final shift and the pots become well filled with roots. Keep up a vigorous growth when once started; never let them get a check from any cause, and remove all old blooms, as soon as they fade, to insure continued flowering.

Water must be withheld when the plants cease flowering, gradually at first, and as they begin to turn yellow it should be withheld altogether. The tubers keep well if packed in sand under a greenhouse bench if not placed too near the pipes. A cellar or closet where frost does not enter will keep them equally well. If by any chance the tubers become shrunken they will regain their former

plumpness by placing them in a moist place for a few hours, and sprinkling with tepid water. After frost has destroyed the plants grown out-doors they may be taken up and dried. Cut away the old stems to within about two inches of the tubers, and after a little time these will gradually fall away, when the tubers may be cleaned and stored away for future use, just as is done with those grown in pots.

The named varieties are all perpetuated by cuttings, though some growers hybridize their finest sorts and save the seed. In this manner they rarely produce as fine a variety. The flowers of the double varieties can be used with good effect in many floral arrangments of designs or bouquets, by the aid of a wire stem.

Seed sown in March will produce blooming plants by the end of July or early in August. The seed may be sown in an ordinary box or seed pan, which should be first filled half full with some material to give plenty of drainage, over which place some finely sifted soil to receive the seed. Scatter the seed thinly, and sufficient covering will be given by simply pressing the soil down level. Keep in darkness by covering with glass and paper for a few days in a temperature of not less than 70°. As soon as the seedlings appear the covering must be be removed, and as soon as they have roots a quarter of an inch long transplant them into small pots of nicely prepared soil. The seedlings are so small they cannot well be handled. A good plan is to take a pencil as a dibber; loosen the soil around them, and by dipping the pencil in water the small plants will hang to it and can be placed in holes prepared for them in the small pots. Press down gently, sprinkle lightly and place in a tem perature as before, for a few days; afterwards gradually expose them to a medium temperature, where they can be shaded and kept near the glass.—JAMES MORTON, *Tennessee.*

WHERE TO GROW TUBEROUS BEGONIAS.—The tuberous begonia should be placed among the most beautiful of plants. It deserves to be grown by every lover of flowers and is worthy of the skill of the most skilful. However large the collection may be, monotony cannot be produced, as the flowers are of so many different colors and the leaves of various forms, and there is no purpose for which these begonias are unsuitable.

The large flowered and double varieties are a beautiful feature in the conservatory, and it is for standing about a greenhouse and for placing in a light hall-way that these are most suitable. For hanging-baskets and for standing on brackets the drooping varieties should be selected. For bedding purposes these begonias are destined to supersede the geranium, and for this purpose the small flowered varieties are most desirable. For window culture tuberous begonias are without a rival, and can be grown as easily as the common plants generally seen, and with one-half of the trouble, for the corms can be dried off and stored away for the winter; the dwarf varieties should be selected for this purpose. Every one who grows window plants should have at least a dozen tuberous begonias of different colors.

For ordinary purposes I consider it best to raise the plants from seed. Some skill is required in this method, but it is much the cheapest, and plants good enough for producing cut-flowers and for decoration are easily obtained. The seed should always be purchased from a reliable source. I used to sow the seed in pans that were well-drained—in fact, they were more than half filled with the draining material. About an inch of good sandy loam was placed over the drainage, and about half an inch of leaf-mold and sand was put upon the loam. The leaf-mold was baked before it was used. The pan was placed in water for a time and then set aside to drain; when the soil had become sufficiently dry, the seed was scattered very thinly on the surface. As the seed is exceedingly small this operation requires great care. The seed was lightly pressed into the soil, and the pan then covered with a piece of glass and placed in a temperature of 70.° The young plants were transplanted as soon as they had made a rough leaf, into well-drained boxes, filled with a soil composed of loam, sand, well-rotted manure and small pieces of charcoal; I used to add leaf-mold when it was at hand. The tiny plants were set an inch apart and potted on as they required. Some were planted out in beds and others were grown during the summer in pots. These plants produced flowers the first season.

Named sorts were increased by cuttings or by division of the crown. Cuttings about three inches long were taken off close to the crown. They were inserted in sand, covered with a glass, and given a temperature of 70.° The crowns were divided into two, three or four pieces as soon as the young shoots could be seen and laid aside to dry for two or three days; then potted in small pots and treated as above. Old plants were wintered in their pots, the pots being laid on their sides under the stage. When they began to grow in the spring they were shaken out and placed in small pots, and potted on as they required until eight-inch pots were reached. When they became pot-bound, they were watered once or twice a week with clear manure water.

Amateurs needing plants for window gardens should buy one year old crowns in March, pot them in small pots, and stand them in a warm room with a sunny window. When the roots reach the sides of the pot they should be given a larger pot. It is very unwise to repot a plant before the roots have penetrated the soil in which it is growing. At no time during the winter should the crowns be kept in a temperature lower than 45.°—H. W. SMITH, *Baton Rouge, La.*

TUBEROUS BEGONIAS AS BEDDING PLANTS.—Our Birmingham correspondent writes: Mr. Bell's note as to his success with these plants at Baroncourt, Ireland, in your last issue, is identical with the experience gained in the immediate neighborhood of Birmingham by Mr. Cooper, in the pleasure grounds at Highbury, the residence of the Rt. Hon. Joseph Chamberlain, M. P. Two beds of these were bright with flower late into October, when the pelargoniums were comparatively without flowers and shabby; and Mr. Cooper told me that for

the future he should rely a great deal more on begonias and violas than he had hitherto done. Of course it is necessary to grow the plants on in a cool house slowly and get them thoroughly hardened before planting out, and to select situations where the soil is not cold and heavy. The more the beauty and usefulness of both the begonia and viola become known, the more generally will they be used for summer and autumn decoration. —*Gardening World.*

TUBEROUS BEGONIAS.—Just now tuberous begonias are attracting the flower loving and flower buying public to a greater extent than ever before, even though the half is not known. The reason, however, is obvious to anyone acquainted with these plants and their habits. A begonia is one of the most gorgeous, prolific and persistent blooming plants we have. It blooms from seed in four months, and continues smothered with flowers for months. A few remarks on growing them from seed may be in order.

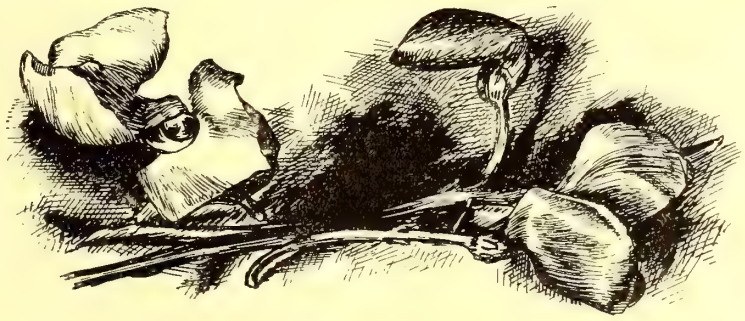
Get good fresh seed from a reliable firm. Do not buy it until January 20, because you will be more likely to obtain new seed at this time than earlier. Sow about February 15, when nature is awakening for the new year. Sow one or two packets in a five or six-inch pot, filled to within half an inch of the top with good, fibous, peaty soil, nearly one half sand; some pulverized moss, say one eighth by bulk, will help it. Mix all thoroughly, and run through a coarse sieve if you have one. Scatter the seed evenly over the surface and press the surface down evenly with a small piece of of wood. Sprinkle thoroughly with a hand sprinkler, without washing, and set in a warm place with a pane of glass over the pot. The glass should be raised about an inch on one side during the day. At night put it down close. In the morning wipe off all the moisture that collects on the glass over night. Keep the soil always moist; do not let it get perfectly dry for a moment.

Two weeks after the seed comes up is the most critical time for damping or drying off. When the little plants are about the size of the end of a lead pencil, having two leaves and the third one just starting, take the point of a stick and prick them out about half an inch apart in other pots, filled with the same kind of soil. After the leaves are hardened and about half an inch in diameter, put one plant in a three-inch pot. When this plant has grown so that it nearly covers the top of the pot, shift it into a five-inch pot, if you want it to flower in that size.

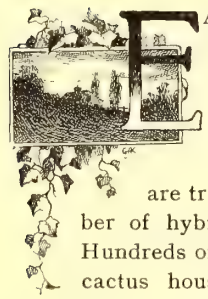
If wanted to grow in a frame or bed outside, transplant directly from the three-inch pot into soil well pulverized and well manured. Raise the beds a little so the water will not stand around the bulbs. Buy your bulbs any time from February to May 1st for bedding; plant outside about May 15 in beds slightly raised, well manured, and thoroughly pulverized. The bulbs should be set about three inches deep and six inches apart.

If you want an early display of flowers start the bulbs in pots about April 1, planting from the pots about May 20, as foliage will be a little tender. The plants will soon begin to flower and will continue covered with bloom until touched by frost. They can be taken up in pots before a heavy frost and will continue to bloom inside for some months. The bulbs must be rested a few months each year. When dug up from the beds after the frost has killed the foliage, spread them out in dry boxes in a dry place, cutting the stem off close to the bulbs. After the ground and roots have become powder dry, the bulbs should be rubbed and made perfectly clean. The stem should be cleaned off close, or the moisture from its decay will sometimes start the bulb to rot. After the bulbs are clean, store them in sawdust or dry sand, in a dry cellar or any other moderately warm place.

The value of tuberous begonias may be seen at once, not only because they yield an immense number of flowers, but they can be used for so many purposes; and at any time you wish to have flowers, by a little care you can have them in full glory. The bulbs are very easy to keep and to grow, they last a length of time, and improve for many years. The plants are at once showy, easy of cultivation, and cheap. They can be gotten from most any good dealer at very moderate prices. Try a dozen or more of single mixed varieties first. Next season try some singles under color; they make a beautiful contrast for bedding. Then further try the double varieties. These are much more expensive, but really not beautiful enough to be worth the higher price usually charged. Still, some of the named varieties are wonderful to behold; but these sorts cost to-day from fifty cents to a dollar each; for specimen plants they are really worth it.—E. V. HALLOCK, *Long Island.*



# STREPTOCARPUS—A NEW RACE OF GARDEN PLANTS.



EACH summer during the last three or four years, one of the most charming sights in the plant houses at Kew has been produced by various kinds of streptocarpus, a few of which are true species, but the greater number of hybrid origin, and raised at Kew. Hundreds of these plants are grown in the cactus house, the large temperate house and in other places in the garden. To the majority of the visitors, and even to many professional gardeners, the genus is quite unknown; yet it has become evident to those who have seen and worked amongst these plants, that they are the forerunners of a new race of greenhouse plants whose value will eventually equal, if not surpass, that of gloxinias, cinerarias, primulas or cyclamens. The beauty of the flowers, the amazing profusion in which they are produced, and the adaptability of the plants themselves to all sorts of treatment, give a combination of good qualities that few indeed of our indoor plants possess. A representative plant, grown at Veitch's, is shown in the engraving.

The genus streptocarpus altogether comprises about a dozen species, all of which are of African origin. It belongs to the natural order gesneraceæ, and the flowers, which are trumpet-shaped, resemble those of isoloma, achimenes and gesnera itself. The species may be divided into two groups, one being stemless and native of south Africa exclusively, the other having erect stems under a foot in height, bearing fleshy opposite leaves, and natives of east tropical Africa and Madagascar. It is the former alone that are here dealt with, none of the caulescent species being of horticultural value. Next to the long, narrow, spirally-twisted seed vessels, which are implied by the generic name, the most remarkable character of the genus is the huge, sprawling, solitary leaf which some species develop. I recently measured a leaf of *S. Dunnii* whose dimensions were two feet six inches in length by sixteen inches in width, and others have been measured over three feet long; those of *S. Saundersii* are nearly as large. It is this ungainly habit that constitutes the drawback to the cultivation of these plants, and it is to its removal that hybridizers will have to mainly direct their efforts, as some of these one-leaved species possess the most desirable floral characters. Sufficient, however, has already been done to show that by introducing the blood of smaller and neater growing kinds, and especially by selection, this defect may in time be removed. The flower scapes are joined to the petiole and the mid-rib of the leaf, and continue to develop, one after the other, in quick succession during the flowering season. Eight or ten flower spikes may be seen standing erect from the base of the prostrate leaf, and simultaneously in flower.

Undoubtedly the hybrids that have been raised are far more suitable for horticultural purposes than the species themselves are, but some of these are very ornamental and interesting. The following list is therefore given of all the species that are of sufficient merit to deserve cultivation. It includes all those that up to the present have been used for hybridizing:

*S. Rexii.*—This was the first species introduced to England, being brought to Kew from the Cape of Good Hope in 1824. It has several prostrate, oblong leaves, and never bears more than two flowers on the scape. The flowers are of a bluish purple and about one and a-half inches long. It is a plant of neat habit and easy cultivation, thriving in either the cool or warm greenhouse. It is also known in gardens under the name biflora.

*S. polyanthus* is a pretty species, with panicles of pale blue flowers. It was originally brought to Kew quite by accident, amongst the roots of some ferns. The tube of the corolla is curved and over an inch long, the limb comparatively wide. For a long time after germination it has but one leaf, which is cordate and ultimately a foot in length, but afterwards one or two small ones are developed. It has been grown in Europe for upwards of forty years.

*S. parviflora.*—This is a plant of much later introduction, having flowered for the first time in 1882, in the Botanic Garden at Cambridge. It is found in the mountainous districts of Cape Colony. It is of neat habit, and the flowers are white, with a few streaks of yellow and purple on the lower lobes of the corolla, the tube of which is a little under an inch in length.

*S. Saundersii.*—This is a remarkable species with only one immense heart-shaped leaf. On some of the plants in the cactus house at Kew these were two and a-half feet long by one and a-half feet in width. It is a fact of morphological interest that in all these stemless, monophyllous species the huge so-called leaves are really developments of one of the cotyledons originally enclosed in the minute seed. The flowers are small, but produced in great numbers on erect panicles eighteen inches high. The color is a pale purplish blue.

*S. Dunnii* is the last addition to the genus, and is nothing less than a vegetable wonder. In the *Botanical Magazine*, where it is figured at plate 6,903, it is hailed by Sir Joseph Hooker as a magnificent plant, and the "monarch of the genus." The dimensions of its huge, wrinkled leaf have already been given. The flowers are

of a bright brick red, individually very much like those of a pentstemon. The color is remarkable in being quite different from what is characteristic of the other species, which are all white or bluish purple. It was raised from seed sent to Kew in 1884.

Hybrids.—The first hybrid streptocarpus was raised about nine years ago by Mr. Green, in the garden of Sir George Macleay, at Pendall Court, in Surrey. Its parents were *S. Rexii* and *S. Saundersii*, and it was named after its raiser. Immediately after, several hybrids were obtained at Kew from *S. Rexii* and *S. parviflora*, the beauty of which was sufficiently marked to justify further experiments upon the same lines. The appearance of *S. Dunnii*, therefore, with its bright, distinct color and many-flowered racemes, at once suggested its utilization for this work, and there is no doubt that the beauty and vivid color of the later hybrids are chiefly due to its influence. It was first crossed with *S. Rexii*, and the progeny is now known as *S. Kewensis*. The leaves are two or three in number, much less ungainly than those of *S. Dunnii*, and the flowers are borne eight or ten together on erect panicles, upwards of a foot high; they are two inches in length. The color differs from that of either parent, being of a brilliant mauve purple, with lines of a darker shade running down the throat.

The success of the second cross, which was obtained from *S. Dunnii* and *S. parviflora*, was even greater. It is named *S. Watsoni*. The flowers are very much like *S. Kewensis* in shape, but rather smaller. They are chiefly of a rich rosy crimson, the influence of *S. parviflora* being shown in the white and brownish purple lines in the throat. The amount of bloom a single plant will produce in a season is astonishing. During the past autumn I counted, on an average specimen, between sixty and seventy flowers fully expanded at one time, and this was when the flowering season was on the wane. Up to the present neither *S. Kewensis* or *S. Watsoni* have produced seeds, and their propagation must be effected by leaf-cuttings or by crossing the parents again. But, although sterile with their own pollen, they can be fertilized with that of either of their parents.

In 1887, after the value of these hybrids had become apparent, all sorts of crosses were made. All the species enumerated above were impressed, with the exception of *S. polyanthus*, which so far, at least in England, has not been successfully crossed with any other. The result of these experiments is an immense number of varieties, varying from pure white to purple and crimson. Some of the white ones are streaked with crimson, some blotched with purple, while some of the purple varieties are streaked with white and brown. A few are almost blue, with only the faintest tinge of purple. As an instance of the improvement due to hybridization and cultivation combined, one named *S. Rexii*, var. *multiflorus* may be mentioned. Its parents are *S. Rexii* and *S. parviflora*, but it differs in no essential particular from the true Rexii, except in having four and six-flowered racemes, the species, neither in a wild state nor in gardens, ever having more than two. *S. Saundersii* was used, with a view to obtaining a race with many-flowered scapes. To a great extent this has been accomplished, and many of its progeny bear flowers of great beauty. The plants, however, retain to a great extent the inconvenient habit of this parent.

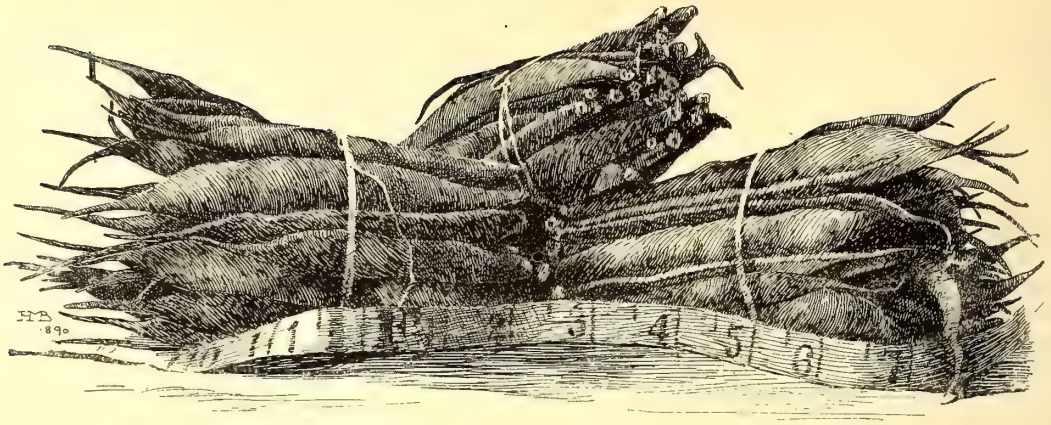
With plants that are so pliant in the hands of the hybridizer, and where the generations can be made to succeed each other so rapidly, there is an almost unlimited capacity for selection; and now that sets of the best strains have been distributed among the trade firms, we may confidently look for many delightful kinds.

The cultivation of streptocarpus is of the easiest kind, although, like all other plants, they repay care and attention. At Kew, the finest plants have obtained by planting out in a border in the cactus house. Here there is abundance of light, a free and continuous supply of fresh air, and a warm greenhouse temperature. The soil is a light, sandy loam. This is probably the

A Hybrid Streptocarpus.

nearest approach to the conditions they exist under in south Africa. But, with the exception of *S. Dunnii* and *S. Saundersii*, which require a slightly warmer and drier position in winter, they grow well and flower beautifully in the winter garden, where the temperature in summer is approximately that of out-doors, and in winter ranges between 40° and 50° Fahr. Here they are grown as an edging to beds, both of peat and loam, and thrive equally well in each. Anyone, therefore, with an ordinary greenhouse and ordinary material may confidently venture on the cultivation of streptocarpus. Grown in well-drained pots they make useful stage plants, especially if occasionally fed with manure water. Nearly all the kinds commence to flower between May and August, continuing up to October and November, and are of continuous interest and prospective importance.

*Kew, England.* W. J. Bean.



READY FOR MARKET.—THE SION HOUSE BEAN.

# BEANS UNDER GLASS.

UNLESS an abundance of heat and light can be given, it is useless to attempt to force beans. Under favorable conditions, however, there is no more satisfactory vegetable for forcing.

A house suited for cucumber culture would serve admirably for beans. (For cut of such a house, see THE AMERICAN GARDEN for September, 1890, p. 542). A special structure, however, is not necessary, as by means of temporary staging the plants may be placed near the glass in any house. Indeed, one of the most satisfactory crops I ever saw was grown in a pit. The pit, however, was on the south side of a forcing house and was heated by hot water, while provision was made for good ventilation.

One thing absolutely essential in a house is good bottom heat. In our houses at the present time are Sion House beans, which have been on the bench nine weeks and are just in full bloom. Owing to alterations in the piping, there was no bottom heat under this bench during the first three weeks. On another bench in the same house, which had bottom heat from the first, the crop has been removed and a second crop started. Here would seem to be a difficulty in building stagings in high houses, but with steam or the modern hot-water system, the heat may be carried to any desired point.

The seeds may be planted in 3-inch pots, in rich, loose soil. Place two or three seeds in each pot. When the pot is well filled with roots, transplant to the fruiting beds, using care not to disturb the roots in handling. If preferred, the first plants may be started where they are to remain. If convenient to use an open bed, as for cucumbers or lettuce, set the plants in rows ten inches apart, and about six inches apart in the rows. If grown as a temporary crop, a good plan is to use boxes, about eight inches wide and six inches deep, of any desired length. By alternating the plants, two rows may be placed in each box, and the boxes may be placed on any temporary staging. The English sometimes use 8-inch pots, placing the plants from three of the small pots in each. As a rule, however, I regard the bed or the narrow boxes as preferable.

The soil on the bench or in the boxes should be very rich—about in the proportion of two parts garden loam to one part well-rotted manure. Provide for thorough drainage by placing about an inch of broken crockery or "clinkers" from the furnace on the table first. Then put on a layer of partially decayed sods, after which fill to the depth of six inches with soil, as above indicated. We are so pleased with this method of preparing the benches that we have used it in all our houses this year.

Attend carefully to the details of watering, and the general care of the house. The atmosphere should be kept warm and moist. Maintain a night temperature of 60° to 65°. Keep the beds thoroughly moist, but not saturated. The extent of leaf surface is so large that the evaporation is great; hence it is well to sprinkle the walks daily in bright weather. This plan will not only arrest excessive evaporation, but will aid in holding the "red spider" in subjection. As soon as the blossoms begin to open, which will be in five or six weeks after the seed is planted, apply liquid manure once a week. This will cause rapid growth, and the pods will be more tender.

From two to three weeks are required for the development of the pods after blossoming. In other words, the crop will be ready for the table in about eight weeks from the time the seed is planted. If a succession is desired, start more plants every three weeks.

In preparing the product for the market, the pods are tied in compact bunches of fifty pods each, care being taken to have the pods as nearly as possible of uniform size, and with the stem ends all in the same direction (see cut). Neatness and honesty are as important here as in all other operations. The pods should be placed

regularly, and all inferior ones discarded. These bunches usually bring about twenty-five cents each. At this price the crop is very profitable.

There are several varieties which are recommended for forcing. With us, Sion House has proved most satisfactory. The plant is of medium size, and very prolific. The pods are uniformly of good size, straight and regular, therefore make neat appearing bunches. (See cut.)

Green Flageolet has straight, handsome pods, but is neither so early nor as prolific as Sion House.

Black Wax is good if not to be sold in bunches. The pods, while of beautiful color, are so uneven in size and so irregular that it is impossible to tie them neatly.

To summarize: the requisites for success in growing beans under glass are rich soil, an abundance of light and air, good bottom heat, warm, moist atmosphere, care in maintaining uniform conditions, selection of the best varieties, and neatness in preparing the product for market. With these precautions, forcing beans for the winter market will prove both pleasant and profitable.

*Cornell University.* W. M. MUNSON.

# ONION GROWING FROM SETS.

AN OHIO EXPERIENCE.

ABOUT three years ago I became very much interested in raising onions from sets, thinking they could be grown in connection with strawberries at small cost. As I plant thirty or forty varieties of the latter and always leave eight feet of vacant ground between them, and four feet between the rows everywhere, it occurred to me that this ground that was then idle during that part of the year when the onion makes its growth, might just as well produce onions. Of course the work would have to be done by hand, but onions are always raised in that way. And to offset this increased expense, I could use the twelve-foot space that had to be left for the horse to turn on. Having settled the matter so far, I wanted to select the best variety to raise under the circumstances. I was not well pleased with the old-fashioned top onion, because it is not so fine-looking and salable as the Yellow Danvers. This is the only objection to it, and if it were grown for home use would have but little weight.

The potato onion would answer my purpose perfectly, but the seed is worth from two to eight dollars per bushel in the spring, and a bushel plants but a small area. I knew a man to plant seventy-five bushels on an acre. This variety is rather hard to keep over winter. If the cellar is too warm it will sprout. For home use it is one of the best, as the small ones can be planted and the large ones used. The quality is excellent, and if one has a surplus in the spring he can readily sell them at a good price.

In buying onion sets in the spring, one gets many that are too large, and if more than half an inch in diameter they are apt to run up to seed. Besides this, they are commonly mixed. I concluded to raise sets for my own use, and endeavored to get the best information obtainable about growing them. Some advised to sow the seed on poor ground, some on rich. One said sow early; another late. I tried various ways, and am satisfied that to sow early, on rich soil, and not less than half a pound of seed to the square rod, is the correct method.

I raised a quantity of very fine sets from Yellow Danvers and Wethersfield seed, and succeeded in wintering them in perfect condition. The seed was grown in New England and New York. Notwithstanding the sets were small—half an inch or less—about ten per cent of them sent up seed stalks, and those that did not produced onions inferior to those grown from some of the same seed the year before. This reminds me that Landreth, who raises more sets than any other firm I know of, always claims that seed grown north of the latitude of Philadelphia will not produce good sets.

When in Canada two years ago, I went to see a man who has made a specialty of growing sets, and he gave me all the information he could. He raises hundreds of bushels and sells them in the spring at wholesale. He raises what he calls the Kentucky set onion, a nice, flat, brown onion that is grown as a set the first year, a mature the second, and produces seed the third. Sets of this variety, when an inch in diameter, rarely go to seed. I believe that the habit of requiring two years to come to maturity has been bred into this variety so long that it is better for sets than those that are strictly biennial. I raised sets of it last year which produced nice onions this season, scarcely any going to seed, and none growing double.

Two years ago I raised the Silver King, Early Pearl Prizetaker and Spanish King from the seed, and last year from the sets. The last is the best of the lot, and really a fine variety, although not quite uniform in color and shape. It is very large indeed. It is an easy matter to raise sets of any of these large onions, but they are very hard to keep. I have wondered if they could not be kept in cold storage. If they can be, I would prefer this method to sowing the seed under glass in February and transplanting in April. It is much less work to raise onions from sets than from seed, as there is no thinning, and no weeding among delicate things like seedling onions. They ripen considerable earlier than if grown from seed, and usually bring a better price at that time than if sold later.—*Matthew Crawford, in Allegan (Mich.) Gazette.*

# SEED WARRANTY.

THERE is no subject more difficult to understand, no subject upon which there is less reliable data to base certain and definite conclusions, than is the subject of tests of the vitality of seeds.

An experience of nearly fifty years in handling and testing seeds of all kinds has at times developed such extraordinary and perplexing results as to confirm me in the conclusion that the vitality of all seeds is controlled by conditions above and beyond the present reach of science. Many people believe, and honestly believe, that seed sown in properly prepared ground, and at what is supposed to be the proper time, must grow, if the seed is good; and that if the seed does not grow under such conditions it is proof positive that the seed is not good.

Your correspondent, W. A. Hale (December, page 737), is, I judge from the tenor of his article, one of these honest people. It is simply a delusion, arising from limited experience. When the embryo is forming, growing and developing in the seed pod, it is subject to the conditions of the atmosphere, which may be humid or dry, hot or cool, or cold. The seed pods on one side of the plant may be exposed to one set of conditions, the pods on the other side of the plant to other conditions. For that reason the seeds may ripen differently. The germ of most seeds is enclosed in a shell or outer covering. That shell may, by reason of prevailing conditions, be hard or soft. If hard, the germ encounters a resistance in breaking through that may be fatal. After the seed is sown it is subjected to atmospheric conditions over which no one has any control, and no one fully understands. Currents of electricity are passing and repassing at all times, that must have more or less influence of vegetation. Why do we see whole strips of corn, of more or less length, in which the seed has failed to grow, and which the farmer has to replant? Do we charge the farmer with planting poor seed in those strips? Do we not see in the garden strips that have failed to grow, whilst the spaces on either end of the same row are in a flourishing condition of vitality? Do we charge the gardener with sowing poor seed in some places, and good seed in others? I have known seeds nine years old to grow freely, and new fresh seeds not grow at all. I have known beans that would grow only 20 per cent. in the spring, grow, from samples taken out of the same bag, 100 per cent. in the fall. If the first sample had been tried in the fall, and the second in the spring, we might have endeavored to explain it upon the theory, that in the course of nature seeds would be the more likely to grow in the spring. But the reverse was the case. I have known of hundreds of instances of seeds taken out of the same package widely varying in the percentages of growth in different situations.

There is no radical rule by which to determine the vitality of seeds; there never has been and never will be until the multitudinous laws of nature are more fully understood than they have been so far. For any seedsman to guarantee any percentage of vitality, as proposed by Mr. Hale, would be to guarantee what it is utterly out of their power to carry out.

The remark about the cremation system is an uncharitable and uncalled-for insinuation against the honesty and integrity of the firm alluded to. The dating of papers of seeds has been practiced by that firm for a number of years past, and is the one sensible suggestion in Mr. Hale's communication.

It is the fashion with many persons to look upon seedsmen as cheats, ready at all times to take advantage of their fellow men. It is a great mistake. If a proper investigation could be made, it would no doubt prove that the average integrity of the seedsmen of the United States ranges as high as that of any other class of the business community, and that they try constantly and with expensive effort to improve their methods.

THOS. O'NEILL.

# TARRYTOWN LETTERS—XIV.

ABOUT MEADOWS, BROOKS, BRIDGES AND THOROUGHFARES.

BY A. B. TARRYER.

THE WOMEN I am clerking for turned their attention to roads and foot-paths early in autumn. Indeed, it was Lady Schnipticket's road force that enabled her to give such substantial help to our "Late Melon Party," as described in my last letter. She declares—and Mrs. Tarryer fully agrees with her—that "our roads and drainage are so outrageously bad that we can only endure to talk or read about them during the very coldest weather."

The reader must be told that the Tarryer, Camperdown and Schnipticket estates lie contiguous, occupying an extensive and somewhat elevated neck of land, bordered by and including in part two considerable streams, which take the drainage of several growing villages—almost cities, some of them—where the darkest ignorance prevails in road management, and the lives of the people are spent in producing what must eventually become, unless wiser counsels prevail, only the homes for river Chinese or the lowest class of foreigners.

The management of these three estates is practically under one thumb. A stranger would be able to find no dividing line between them. Whose thumb that is it would be hard for me to tell. "They say the Colonel stole his money from the people," Lady Schnipticket says, "and I am going to see that the people who are good and wise enough to inherit the earth get it all back again." Parson Camperdown's caution and Mrs. Tarryer's taste and judgment are followed in every plan and every expenditure. As a general rule, nothing is done that has not been considered for at least a year, or nine months of the growing season.

But while great works are going on—always in a neat and tidy manner—it is easy to draft men and teams for the small matters that may be thought of over night and executed during the next day or two—things which give a hundred times more pleasure and use when they are done quickly as well as thoroughly.

For instance: that foot-path of near half a mile across the meadow, with two bridges and three stiles, was substantially completed in a couple of days, just after the first crop of hay was cut, because the material was all planned and ready. The path, done as in Fig. 1—four feet wide and filled water-tight with fine broken stone of all sizes, having gravelly old turf bedded in the edges—looked a hundred years old at once. And though dwarf grasses and weeds may grow upon it, the fresh cleft stone, filling their own interstices, are so knit together as to remain practically a rock to walk upon forever and a day.

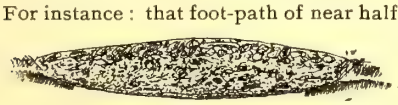


FIG. 1. CROSS SECTION OF PATH.

Those meadows are subject to sudden freshets, anyhow, and the bridges are built to offer no great obstruction to them. By considering the nature and fit art for each case, the site of both bridges was so chosen as to make each one of them aid in checking floods enough to fertilize several acres of meadow. Two or three years ago the alluvial banks of that crooked stream were graded and sodded on both sides after the fashion shown in Fig. 2.

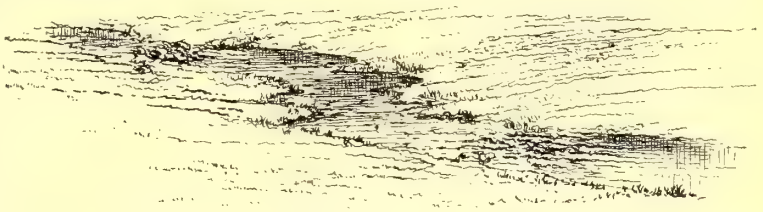


FIG. 2. A PLEASANT MEADOW BROOK.

The brook now has no steep banks as formerly, to be undermined and gouged in freshet time. On either side in haying, the mower knife dips into the pebbly bed and ripples of the regularly graded bottom of the stream. The spare earth from the slopes of the old banks was used in smoothing and flushing holes and rough places in the general surface of the meadow. It should be mentioned right here, that for two years that meadow has been rolled with a light steam roller earlier in spring than the turf would bear draft animals, and also once or twice during the summer after rains, with a corresponding improvement of the surface that is positively millennial. The hardy aquatic grasses chosen for the margins of the brook make the sweetest hay, and cannot be uprooted or washed away by floods.

The two bridges aforesaid were located where the narrowing of the meadow bottom on one or the other side enables the kind of bridge in use to throw any sudden rise of water across the surface of the meadow. Cement or terra-cotta pipe, large enough to convey the regular flow of the stream only, are laid in its bed, protected by similar cast-iron sections at each end, bolted together. These are covered with puddled gravel, protected by grasses suited to each point in the work. The top of the bridge is not more than four feet higher than the bottom of the stream, which is well lined below each

bridge with mud-sills of round timber. These bridges enable loads of hay, manure and carriages to cross, as well as the foot path in question, and, except some low shrubs planted, and a tree or two which stood there before, present an entire top surface of smooth, green grass. A view of the lower side of one of them and one of the foot path entrance gates to the meadow might look somewhat as in Fig. 3.

We got our notions about having a plenty of convenient stiles and gates from the Master of Edgewood. The three estates had to coöperate in road making, for though Lady Schnipticket has the money, the Camperdowns had the stone quarry and the Tarryers the sand. The latter is better than stone in the bottom of a road where the loam turns to molasses during the freezing and thawing of winter, as much of the soil or subsoil about Tarrytown does.

FIG. 3. AN ADORNED MEADOW BROOK.

The grand road that is being constructed across the estates—something over three miles—is built in this way. Where there is a clay bottom there can be no solid road unless the substance of it prevents the clay from rising among the stone.

This road when completed will be thrown open to the public, if it behaves itself. The travelled path is apparently narrow, but the turf borders, built on stone, will sustain any amount of turning out that may come upon them. There is no dust or mud on such a road as this, Every rain washes it as clean as a bone. All settlement being prevented by broad tires on which the material is hauled, it wears only from the top, and that imperceptibly, because the stone, bedded perfectly solid in their own clean masonic substance, subject to capillary moisture, are never quite dry, and so grow harder year by year. Sidewalks of the same construction accompany this road, on one or both sides, or branch off in roads to different parts of the estates.

Road-stone quarries in our region are better than silver mines, because the people have been taught to sink broken stone all of one size in the clay without a thought as to where they go to. And still the roads are rough with holes, mud, dust or recent repairs—which make them worse—and are nothing but a punishment to ride over.

We made a point on our county supervisors this fall. M'Tavish, who hates them for laming so many of his horses, ordered the affair at Mrs. Tarryer's instigation with a perfect relish. Several miles of "resurfacing" had been contracted, and the horrid work was begun just as our fall colors were in their brightest, and people wanted to be driving to see them. M'Tavish went to the supervisors and offered to repair a certain section of the old pike better than it ever was for nothing, and they let him go ahead. He immediately put a force of trained men at the job, closed that loop in the road to travel, threw the old mass of stones and mud out on either side, washed them clean with cotton hose from our own water supply, broke them small, and in five days time had the finest bit of road in the county, with village children playing hop-scotch and spinning tops on it. It was Lady Schnipticket's broad tires that did the business. M'Tavish kept two pairs of them, half-loaded with select metal finish, constantly turning upon the new work in its progress.

The humbug of ordinary stone-road making is so potent that it is a wonder our bicyclists don't see why the foolish surfaces on a porous substructure are always crumbling. When Mrs. Tarryer meets one of those poor fellows with a good face, his hat shaking and his jaws rattled like the ague by the infamous and needless joggle of his wheel upon our stony ways, she is sure to find him out and send him a card for dinner, when some of our young people will take charge of him, and explain to his benighted comprehension the true inwardness of road-making. Can't the editor of THE GARDEN's puzzle columns contrive some arrangement of "even sized stone," half air, water or mud, that will set the children to thinking straight about roads? At present the blind lead the blind, and the average civil engineer will sell us to the road barnacles or the sewer rats for the price of making the levels.

Close by that gate, in the picture, is one of Lady Schnipticket's coolest springs, that M'Tavish took a world of pains with. He managed to make it spirt out of a rock under the roots of an enormous beech tree, and had dry ottomans of greenest moss made so naturally all about it that no one would guess they didn't grow there. You are not required to drink out of a rusty tin-dipper, either, because some careless people will smash things, for if one of the crystal glasses is broken, or let

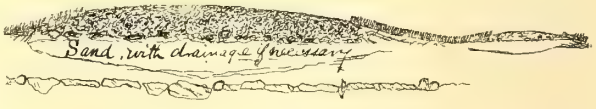



FIG. 4. THE ROAD AND WALK.

us say stolen, nothing is said about it, but its place is filled, if possible, with something still more convenient and nice to drink from.

Overhead in the rooflet of that gate I have seen four or five umbrellas at a time, good enough to lend to any one crossing the meadow in a sudden shower, and as many pairs of over-shoes also. And these are scrupulously returned by whoever borrows them, till, when

past service, they are spirited away by those who have the care of such things, where the women I am clerking for rule the roost.

"Road-making," said Lady Schnipticket, "is the essential part of the world's gardening now, and every time I see a pair of Christian horses whipped to start a load of sinners on little car-wheels over a greasy track, I wonder our pulpits don't preach how we have fallen from the garden, and that our schools don't teach how we fail in road-making for the next ten years." At this sentiment Parson Camperdown raised his eyebrows a trifle, but said "Amen!"

# THE STORRS & HARRISON NURSERIES.

"YE MAY be aye stickin' in a tree, Jock; it will be growin' when ye're sleepin," was the excellent counsel of the old Laird of Dumbiedikes. To the fact that this admonition has been so universally heeded, and that men are everywhere engaged in "stickin' in trees," is due the other fact that great establishments have been built up for the purpose of supplying the trees which are to be "stuck in." I had nearly said that these establishments have sprung up, but that would convey a false impression, as a nursery is not a mushroom growth. It is a work of time and of evolution through the successive stages of experiment and experience. But when success is reached, it should compensate for all failures and discouragements, not only from a financial point of view, but from the knowledge as well that the enterprise is one which is far reaching in its consequences for good to mankind.

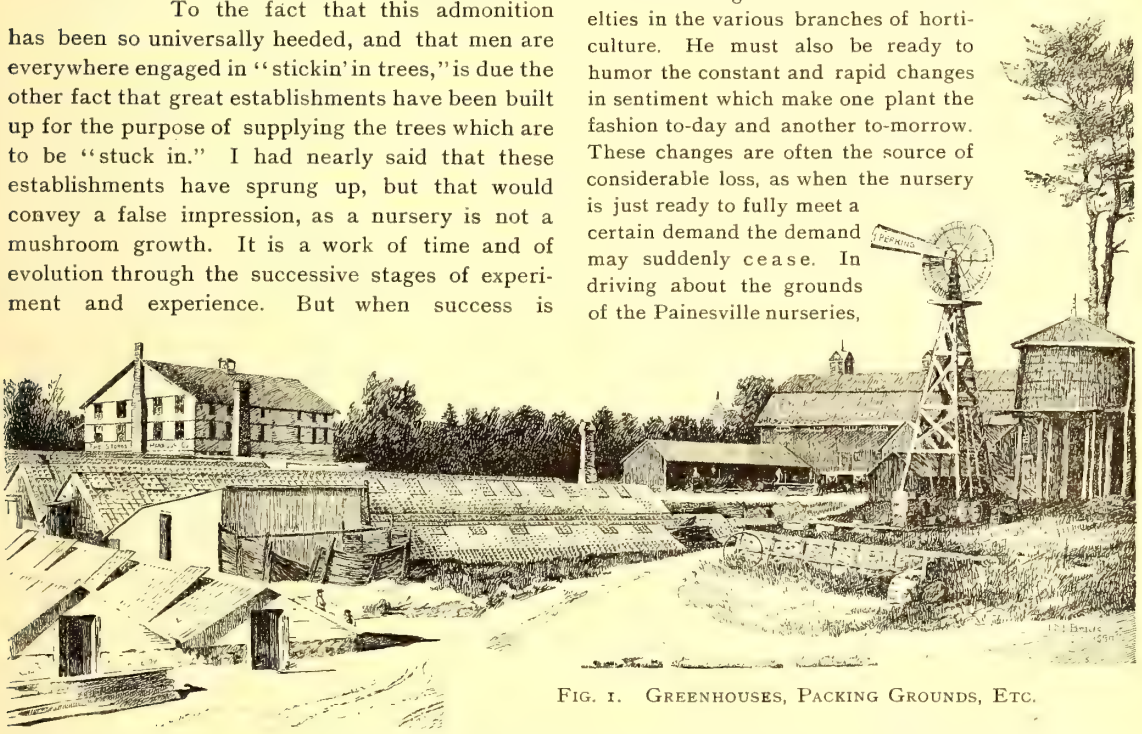


FIG. 1. GREENHOUSES, PACKING GROUNDS, ETC.

The nurseries which we have taken for the subject of this sketch have been built up by thirty-five years of unceasing care and labor on the part of the senior members—Messrs. Storrs and Harrison—of the corporation which bears their name, at Painesville, Ohio.

From a very modest beginning, the establishment has grown to the extent that it requires now some seven hundred acres of land to accommodate its various branches. Most of this is closely covered with great "blocks" of trees, shrubs, fruit, plants, etc., embracing almost every variety of shade and ornamental trees, fruit trees and plants which long experience has taught may be called for by patrons. Besides providing for this varied demand, the nurseryman must be an educator of the public, continually on the alert to discover and bring to notice valuable novelties in the various branches of horticulture. He must also be ready to humor the constant and rapid changes in sentiment which make one plant the fashion to-day and another to-morrow. These changes are often the source of considerable loss, as when the nursery is just ready to fully meet a certain demand the demand may suddenly cease. In driving about the grounds of the Painesville nurseries, my attention was called to an instance of this kind of popularity. To meet a sudden demand, a block of 25,000 Carolina poplars is being grown. These are rapidly taking a leading place as shade trees, fully usurping the place of the Lombardy poplar and taking close rank after the Norway and silver maples, which in turn have taken precedence of our common native varieties. The Norway maple probably leads all others now as a popular shade tree, and the nurseries count upon a regular and constant demand for it, and prepare accordingly. With its broad, dark green foliage and dense, compact habit of growth, it certainly merits all its popularity; only in the autumn I am inclined to think it does not lend quite so much brilliancy to our streets and grounds as we have been accustomed to with the other varieties. The growing demand for dwarf instead of standard pears affords another instance of

how the nurseryman must cater to public opinion. Of the 205,000 pear trees now being grown upon this place, 80,000 are dwarfs and 125,000 standards. Last year there were 50,000 of the former and 100,000 of the

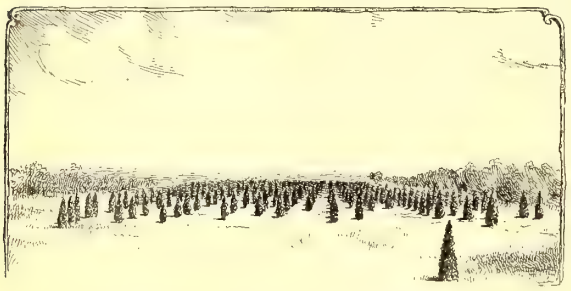


FIG. 2. A BLOCK OF JUNIPERS.

latter. A few years ago the proportion of dwarfs was almost insignificant. Among the dwarfs the Duchess takes first place, numbering nearly one-half of the whole amount. Among the other items which it was a surprise to see in such large amounts were the weeping willows. A block of 10,000 of these testified the hold which these somewhat doleful trees have upon the popular fancy. Their extensive use in cemetery decoration helps to explain the demand.

A rose block of six acres, containing a hundred thousand plants, was a noticeable feature, although my visit was so late that but slight bloom remained upon them. Earlier in the season, I was assured, they would have presented a sight worth coming a long way to see. A fact worth noting is the condition of the soil in which these roses were propagated. It is heavily enriched every year with a good dressing of composted stable manure, and after every second crop is taken off it is sub-soiled to the depth of eighteen inches. Prior to being set to roses, it had yielded three tons of hay per acre.

Other points of interest about the grounds were: A block of some three thousand young strawberry trees (*Euonymus Europæus*), with their scarlet fruits glowing brightly, suggesting what a contrast they would afford when the ground should be covered with snow beneath them; long rows of Hovey's Golden arbor-vitæ, the most beautiful hedge plant we have, but as yet too expensive for general use for this purpose; a beautiful block of Irish junipers (Fig. 2); a tract of thirty acres of rich black soil, occupied wholly with small fruit plants, ten acres being given to strawberries; four acres of osiers, cultivated in single stools which are kept cut close to the ground and which throw up each season long slender sprouts which are used for tying; and lastly the beds of blooming plants—dahlias, hardy hydrangeas, altheas, wigelias, etc.—making bright relief against the prevailing brown or green of the nursery rows.

Among the specialties of this company are the Idaho pear and the Crawford strawberry, of the latter of which they were the introducers; and Yellow Globe onion seed, of which they produce this season about one and a half tons. A tract of land immediately about the offices is given up to greenhouses (Fig. 1), packing grounds, cold storage rooms, etc. The sale of greenhouse plants is a most important part of the business, and to them are devoted twenty-four houses, each nearly one hundred feet in length, and a large amount of supplemental hot-bed sash. The cold storage cellars (Fig. 3) have a capacity of 12,000 cubic feet, and here trees, vines and plants are stored during the winter to protect them from freezing and to have them ready for early spring shipment.

In packing for shipment, six car loads of sphagnum moss are used annually, and sixty thousand feet of lumber for boxing. To keep up the fertility of the land, five thousand dollars are expended annually for fertilizers. Stable manure is used almost exclusively, being bought at the uniform price of $1.25 per ton delivered upon the ground. Labor is an important item of the expense account, some forty men being employed nearly the whole year. On the whole, a large nursery which has been built up by years of careful and honorable effort is impressive; not only because of the suggestion of wide-spread and long-continued fruitfulness, as its products are dispersed upon the land, but as an example of what may be done in building up an occupation which has for a basis the cultivation of the soil.

JAS. K. REEVE.

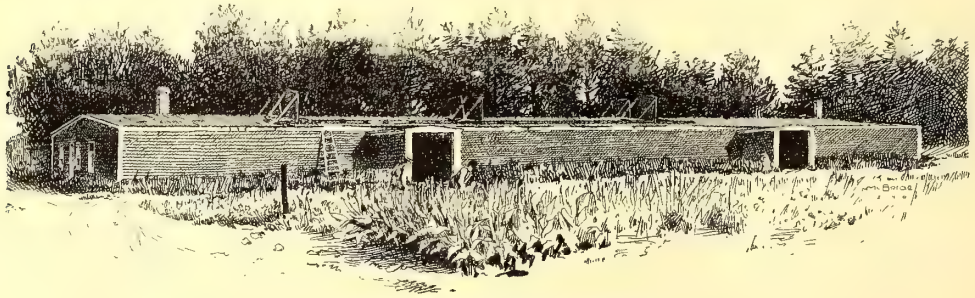


FIG. 3. COLD STORAGE HOUSES.

# HORTICULTURAL APPLIANCES AT THE PARIS EXPOSITION.

A TRANSLATION OF CH. JOLY'S "RAPPORT SUR LES SERRES LE MATERIEL DE L'HORTICULTURE."

(*Concluded from page 745, December issue.*)

THE HEATERS for our hot-houses were at first in the form of a horse-shoe, and only utilized a small amount of the fuel. I shall only mention the brick furnaces still found in Belgium. These had pipes made of pottery resting upon the soil. They are cheap arrangements and have many inconveniences.

For our greenhouses the object is not, as in manufactories, to obtain a high temperature, for water boils at 212°, and this heat must be avoided. What is needed is to be able to utilize fuel with simple appliances which shall be economical, and easily examined and cleaned. For this purpose numerous inventions have been made, all having in view an increase of the heating surface. They can all be reduced to two principal systems: Those with boilers having vertical tubes and those with horizontal ones, and perhaps, also, those in which the plates are more or less multiplied. Sometimes the boiler is placed under the greenhouse itself, and this has many advantages if one does not consider the cost; sometimes it is placed below and outside, under shelter, at one of the extremities of the house, the surface of the boiler itself furnishing heat as well as the pipes. The doors of the fire-box and the smoke-pipe are outside to avoid the dust; sometimes, when the soil is moist, or if one wishes to avoid expense, the boiler is placed on the ground of the greenhouse itself, but care must be taken to place the expansion tank and the pipe for the escape of steam upwards. Many builders have studied this subject in particular and understand better the scientific conditions of good heating, combined with solidity and durability of the apparatus. They are right in insisting upon the utility—

(1) Of having in all large establishments an extra heater for extreme cold, or to replace the one in use if it should need repairs.

(2) Of having more pipes than are strictly necessary, in order to avoid over-heating the immediate surroundings of the pipes.

One has often proposed tests in which there should be either a series of greenhouses having the same dimensions, exposure, etc., etc., or a certain number of reservoirs of equal capacities, placed in conditions equal in respect to distance and loss of heat. In general, these tests, where one has used the same fuel and employed the same instruments for observation, have not given the results which were expected, for besides simply the heating, one must consider the conditions of price, solidity, simplicity, durability, ease of cleaning, rapidity in heating, etc.

The heaters commonly used now are much the same as those used in manufactories. They consist of a fire-box surmounted by pipes of various diameters, to increase the surface for heating. In the center there is a reservoir for the fuel, which slowly feeds the fire in proportion to the combustion. As to horizontal heaters, they are surmounted by plates, between which the burnt gases circulate, or by layers of tubes. The coppers of commerce being usually costly and impure, riveted sheet-iron, or even castings, are usually preferred.

In general, our manufacturers have progressed since 1878, and now build durable heaters which are easily managed.

### GREENHOUSES, KIOSQUES AND RUSTIC CONSTRUCTIONS.

At the beginning of this report I said that the Exhibition did not possess one greenhouse in which large plants might have been grown. Moreover, the twenty-five greenhouses scattered about the Trocadéro were in no way remarkable. The central part of each was elevated for large plants, and there were usually two wings, one for the cold house and the other for the temperate house. It would have been excellent to have had a large structure for a winter garden, in order to compare the work of our manufacturers with the expensive structure of Rome, which has spent so much on its museum with such little effect—and this will always be the result when ordinary architects are employed, for these consider the needs of horticulture as of minor importance.

The building of a greenhouse is, from a horticultural standpoint, a very important matter, for it includes glazing, shading and especially heating. Since it has became known that ordinary builders of greenhouses, and particularly architects, understand nothing whatever about their construction, and especially of the needs of plants, a new class of builders has arisen. These use iron, mainly, and not only build greenhouses at reasonable prices, but also winter gardens and conservatories for houses. As for the botanists and amateurs who wish to grow all the plants of the world in one place, they know that, in order to succeed, one must furnish the same conditions of soil, light, heat and moisture as the plants had in their native regions; hence the necessity of structures of different dimensions, arranged so that they are united by corridors containing the return pipes. The above arrangements are for large establishments. The conditions required for ordinary greenhouses are as follows:

1. The upper ridge must have sufficient slope to carry off the condensed vapor, not through capillary attraction, but by means of the weight of the liquid.

2. The frame-work must be outside, in order to avoid the vapor on the interior, and it should extend to the ground, upon which it should rest.

3. The glass in the Dutch houses must be joined end to end at the ridge, where condensation takes place.

4. The glazing should be made with free joints, without tringles, for these only increase the expense and are of no use. Double glazing should only be resorted to when strictly necessary, for the expense is heavy and cleaning the glass very difficult. With us the cold is not so intense as to require its use.

5. Lateral ventilation must be given through openings under the walls, so that the air first strikes the heated pipes; and the ventilation above must be so arranged that it will in no way injure the plants.

6. The screens will always furnish better shade if they can be unrolled six or eight inches above the glass. This may be done by having them rest upon a frame.

7. It is always a good plan to have double doors at the entrance.

Of the greenhouses exhibited, that of M. Izambert appeared to possess all the modern improvements. It was well-planned, solid, light and quite cheap. M. Cochn exhibited a greenhouse having the frame of wood. This showed that our builders can do as well as the Belgians or English in the use of pitch pine, which growers prefer.

We continue to make the slat screens of narrow pitch pine. These are fastened together by rings of wire, only a narrow space being left between them.

The appliances and structures scattered about the Trocadéro served the purpose of four exhibitions, for there were the greenhouses proper, appliances for heating them, various fixtures and the plants which various horticulturists had brought. One could hardly notice anything but the marked improvements which have been made in hot-beds. The number of these now in use is enormous, and they are heated by regular hot-water systems instead of by manure, as formerly.

The round greenhouse of G. Sohier was a work of art rising above the others. It united the conditions of taste, solidity and lightness. M. Sohier is also the builder of the large Brazilian greenhouse on the Champ-de-Mars.

I must also mention here the greenhouses which had the ends of boards. These fitted in the iron frame and could be removed when necessary. The price of espaliers is also much lower, so that they can easily be used for fruit trees and vines.

Quite a number of kiosques were also exhibited in the Trocadéro, some having simple, and others rustic trellises. Japan had a small bamboo house, of little importance. It was much smaller than the one at the Exposition of 1878. Two builders, Messrs. Simard and Pruniéres, had erected rustic pavilions. These were built of wood, bark and colored plaster. The most remarkable exhibit of this kind was a Swiss cottage, exceedingly well arranged. It was placed at the service of the committee on horticulture.

### INSECTICIDES AND ATOMIZERS.

The number of manufactures of insecticides grows every day; each one calls himself a chemist and pretends, or believes, to have discovered some new combination. The question of insecticides is becoming to be of the highest importance, for in proportion as we improve our fruits, the plants seem to be attacked by new diseases and enemies, to which our fathers seemed to pay no attention. It often occurs that a large part, or even the whole of a crop is lost on account of the attacks of some animal or vegetable parasite.

One should always prefer those insecticides which contain fertilizing elements, such as potash, sulphur and lime. For the mealy bug (*Schizoneura lanigera*), which is the pest of our orchards, not less than one hundred methods of extermination are given, all more or less effective; only one thing is lacking, and that is a quick and easy method of application. Besides the three substances mentioned above, there are two others which are very important, viz. petroleum, diluted with water for the destruction of caterpillars, and tobacco juice for use in the greenhouse. At first tobacco smoke was used, but this was found to be injurious to delicate plants, then pulverized tobacco was used, but the powder did not always reach the under side of the foliage, where the insects laid their eggs. During the last few years we have employed an effective method, one which has not the objectionable features of the two just mentioned; it does not injure the plants, and the insecticide penetrates everywhere. It is the vapor of the juice of tobacco; this is obtained in various ways, either by throwing the liquid on hot bricks placed upon the soil; or by special furnaces, placed outside of the greenhouse, the fumes entering the house through openings made for the purpose. In the United States, wagons are used for working in an orchard. They carry portable tents which are spread over the diseased tree, and a fumigating apparatus supplies the tent with the vapor. Many of our horticulturists employ bi-sulphide of carbon for the destruction of white grubs. It is put in vessels, and used in the same manner as in the vineyard.

In conclusion I will say that only in details could one see improvements on the exhibits of the Expositions of 1867 and 1878. There were lacking the foreign exhibits, for comparison; the locations furnished by the administration were not as favorable as might have been desired; and finally, the attractions of the Champs-de-Mars and of the Invalides were such that every visitor eagerly hastened to them. But the true admirer, far from the noise of the kiosques and the restaurants, found in the Trocadéro endless pleasure in the marvelous collections of plants which were exhibited, and which for a long time to come will not again appear in this admirable situation.

# The Editor's Outlook.

*1890.* THE YEAR just closed has been a trying one to fruit growers nearly everywhere east of the Rocky mountains. Not only have fruit crops failed more completely than ever before, but fungi and insects have been abundant and have injured or destroyed much of the fruit that set. In other branches of horticulture results have been fair or good, although field crops have given indifferent returns. In general farming the year has not been a pleasant one, in most regions.

These general failures have come at a time, too, when agricultural interests are peculiarly depressed, and for that reason they have attracted unusual attention. Perhaps it has needed such a combination of unfortunate circumstances to set the people thinking. Farmers have never before made such earnest endeavors to overcome obstacles and to free themselves from the bondage of traditions. The effort amounts almost to revolution, both in methods of farming and in political thinking. The tariff discussion has complicated the general unrest, and has been a prime factor in awakening the rural population to intellectual activity.

In the long run, the outcome of the year must be beneficent. The general upheaval must purify the agricultural atmosphere. Farmers will know their definite wants and will have made some progress towards supplying them. The connections between the rural population and the colleges and stations are being strengthened. Farmers are demanding aid everywhere, and the institutions are doing their utmost to help them. The greatest misfortune of the year will probably be the impatience for results and recognition which nearly always follows a period of trial and unrest.

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*THE WINTER VOID.* ACTIVE farming extends through scarcely more than half the year in the northern states. With winter comes comparative inactivity and the cultivator draws upon the results of the summer for his support. The farmer should be one of the best read of men, with so much time at his disposal as the long winter season brings.

It is a wonder that farming returns even a livelihood when one half of it is a consumption of the other half. It is only a good business which can be followed even with a scant profit with so long an intermission each year. The closeness and depression of the times must tend to fill up this wasteful void of winter. The farmer must extend his energies over the whole year, and he has ample opportunity to do so in the management of his stock. The horticulturist especially, who is supposed to pursue intenser methods, should contrive to carry his business throughout the twelvemonth. Winter should mean only a change of occupation, a shifting of methods and energies. The changing seasons are inspirations to the thoughtful cultivator. They relieve the monotony and should train to more complete and skilful methods. At present, the cultivator bends his energies to the utmost to provide for the winter, while the winter should provide for itself. The ideal farming is one which brings in a more or less continuous return the year around, rather than the whole of it in one month.

Horticultural industries often allow of the growing of crops which mature at nearly all seasons, from asparagus in April to celery in November, and many of these crops are eminently adapted to farm conditions. Asparagus, for instance, is a farm crop in some regions, and it requires less labor than wheat, with much surer profits. The most promising secondary field for horticulturists in easy reach of good markets is the forcing of plants under glass. Certain crops are easily and cheaply grown, and with good management the profits are nearly always satisfactory. This vegetable gardening under glass is sure to increase in extent and importance every year. But it demands a certain alertness and painstaking which are not common among horticulturists. It requires a good training, and the difficulties of it become greater each year, as new competitions, new conditions and new enemies arise. Such industries are the ones which pay.

But we cannot advise particular methods or occupations in a general discussion. We only wish to impress the fact upon those who live by tilling the soil that a business cannot long remain profitable which is followed but four or five months out of twelve. Reform your rotations, combine stock or poultry with your business, or in some way contrive to make the winter months pay for themselves, at least. If nothing more can be done, the time can be spent

in reading and study relating to the business, and the plans for the next year can be thoroughly digested.

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*TESTING OF VARIETIES.*

WE HAVE little admiration for the ordinary testing of varieties and we have several times stated our objections to it. It is a cheap, unsatisfactory and often trivial labor, and in most cases it does not rise to the dignity of experimentation. Yet there is no reason why testing of varieties should not form a useful part of experiment station work. But it must be more thoroughly done than heretofore, and the experimenter must look beyond the mere behavior of plants under his eyes. The best instructions which have yet come from the stations for the testing of varieties are those contained in a recent Ohio bulletin upon strawberries, by W. J. Green. These remarks are so pertinent and express our own convictions so fully that we transcribe them *in extenso*. The remarks upon the essentials of a good variety are particularly valuable, and they are applicable, with slight modifications, to other fruits than the strawberry.

"The greatest change [in testing of varieties] that has been made was to enlarge the field of observations by making use of the experience of specialists in other parts of the state. This has been done by sending out plants of new sorts for trial, by correspondence, and by personal visits to fruit growers. None of these plants have been carried out very thoroughly for want of means and because it was thought best to make a preliminary trial of each before extended operations were begun. Enough has now been done to warrant the conclusion that unless the parties to whom plants are sent for trial can be visited frequently, and at least once during the fruiting season, but little can be expected in the way of reports from plants so sent.

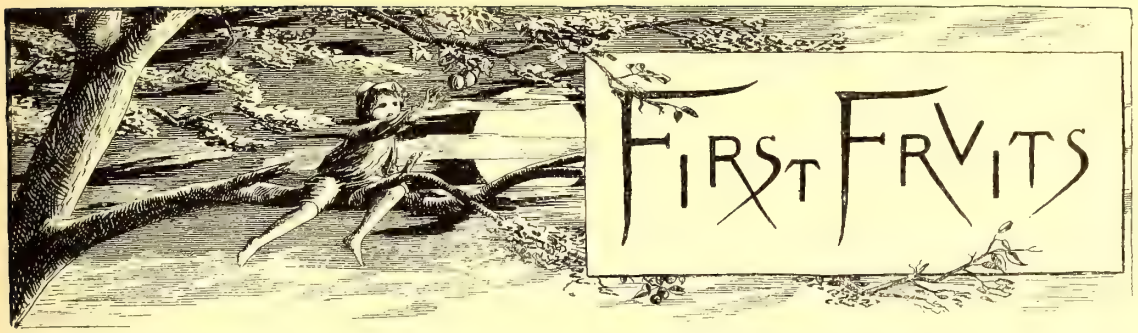
"There are numerous reasons why the plan of sending out plants indiscriminately for testing is not feasible, but the main cause is the inability of those who are qualified to do the work to find the necessary time, even if paid for doing it. In view of this fact, the sending out of plants will be discontinued, except to those who are found to be willing and able to make satisfactory reports, or to those to whom a visit can be made at the proper season. It is believed that the work might be profitably extended in this direction, and at the same time the amount done at the station reduced.

"Experience shows that to reduce the number of varieties to the lowest limit, to increase the size of the plats, and to multiply tests, is the direction in which to work. These changes have been made, or are being made, as fast as possible. To more sharply define the limits of each experiment, or trial of varieties, will be the aim; *i. e.*, varieties will be so tested as to determine one or two special characteristics, such as comparing for earliness, lateness, productiveness, etc., and to bring these points out prominently, rather than to study all equally closely. A thorough comparison of early varieties, and of the productiveness of several leading varieties is now in progress. It is hoped that with the strawberry, at least, variety testing, as commonly understood, may be largely discontinued, and no harm done to the interests represented. New varieties, not yet offered for sale, will be tested as heretofore.

"ESSENTIALS OF A GOOD VARIETY. — There is no proper conception on the part of many originators of what is demanded, or should be demanded in a new variety. It is idle to expect all of the virtues of a strawberry in one variety, but to be of any value a variety must have some marked characteristics. It may not be early, late, vigorous, productive, large, firm and of high quality. It may lack some of these attributes and yet have value, if the qualities that it does possess are well marked, and those that are lacking are not such as would be required to fit it for general cultivation.

"It will be found that varieties which have failed to become favorites either have no pronounced characteristics, or have been wanting in qualities required to fit them for general cultivation. It is commonly believed that a variety may do well in one locality and yet fail in another, and vice versa. There is some truth in this, but much error also. It is true that varieties vary more or less on different soils, but it is also true that the most variable sorts are the least valuable. In fact, if a variety varies greatly on different soils it may be set down as unreliable. Sooner or later it will fail, even where it seems to be most at home. To believe that because a variety exhibits a defect in one locality it may not in another, is almost always a fatal error. If a variety lacks vigor, is susceptible to disease, is tender when in bloom, or is unproductive, there is no ground for hope that even under favorable conditions it will become popular, and remain so. Some such have been favorites in certain localities for a time, but sooner or later have been discarded. To hope to find varieties suited to certain sections only is a delusion. The only varieties that stand the test in particular sections are those that succeed over wide areas.

"The qualities that strawberry growers desire in a variety are, first of all, vigor, health, hardiness and productiveness. None of these attributes can be sacrificed, except in a limited degree. Aside from these qualities others are required, but not the same in all cases. One grower places productiveness first, another firmness, another size and beauty, while in certain cases quality is ranked first. Given a healthy, vigorous plant, then whatever other qualities a variety possesses must be very marked, so as to fit it to meet certain requirements as well, or better, than any other variety. If originators and growers will cease trying to find varieties that are suited to particular soils, and send out those only that succeed over wide areas, and the wider the better, and that have one or more marked characteristics, much annoyance and useless labor will be saved."




*** The American Garden *stands for simplicity, good taste and correctness in names of varieties. In general botanical nomenclature it follows Bentham and Hooker and Nicholson's Dictionary of Gardening. In the names of fruits, it adopts the catalogue of the American Pomological Society, and in vegetables the Horticulturists' revision in Annals of Horticulture. In florists' plants, it follows the determinations of the Nomenclature committee of the Society of American Florists. It opposes trinomial nomenclature, and therefore places a comma or the abbreviation* var. *between the specific and varietal names. It uses capital initials for all specific and varietal Latin names which are derived from proper nouns.*

A Collection of Wild Flowers will be made for the World's Fair by the school children of California.

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H. L. Bolley, formerly of Purdue University, becomes botanist to the North Dakota Agricultural College.

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Weather in England —The autumn in England was very mild. Plants were almost forced into a second growth.

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The chrysanthemum shows were unusually complete and interesting last fall. The "Autumn Queen" still holds its supremacy.

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The Annual Meeting of the Colorado State Bureau of Horticulture and Forestry will be held the 8th, 9th and 10th inst., at Denver.

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C. B. Waldron, a graduate of the Michigan Agricultural College in 1888, has been elected professor of forestry and horticulture in the North Dakota Agricultural College.

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P. H. Foster, the veteran nurseryman of Babylon, Long Island, will close out his business and remove to Rockville Center, L. I., where he will erect greenhouses for rental.

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The Western New York Horticultural Society meets in Rochester, Jan. 28 and 29. An interesting programme is sure to be presented. This is one of the best societies in existence.

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Phylloxera in California.—The phylloxera is making deep inroads in many of the Napa county vineyards. Several parties have determined to grub out their entire vineyards this fall.—*California Fruit Grower.*

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The Herendeen Manufacturing Co., Geneva, N.Y., makers of the Furman heaters, send us a good photograph of the florists who visited Mr. Hunnewell's place last August. It is a pleasant reminder of the occasion.

Orange Crop.—It is estimated that the Florida orange crop is 63 per cent. of last year's crop, notwithstanding the March freeze. Much of the fruit is from the second setting of flowers. 1,357,500 boxes is the estimated crop.

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The 32d Annual Meeting of the Pennsylvania Horticultural Association will be held at Lancaster, Jan. 21 and 22. Among other features, it is expected that a reunion of all the living original members will be held.

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Cattleya Bowringiana has been the wonder of all England this year. Sander & Co., at St. Albans, have a stage some fifty feet in length on which were set the plants, about one hundred or so in number; from these they procured the grand total of five thousand flowers, one spike alone bearing eighteen splendid flowers of fine quality. The whole show was wonderful.

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The Pike County Nurseries, Louisiana, Missouri, issues a 44-page pamphlet and catalogue of a novel and useful type. It discusses methods of propagation and choice of stocks at considerable length, particularly the question of whole-rooted and piece-rooted trees. Its discussions of commercial orchards are to the point, and the statements concerning all questions are reinforced by extracts from the best authorities.

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Houghton, Mifflin & Co. announce a "Silva of North America" by Professor C. S. Sargent. The work is to comprise 12 quarto volumes, each containing 50 plates, and selling for $25, or $300 for the complete set. The work will appear at the rate of two volumes a year. The plates are engraved on copper by Picart of Paris, from drawings by C. E. Faxon. The publishers assert that it will be "noblest example of its class that has come from an American press."

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Dr. Thomas Morong has recently returned from a two years' botanical exploration of Paraguay and Chili.

His collections of plants have been very large, and some of the species will no doubt prove to possess horticultural interest. The collections of dried specimens will be added to the Torrey herbarium at Columbia College, and the seeds will be grown by the horticultural department of Cornell University. Dr. Morong traveled under the auspices of the Torrey Botanical Club of New York city. He will now assume the curatorship of Columbia College herbarium. He is well equipped for the work.

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THE EXPERIMENT STATION RECORD.—The agricultural experiment stations of the country, over fifty in number, issue annually some three hundred bulletins and reports of from four to two hundred and fifty pages each. Very few people have access to all of these publications, and fewer still can afford the time required to note the character and results of the experiments they describe. Those who find it desirable to keep pace with the progress of agricultural experimentation will find a condensed record of all station work in the Experiment Station Record, issued by the United States Department of Agriculture. The October number is being distributed, and the November number also is practically ready.

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THE HORTICULTURAL SECTION of the Association of Agricultural Colleges and Experiment Stations was represented at the recent meeting at Champaign, Ill., by ten workers, viz., Alwood of Virginia, Burrill of Illinois, Goff of Wisconsin, Green of Ohio, Lyon of Michigan (representing the Division of Pomology), McCluer of Illinois, Massey of North Corolina, Taft of Michigan, Troop of Indiana and Waldron of North Dakota.

The meetings of the session were necessarily restricted as to number and length by those of the general session, but the papers and discussions were both interesting and profitable. Space permits only the merest abstract here.

The tabular system of note taking, with blanks for special columns and remarks was thought most generally satisfactory.

It was agreed that the work of the Experiment Station horticulturist should not end with the necessary work of variety testing, but that the information thus brought out should bear fruit in the development at our Stations of truly superior varieties. Especially should the station horticulturist pursue the most advanced kinds of plant breeding, as the development of disease-resisting varieties, the introduction of new qualities through hybridization, and the enhancement of specially valuable qualities through long continued selection.

Professor Goff explained a very concise and comprehensive method for the graphic representation of the yields of varieties that are of necessity harvested at frequent intervals, as small fruits, peas, etc. By this method not only the comparative productiveness, but also the relative earliness or lateness and the length of the season of bearing were all discernible at a glance.

In the absence of Professor Bailey, the report of the committee on Reform in Vegetable Nomenclature was read by Professor Goff.

Mr. Green read a carefully prepared paper before the general session on Methods in Variety Testing.

Mr. McCluer gave an interesting account of experiments in the crossing of varieties of Indian corn; and Professor Waldron gave an account of some of the promising wild fruits of North Dakota.

It was urged that hereafter members who cannot be present at the annual meetings of the Association prepare and forward their papers to the Secretary in order that they may be read before the session and published in its report.

Professor Goff, of Wisconsin, was chosen chairman, and W. J. Green, of Ohio, secretary, for the ensuing year.—E. S. G.

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SHIRLEY HIBBERD.—Still another name has been added to the list of eminent horticulturists whom death has claimed during the past year. Shirley Hibberd, so widely known and respected, died at Kew, November 16. For some years his health had not been very good, but the immediate cause of his death was exposure and over-exertion at the exhibition of the National Chrysanthemum Society. He was taken sick Thursday and died the following Sunday.

Mr. Hibberd was born at Stepney, in the parish of St. Dunstan, in 1825. He secured a place in a book-seller's store when but fourteen years of age. Later he entered a book-bindery, but his tastes were not in sympathy with his work. He was fond of literary pursuits, and when quite young was a frequent contributor to various publications, writing almost entirely on rural topics. When but twenty-five years of age he was editor of a weekly paper, and had published a volume entitled "Brambles and Bay Leaves," which became very popular. He made a study of the principles of urban horticulture and carried on many experiments. This work resulted in the publication of "Rustic Adornments," "Book of the Aquarium," and "Fern Garden," each of which passed through several editions. Another important work published at this time was the "Town Garden." In 1858 he appeared as the editor of the *Floral World*, a monthly paper which attained an extensive circulation. Three years later he assumed the editorship of *The Gardeners' Magazine*, and this position he held until his death. He retired from the *Floral World* in 1875. In addition to the books mentioned above he wrote a series of volumes, all of particular interest to amateur horticulturists.

Wherever Mr. Hibberd resided, he always contrived to have his experimental gardens. He paid particular attention to the cultivation of potatoes, peas and other useful vegetables, and originated several valuable varieties. He worked a good deal with zonale pelargoniums

and roses, and published a monograph on the ivy. He developed the plunging system ; and, in fact, all branches of horticulture received his active attention.

Mr. Hibberd also took an active part in all horticultural societies with which he was connected. He materially aided the foundation of the United Horticultural Benefit and Provident Society, and of the Gardeners' Orphan Fund. He was for many years Fellow of the Royal Horticultural Society, and did excellent service on the various committees of which he was a member. In this line of work he will be particularly missed, for his quick, active spirit seemed to infuse new life and energy into all the projects he undertook.

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Pitcher & Manda's Show. — In some respects Pitcher & Manda's great show, which was held in Madison Square Garden, New York, during Thanksgiving week, was the most important exhibition ever made in this country ; it proved that the metropolis will support a show upon its merits, and that there are private collections of plants in the country large and complete enough to afford a symmetrical exhibition. The obstacles to be met in the holding of such a show are sufficient to have overwhelmed any but the most enterprising firms. The Florists' Club of New York had planned to give an autumn exhibition, but because of various discouragements the venture was abandoned. Disliking to see the metropolis go without a show, Pitcher & Manda, whose nurseries are within eighteen miles of the city, with most commendable enterprise, decided to make one themselves. The great Madison Square Garden, which is not yet fully completed, was secured, although the rent was $1,500 per day. The interior space covers an area of 30,000 square feet, and the building is so high that even the best palms appear like pygmies ; and this fact was against the effectiveness of the display. $2,000 was required to move the plants, some 40,000 in number, and the expenses of advertising, music, catalogues, etc., were very heavy. And aside from all this, the hall could not be secured until the season was nearly two weeks too late for chrysanthemums, and orchids were not yet in full bloom. Yet the show probably about paid for itself in direct entrance fees. No less than 5,000 paying entrance fees were recorded any day in Thanksgiving week.

The two prominent features of the display were chrysanthemums and cypripediums. As usual, Mrs. Alpheus Hardy attracted much attention, and although the season was late, many fine blooms were shown. Louis Boehmer, the pink variety of the Mrs. Alpheus Hardy type, was well represented and was much admired. The varieties of chrysanthemums of particular interest were Rohallion, Mrs. William Barr, Hicks Arnold, William S. Kimball, Mrs. E. D. Adams, Excellent, Superbe Flore, Mrs. Libbie Allen, Lilian Bird, Violet Rose, Ada Spalding, Bohemia, L. Canning, John Lane. Three promising new varieties were shown : Otero, a large lemon yellow flower with the reflex petals tinged with pink ; Herald, a pronounced anemone-flowered variety with very long and even golden-yellow tube flowers ; and Tribune, a large incurved white with some approach to the Mrs. Alpheus Hardy type. The massing of chrysanthemums was effective. The varieties chiefly used for this purpose were William H. Lincoln, Grandiflora, Cullingfordii, Mrs. Jessie Barr and John Lane.

The cypripediums, although less showy than many other groups of plants, were the most attractive part of the display to lovers of fine plants. Some over 130 distinct species and varieties were shown, probably the largest collection ever shown in the world. It is well known that Pitcher & Manda have the largest collection of these plants in existence. A new and unnamed sort, a hybrid of *C. barbatum* with *C. villosum*, occupied a conspicuous place. *C. Masereelianum*, for which the owners paid an enormous price, and which was ticketed "the $1,000.00 orchid," attracted much attention. Some of the sorts worthy of especial mention were *C. tessellatum* var. *porphyreum*, magniflorum, Arthurianum, Hookeræ, Charles Canham, cardinale, Schroderæ, Spicerianum, Harrisianum, Javanico-superbiens, leucorhodum, vexillarium, insigne.

The general display of orchids was good, considering the earliness of the season. *Lycaste Skinneri* var. *alba*, *Oncidium varicosum* var. *Rogersii*, *Phajus Blumei*, *Vanda cærulea*, *Odontoglossum crispum*, *Dendrobium chrysanthum*, and several Lælias—as *L. autumnalis*, *Dayana*. *Gouldiana*, *Arnoldiana* and others—were plants of particular interest and merit.

Palms were present in good variety, among them being an enormous latania, *Licuala horrida*, *Verschaffeltia splendens*, *Pritchardia macrocarpa*, *Phœnix Andersoni* and *P. Roeblinii*, *Geonoma gracilis*, *Areca Sanderiana*, and other interesting specimens. Among ferns, which were numerous and well disposed, were good specimens of platyceriums, *Cybotium princeps*, *Davallia Mooreana* and *plumosa*, *Asplenium Nidus* and *Aspidium viridescens*. Good plants of dracænas, marantas, alocasias and anthuriums brightened the display. Some fine specimens of *Pandanus Veitchii* made a bold show near the main entrance. A large araucaria also attracted much comment. Various plants had been brought forward to be used in the banking of the sides, particularly Easter lilies, cyclamens, and lilies of the valley. On one of the side tables the new American Flag carnation aroused much curiosity.

A novel and interesting feature of the exhibit was a collection of various useful and curious plants, as the olive, papyrus, black and cayenne peppers, camphor tree, cinnamon, quinine tree, guava, pine apple, dionæa, etc. In the center of the great hall two rooms were decorated as reception and dining rooms, with choice flowers and silver, but some of the decorations appeared to have been overdone.

The exhibition was a monument of enterprise, and that it was a commercial success as well as a thing of beauty is creditable to the metropolis.

L. H. B.

# FOREIGN NOTES.

LABORATORY OF VEGETABLE BIOLOGY AT FONTAINEBLEAU. — The study of experimental anatomy has become very important in France during the last few years, and the study of this branch in botany has already given very satisfactory results.

A laboratory devoted to the study of vegetable biology, and connected with the laboratories of the Faculty of Sciences, at Paris, has just been erected at Fontainebleau. The director is Gaston Bonnier. The station has ample grounds for experimentation, and will materially aid in the advancement of science in France.—*Revue Horticole.*

VILMORIN & CO. have succeeded in obtaining a double hybrid cineraria, which will soon be offered to the public.—*Revue Horticole.*

RAMIE FOR THE SILK WORM.—The *Kew Bulletin* says that the leaves of the ramie can be employed with great success for the nourishment of the silk worm, which, with this food, produces larger cocoons and finer silk. This fact was discovered by a person who had no mulberry leaves to feed, and so tried the ramie. The result was surprising, and the experiment was continued with success.

PLANTING OF HIGHWAYS WITH FRUIT TREES.—The lowest district tax is found in Suabia, and this is due to the fact that the people are shrewd enough to plant fruit trees along all the highways, roads, lanes, etc., and they are well taken care of. There are many districts in Suabia that have an annual income of $5,000, received from the sale of the fruit raised in this way.

In 1858 the district of Monheim set out trees in the above manner, and in 1868 it had an income of $1,850. In 1878 the sum had increased to $4,250, and in 1885 about $7,000 were realized. Reutlingen, another district, received in 1885, $65,000 from its wayside fruit.—*Gartenflora.*

AUSTRIAN EXHIBITION.—Arrangements are being made for a National Agricultural Exhibition at Prague, Austria, to be held in 1891. New prizes will be offered each month during the time in which the exhibition is held, which will probably be for six months.—*Gartenflora.*

THE CULTURE OF FRUIT under glass is steadily increasing in France.

OBITUARY.—Carl Braun, a well-known landscape gardener of Germany, died at Camenz in Schleswig, on the 31st of August, aged 74 years.

Julius Niepraschk, director of the Royal Garden "Flora," at Cologne, died October 14th.

Francis Dumer died recently at Moscow, Russia, aged 76. He was head gardener of Moscow, and the city owes most of the adornments in its squares, parks, etc., to his good taste and untiring industry.

James McIntosh, a prominent English horticulturist, died Nov. 5th, aged 76 years.

NEW FRUIT AND VEGETABLE MARKET.—The Lord Mayor recently laid the foundation-stone of a new fruit and vegetable market in the Farringdon Road (England). The area amounts to 54,000 feet, and the building about to be erected will occupy a space of 30,000 feet, so that there will be room for extension. A very important consideration is the basement work. The rails of the Great Northern Railway Company will traverse the entire length of the building, and lifts will be provided for raising the produce to the market above. —*The Garden.*

A FOREST PLAGUE IN BAVARIA.—The *Kew Bulletin* describes a pest which has attacked the pine forests of Bavaria. It is known as the nounen, and is caused by the caterpillar of the north, *Liparis monacha*, which has regularly attacked forests on the continent for the last 200 years. The loss is estimated at about $200,000. Munich has been invaded, and in some cases people retreated before them.

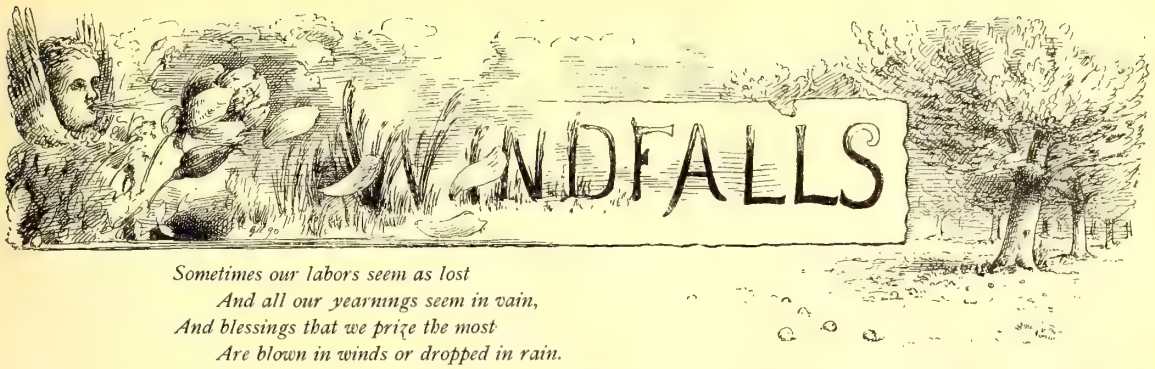
FORESTS IN EUROPE.—The following statistics about the extent of forest land in Europe have recently been compiled. Forests occupy 39.7 per cent. of the total area of Sweden; 36.9 of Russia; 32.5 of Austria; 28.4 of Hungary; 25.2 of Germany; 24.5 of Norway; 19.9 of Servia; 19.6 of Belgium; 18.9 of Switzerland; 17.7 of France; 17 of Spain; 15.2 of Roumania; 13.1 of Greece; 12.3 of Italy; 7 of Holland; 5.3 of Portugal; 4.8 of Denmark, and 4 of Great Britain and Ireland. As to the United States, the figure is 19 per cent. of the total area, and the actual extent of forest land is equal to 15 times the area of Pennsylvania.—*The Garden.*

NEW CAULIFLOWER.—Carter's Extra Early Autumn Giant Cauliflower is an acquisition to the select list of standard varieties already in cultivation. The large heads are close and white, and both "flower" and leaf are less coarse than those of the Autumn Giant.—*H. W. Ward, in The Gardeners' Chronicle.*

SEÑOR BARBOZA RODRIGUES has been appointed director of the Botanic Gardens of Rio de Janeiro, Brazil.

THE POTATO DISEASE has not been so destructive in England as was at first supposed, and a fair crop of good tubers has been obtained.

REFORM in nomenclature does not appear to find congenial soil in Europe. Old customs are all-powerful. In orchids, and a few other plants, good rules of nomenclature have been formulated, but common plants, vegetables and fruits are untouched.




*Sometimes our labors seem as lost*
*And all our yearnings seem in vain,*
*And blessings that we prize the most*
*Are blown in winds or dropped in rain.*

**Lemon Notes for Southern California.**—I wish every one starting citrus groves could be impressed with the importance of having the trees headed low. This is especially true of the lemon, one of the most obvious reasons being economy in the repeated pickings. Besides, experience and observation have demonstrated that the greater proportion of fruit for many years will be gathered very near the ground. I do not know if this latter fact is due to the shade which is thus produced or not; but it is certainly true, and I believe teaches the importance of a judicious shortening in to produce a closer head than the lemon naturally produces. The value of these low-hanging branches to protect the trunk of the tree from the fierce heat of the sun is also evident. If large two or three-year-old trees are to be planted they should be cut back close to the ground, and as they grow up the shoot selected for the tree should be trained to the true natural pyramidal form, with a main upright stem, from which the branches are sent out as nearly as possible at right angles. All "forks" or branches starting at a sharp angle to the trunk should be removed during the first year, else the tree can never bear, without splitting with the immense loads of fruit we expect from it.

For the same reason the branches should be judiciously shortened in each year at first, to make them strong and stocky. The comparatively few trees which have been trained to grow in this manner are shining contrasts to the stunted, sun-scalded, high-topped trees whose branches, when loaded, must necessarily come down to the ground, and as they are not strong, as nature intended them to be, they split down, and by the wound thus made in the trunk the life of the tree is impaired. One-year-old buds are generally preferable in starting a grove, as they are, or should be, less injured by loss of roots in transplanting and by the consequent necessary cutting back. Still the first fruit may be procured by planting two or three-year-old budded trees.—Harvey C. Stiles, *in The Great Southwest.*

**Oregon and California Prunes.**—It will be well to note a few facts developed by our [Oregon's] last year's prune crop, still our most promising and important output. Our Italian and silver prunes lead the market, and when we adopt the California system of grading, which we must do, and put up in smaller, fancy packages, will bring double the present prices. Our first grade of these fruits are superior in size and quality to anything produced on the continent—this is the decision of Eastern buyers and experts—and are worth to-day in the Bordeaux market, in bulk, 16 cents per pound for fancy packages and confections to eat out of hand. * *

The claim that the French prunes are underselling California prunes is based upon sales of the very lowest grades of French prunes, those of 90 to 105 to the pound, for which the French paper says the American demand has exhausted the supply. Now, the fact is that California and Oregon prunes are not and should not be in competition with these small French prunes. Our prunes do not run so small as that, but should be chiefly classed rather against the first to third grades of French, for which the producer gets from eight to fifteen cents a pound, just as they come from the ovens, the growers being to no expense whatever for packing. These statements it is important for the prune-producers of California to consider, and to ascertain where the big margin goes to when a good, large California prune sells at the price of the lowest grade of French. The reports are that California prunes are being preferred at the East, and they should be, for they are fresh and fruity and uncooked; but to state this, and then in the next breath to say that they must be sold by grocers to dealers at five cents per pound, because the poorest French sell below that, is to say "what is the matter with the prune trade." It is not likely that Californians will be long content to take less from prune-buyers than the Bordeaux merchants allow to the French peasants.—President J. R. Cardwell, *before Oregon Horticultural Association.*

**Rotting of Fruits in Clay Soil.**—Will the editor give the reason and the remedy for the rotting of fruit in heavy clay? On both young and old peach trees I find the fruit will rot just before ripening; musk-melons do the same. This I attribute to the soil, as my neighbors, whose trees are in sandy soil, have plenty of good fruit. —C., *Georgia.*

[The rotting is no doubt occasioned by fungi, which attack the green fruit. Some of these fungi—as for instance that which causes the rot of stone fruits—are tolerably well known to mycologists. All of them, so far as we know, spread most rapidly in a moist atmosphere or upon moist plants. The heavy clay does not allow the moisture to drain off quickly and it must there-

fore be held upon the surface and evaporated. The only prevention, probably, if the soil cannot be drained, is to practice open training of plants. Covering the ground very densely with foliage on such soils is generally regarded as poor practice.]

**The Crawford Apple.**—E. F. Babcock gives the following account of this variety in *Prairie Farmer*:

"Crawford originated on the farm of W. P. Crawford, Washington Co., Ark., from seeds brought, I believe, from Tennessee over forty years ago. Mr. Crawford stated that they were a mixed lot of seeds, but all were from good sorts, and from these seedlings he obtained this variety. The tree is a good grower, and from what I saw of it, is a fair bearer. The fruit is of very large size, frequently measuring fifteen inches in circumference. I kept them in New Orleans at the World's Fair (as I find by my notes) on my tables as late as April 20.

"Color is light golden yellow, with a dull brownish red, with a lighter and brighter red and splashes light crimson. Stem short, thick, set in a broad, moderately deep basin, covered with russet, which extends in splashes considerably beyond. Calyx broad and deep. Flesh, fine grained for so large an apple. Yellow, fine flavored, sharp and acid."

**History of the Wyoming Red Grape.**—R. W. Parr, Ithaca, N. Y., informed me that in 1861 a bundle of grape wood was brought from Waverly, N. Y., to Ithaca, sent by a friend to be propagated here, who said it was a grape highly prized in Wyoming Valley, where it originated. James Cook, now deceased, bought the wood, and with said Parr commenced propagating, but gave it little attention. In 1868 I moved to Ithaca and set a small vineyard, among other kinds, this new variety. I employed Mr. Parr, and raised a few thousand plants, I sent some to friends in different parts of the state, sold a few to nurserymen in Geneva, and later supplied T. S. Hubbard and Mr. Roesch, of Fredonia, N. Y., with cuttings. I think the first supply for nurseries came from Ithaca.

Still further and stronger evidence as to the origin of the grape I received from F. L. Perry, whom I met at the Annual Meeting of the Horticultural Society of Western New York, in 1881. He then owned or had charge of a nursery in Connecticut, and another at Canandaigua, N. Y. Mr. Perry had specially interested himself in the grape in question. He told me that in some localities it was propagated and sold for the Delaware. While passing from Connecticut to Canadaigua, knowing the grape was grown by a few citizens in Waverly, he stopped off to trace its origin, and followed it from one place to another until he reached the Wyoming Valley in Pennsylvania, and from there to a high elevation on a mountain, sloping to the valley. There he was shown the first vine, a seedling to which all subsequent propagations could be traced. It had no record in grape catalogues until after supplies were furnished from Ithaca, as I have ever learned.—P. B. CRANDALL, *Ithaca, N. Y.*

**Preserving Fruits.**—To every gallon of water use two tablespoonsful of powdered sulphur. Lay the sulphur on a dish. Place your fruit, water and sulphur in a tightly closed box. Set fire to the sulphur, close the lid of the box, and allow the articles to remain in four or five hours, when they will be sufficiently processedr Then take out your fruit, place it in jars, and cove. with the processed water.

All articles to be preserved must be sound and free from blemish; bruised or broken skins would keep, but be water-soaked. Only thick skinned fruits and vegetables are to be used. Any water-tight vessel, covered sufficiently to exclude dust, may be used. Barrels are advised for green corn, and large sized stone jars, holding several gallons, for tomatoes. Two or three inches of the water must always be over and above the fruit. For use, rinse off the sulphured water and cook, or use as if fresh from garden.—MRS. K. T. G.

**Thanksgiving Celery.** — *Various Estimates of the Amount Shipped.*—The amount of celery shipped from Kalamazoo for the Thanksgiving trade is astonishing, even to those who are most familiar with the industry. A correct estimate of the amount shipped is an exceedingly difficult fact to secure as the numerous shippers and growers make different statements in regard thereto. Some dealers are willing to make their business appear as large as the facts warrant, while others put a very conservative figure upon their shipments, claiming that to advertise the extent of the industry would encourage outsiders to go into the business. The *Telegraph* in securing figures from which to compile a grand total of the amount shipped, has been guided by the statements of those who would make estimates approximately correct.

In five days beginning last Friday and ending to-night, the various express companies have been busy night and day hauling the esculent to the trains. The Adams express Company will probably handle 12 carloads of celery, each car holding about 3,000 bunches, making a total of about 36,000 bunches. The United States express Company will handle about eight cars, which are larger than those used by the Adams, and will hold 4,000 each, making 32,000 bunches. The American Express Company and the Michigan Central Railroad Company will ship in the neighborhood of 12 cars each, for the five days, or a total of 78,000 bunches for the two companies. The grand total, or the entire output, figures up to 146,000 bunches, which would fill a train of 44 cars, or tons upon tons of the toothsome article. This is considered by several shippers and express company managers, with whom a *Telegraph* reporter conversed, a fair and not exaggerated statement. It must be remembered that this celery is shipped to every state in the union, that shipped the longest distances being started on the journey either Friday or Saturday in refrigerator cars. The celery industry is a great boon to express companies. One manager opened his books to a reporter and showed as cash, from Saturday's business alone, the snug sum of $1,400. This does not include the outside business.—*Kalamazoo (Mich.) Telegraph, Nov. 26, 1890.*

**The Streintown Apple.**—The Streintown is one of our most valuable apples, being such a wonderful bearer and a long keeper. For the past two seasons, when nearly all the varieties were a complete failure, our row of Streintown produced remarkably heavy crops; in fact, they have not missed having a good crop since coming into bearing. This year they averaged about ten bushels to the tree. Though the quality is not strictly first-class, being rather acid as an eating apple until fully ripened, for baking and cooking purposes it cannot be surpassed. They come in very nicely in February and March, though we have kept them perfectly until the middle of April. Size, medium to large; shape, ovoid conical; skin greenish white with a fine blush on side next to the sun; flesh white, and of first-rate quality for culinary uses.

This variety and the York Imperial are the only kinds which had a good crop this fall in our orchards, containing some fifty varieties. The Streintown has not been very widely disseminated, though it has been grown twenty-five or more years in this, Cumberland, and adjoining counties.—JOHN F. RUPP, *Shiremanstown, Pa.*

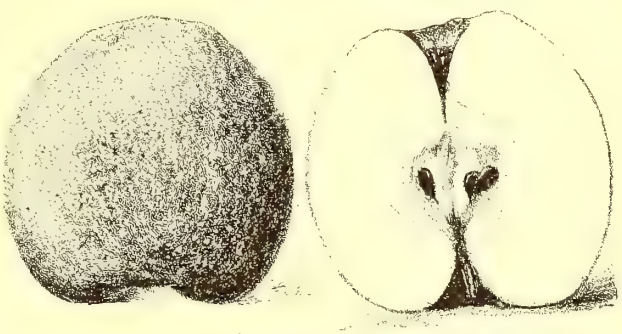
**Radishes.**—Many persons are desirous of obtaining this plant the year round, but it is somewhat difficult to produce creditable radishes during the height of summer. Commencing with the first month of the year, the seed should be sown in hot-beds, soaking it in liquid manure a few hours before sowing. The soil of which the hot-bed is composed must be of good staple; the radish requires that the soil be thoroughly enriched, if it is expected to do its best. It is not necessary to devote a hot-bed entirely to these early radishes, but raise them in beds already working for some other crop. When the weather becomes sufficiently warm, the seed may be sown in borders having a warm position. Cover with long litter during the nights that are cold enough to injure the plants, but the litter must be raked off during the day time.

As the weather gets warmer, cooler positions must be chosen, until the coolest place becomes allotted to them. If the beds occupy a half shady position during summer the plants will be found to thrive well. The quicker the radish can be grown to a size large enough for the table the better will be the quality.

Plentiful supplies of water during a hot spell will be very beneficial to the beds. During very hot weather it is a good plan to sow the seed in drills about nine inches apart, and as soon as the seed comes up to mulch the ground between the rows with short stable manure or the mowings from a lawn. This has the effect of keeping the ground cool and moist, and thus making watering less needful. The seed should always be sown thinly so as to allow the plants room to bulb, and a small sowing should be made about every fortnight. The best varieties to sow for forcing and for a main crop are the Turnip-Rooted and the French Breakfast. In July in the northern, and August in the middle, and September in the southern states, the winter varieties may be sown. The best varieties for this are the Black Spanish and the Chinese Rose. These should be sown in drills about a foot apart, and thinned to two inches in the drill.—H. W. SMITH, *Baton Rouge, La.*

**Successful Melon Growing.**—My experience in growing melons leads me to think that a garden where good melons cannot be raised successfully must be indeed a poor one. Most people select their best corner for a garden patch, and if that patch is well drained, the first requirement for growing melons is met. Melons like a rich, loamy, warm and porous soil, and where that cannot be obtained, I will give my remedy. It may entail some extra labor at the start, but since the object is to have first-class melons, it will pay. If the soil is clayey or old from constant planting, manure liberally with well-rotted manure from the barnyard. I prefer it to commercial fertilizer on such soil. Plow or spade thoroughly.

For musk melons have the hills eight feet apart each way, for water melons more. But before planting the seed, remove about a wheelbarrow full of soil and



THE STREINTOWN APPLE.

scatter it between the hills. Fill up the holes thus made with a compost consisting of three parts decomposed sod and one part well rotted manure. If the compost is thrown into a heap the fall previous, so much the better. Have the hills raised three inches above the level of the ground, to give drainage and warmth, and then plant the seed.

Melons should ripen early, in order to have a good flavor. The object of filling the hole, as above mentioned, is to give the young plants a start in the fresh sweet soil which they like, for when they commence to make a healthy, vigorous growth they will feed on most any kind of soil that is not too wet or sour. There is an opinion amongst a great many growers that to manure the hills is sufficient. That may do where the land is good and rich, but it must be taken into consideration that the roots of most vines grow in proportion to their branches. Keep the plants free from weeds and insects. In a dry season mulch, and unless there should be cool wet weather at the time of ripening, you will have melons worth eating.—PHILIP RYAN, *N. Y.*

**Rhubarb and Sage.**—Please inform me how rhubarb and sage are grown.—*John T. Erds, Cal.*

[For ordinary household use, rhubarb is nearly always multiplied by division of the roots. Each "eye"

or bud upon the crown, when broken or cut apart with a portion of root attached, will make a good plant in two years. On a large scale, it is best to raise the plants from seeds. These are sown in drills in spring, and the next fall or spring the young plants may be set in the permanent plantation. This operation usually requires a year longer than the other. The plants should not be cut until the second season after transplanting, or the third season from seed. Rhubarb demands a rich loose soil. It is usually planted 4x5 or 4x4 feet.

Sage is grown from seed sown in spring. For household use, a few plants are allowed to stand permanently in a bed, but for market it is grown as an annual crop. The young plants are transplanted in June or July between rows of early beets, early cabbages or other crops, and the plants are ready to cut in the fall.]

**The Cabbage Louse.**—Next to the cabbage worm, the worst insect enemy of the cabbage is the aphis, or plant-louse, which is so often found upon the leaves and in the heads in great numbers. This is a small, bluish white insect, that subsists upon the sap of the plant and multiplies with great rapidity. Like most of the peculiar family to which it belongs, this insect has the power, not common among insects, of bringing forth living young, but with most of those that have been carefully studied, there is in the fall a sexual generation by which the true eggs are laid, and in this egg state most of them pass the winter. But although the cabbage aphis has been known both to Europe and America for more than a century, the sexual generation has never heretofore been found, and entomologists did not know where or when the eggs were laid, nor how the insect passed the winter. Recent investigations, however, carried on at Ohio Experiment station by Dr. C. M. Weed, has shown conclusively that the sexual generation develop late in autumn on the cabbage, and that the eggs are laid on the cabbage leaves. The true male is a small winged creature, with a more slender body than the other winged forms. The egg-laying female has no wings, and is pale green in color.

This discovery of the fact that the insect passes the winter in the egg state on the cabbage leaves has an important economic bearing. It suggests, as one of the best ways of preventing the injuries of this pest, the destruction during winter of the old cabbage leaves, with the eggs upon them, instead of leaving them undisturbed until spring, as is too often done.

**The Cucumber Beetle.**—Extensive experiments were made last season upon remedies for the cucumber beetle at the Ohio Experiment Station. "Two general methods of treatment were employed: (1) Coating the plants with poisonous substances, and (2) fencing out the insects by mechanical barriers. The best success was attained in the first class of remedies, by the use of tobacco powder—the refuse packing of the cigar factories. A number of barrels of this substance were obtained at a cigar factory. A shovelful of powder was thrown on each hill. The first application was made to eighty hills, June 12th. Rains coming soon after, it was repeated June 14th, 16th and 17th. The results were excellent. The beetles seemed to dislike working in the tobacco, and the plants on all the hills so treated came through in good condition. Aside from its value as an insecticide, the tobacco acts both as a mulch and fertilizer. Chemical analysis shows that its market value as a fertilizer is $25 per ton. In many eastern cities it is being utilized, but in Columbus and other Ohio cities many of the factories are glad to give this refuse to any one who will take it away.

Various methods of mechanical exclusion of the beetles were again tried with good success. This may be done by simply placing over the plants a piece of thin plant-cloth, or cheese-cloth, about two feet square, and fastening the edges down by loose earth. It is better, however, to hold the center of the cloth up by means of a half-barrel hoop, or wires bent in the form of a croquet arch.

It is frequently stated that these beetles will not attack plants if simple frames, consisting of four pieces of boards nailed together, without a top of any kind, are placed over the hills. This method was tried, with a number of frames ranging from four to ten inches in height. As anticipated, the method was entirely unsuccessful, every plant of the hills so covered being destroyed by the beetles.

**Horticulture in the Schools.**—For years past we have been reaping the natural results of a system of education that, intentionally or unintentionally, turns all our young people for a livelihood towards the occupations of teachers, college professors, lawyers, physicians, clergymen, book-keepers, salesmen, musicians, artists, agents and business men—under which last head a multifarious and heterogeneous legion of middlemen are pleased to class themselves. These men have had the control of educational affairs, and they have kept the schools turning out their kind so long that there is unquestionably in the country an overwhelming surplus of middlemen, non-producers and men living by their wits. Such a surplus is bound to make trouble. All are determined to live in affluence, if possible—genteelly at all events.

Even the text books used in the common schools have a powerful influence, mainly in the direction of those unfortunate conditions to which reference has been made. Our school books should not be in the interests of trade more than in the interests of agriculture or manufactures. The fact that they have been so, makes them largely responsible for the present condition of things.

The introduction of horticulture into the common schools will do much to counteract those baneful influences which have been mentioned. It will create that respect for and intelligent appreciation of the culture of the soil that is desirable; it will check the tendency to abandon the farm as soon as possible, if any educational means can; it will create a first love to return to at a later period of life, and it will lead to a real demand

for agricultural schools of a high grade. To expect agricultural colleges to flourish without feeders is chimerical. Agricultural colleges and scientific farming on a large scale must start from plenty of seeds planted in good soil and in the spring-time of life. The common schools, in an eminent degree, have the point of vantage for the prosecution of this work, and there is need enough of scientific farming.—*Henry L. Clapp, before Mass. Horticultural Society.*

**Tools and Brains.**—I have been much interested in the series of letters from your Tarrytown correspondent about the exquisite tools they have succeeded in making. Now, honest confession, they say, is good for the soul, and I have to confess that I am interested in the manufacture of the despised "wheel hoes" sometimes mentioned, but I can appreciate Mrs. Tarryer's troubles. While very interesting reading, I think it would not be out of the way to remind those that contemplate falling into their footsteps that it takes brains as well as tools to secure the proper result, and that, if the same care is bestowed in keeping the wheels oiled and the blades sharp on a wheel hoe as Mrs. Tarryer takes to keep her special hoes sharp and keen, and they are used intelligently, they will, if rightly made, give as surprising results in their way as the watch-spring hoes. Of course, there are wheel hoes and wheel hoes, but all of them will do pretty good service if properly managed.

There are no two of the human family alike, and I am reminded of the difference in methods of Mrs. Tarryer and other gardeners in the use of their tools, as in mechanics. I have seen a carpenter carry a great chest full of expensive tools, tools of every description, around with him in building a house. For each part of his work he has a special labor-saving tool that is a "gem." But another carpenter who builds the adjoining house, carries his tools to his work on his shoulder, and does as complicated work with them as his colleague, and by the time carpenter No. 1 has hunted up all the uses he can put his tools to, carpenter No. 2 has finished his job and is well started on another. Even a better illustration is in the different number of tools different wood engravers use; some have a tool for everything, and some a very few. While, unfortunately for genius in this world, the vulgar cannot appreciate the flavor of crops raised with twenty hoes any better than they can of that raised with one. They can taste the brains that is mixed with the cultivation, however.—G. R.

**Sources of Fertilizers.**—Professor C. H. Whitcher, in speaking before the Massachusetts Horticultural Society, gave the following facts concerning sources of plant food: Barn-yard manure is the standard fertilizer, but there is a limit to the quantity which can be produced. Every stalk of corn sold carries so much of the soil with it. To supply phosphoric acid, bones were first used in 1750, and later, about 1780 to 1800, they became a comparatively common manure in England and Scotland. It was not, however, until 1814 that they were ground. The next step was the process suggested by Liebig in 1839, of dissolving bones in sulphuric acid, which made the greater part of the phosphate of lime soluble in water. In the United States, bones were first used about 1790. The first bone-mill was established in 1830, and superphosphate, or dissolved bone, was first tried in 1851. In 1843 phosphatic rock was discovered in Spain, and in 1868 in South Carolina. The later contains from twenty-five to thirty-two per cent. of phosphoric acid. Three million dollars worth of it are now mined annually. The phosphoric acid in these rock phosphates is insoluble, but when ground and treated with sulphuric acid, they are converted into superphosphates or soluble phosphates. Another valuable source of phosphoric acid is bone-black, a waste product from the manufacture of sugar, containing about thirty-four per cent. of insoluble phosphoric acid.

The original source of potash was wood ashes. In 1868 the first potash salts from the mines at Strassfurt, in Saxony, was brought to the United States.

There is a large proportion of nitrogen in barn-yard manures, and two per cent. in bones. Nitrate of potash (saltpetre) was one of the earliest fertilizers used; it contains about thirteen per cent. of actual nitrogen. Its value is to great to permit its use in agriculture, and a substitute has been found in Chili saltpetre, or nitrate of soda, which contains fifteen per cent. of nitrogen. One of the best sources of nitrogen is the sulphate of ammonia, made from a waste product of gas works.

**Automatic Ventilation.** — The American Garden experiments with automatic ventilation, which were mentioned in the last issue (p. 741) are not yet completed. They will be reported in due time.

**Recipes.**—Apricot Jam.—Skin and stone the apricots, weigh, and allow one pound of sugar for each pound of fruit; place the fruit on flat dishes, strain over it the sugar, and allow it to remain twelve hours. Break the stones, blanch the kernels, and put them with the sugar and fruit into a preserving kettle. Let all simmer very gently until the apricots look clear; take out the pieces singly, and as fast as the scum rises, carefully remove it. Put in small jars.

Quince Marmalade.—Slice the quinces into a preserving kettle, adding sufficient water to float them; put them on the stove and stew for about three hours, until reduced to a pulp, then strain to remove the skin and seeds. Allow three-quarters of a pound of sugar to a pound of fruit. Stir well from the bottom to prevent burning until it is reduced to marmalade, which may be known by dropping a little on a cold plate when, if it jeliies it is done. Put up hot.

Chow-Chow.—One pint of string beans broken in small pieces, one pint of small onions cut in two, one pint of green tomatoes chopped coarse, one quart of cabbage or cauliflower chopped coarse, one quart of very small cucumbers, six green peppers, one bunch of celery, one tablespoonful of salt, one cup of sugar,

four tablespoonfuls of ground mustard, one tablespoon each of cloves and cinnamon, one and one-half quarts of strong vinegar. Put on the stove and cook till nearly soft. If put in air-tight jars will keep for months.

CHILI SAUCE.—Four large green peppers, chopped fine, seeds out, twenty-four ripe tomatoes, two onions, two cups of sugar, two tablespoonfuls of salt, one tablespoonful each of cloves, allspice, nutmeg, and ginger, and one quart of vinegar. Cook two and one-half hours. Bottle and keep in a cool place; nice for meats.

LILY PICKLE.—Chop one gallon of green tomatoes, sprinkle salt over them, and let them lie twenty-four hours; drain off the liquor and throw it away, add twelve chopped onions, six green peppers, three quarts of chopped cabbage, one-half pint of grated horseradish, black pepper, cloves, etc., to taste. Add vinegar to this and cook.—FLORENCE HOLMES, *Tenn.*

**Bordeaux Mixture at Kenwood.**—My grapes did not do at all well last year. Niagara rotted fearfully, Vergennes, Creveling and all of Rogers' Hybrids, except Agawam, lost their leaves early and of course the fruit was insipid—and let me say right here, that you need not look for highest flavored grapes unless the leaf opposite the cluster is large, healthy, and doing its work until the grapes are dead ripe. Mildew attacked the clusters of Wyoming and Salem when the fruit was no larger than bird-shot. The bunches so affected perished right away; Delaware was mildewed in the leaf, numerous dun-colored spots appearing on the underside. The leaves soon grew pale and worthless for the development of high-flavored grapes. After the healthy grapes were quite grown they were attacked by a different sort of fungus from that which destroyed Salem and Wyoming.

I was getting ready for some other fungicide than air-slaked lime and sulphur, and when I read, in the May number of the GARDEN, of the Bordeaux mixture as a remedy for grape diseases, I resolved to experiment with it. I dissolved six pounds of blue vitriol, costing thirty-six cents, in four buckets of hot-water; four pounds of fresh lime, dissolved in cold water as well as I could. These I mixed in a kerosene barrel, and then added enough water to fill the barrel.

June 20th I sprayed Salem, Niagara and part of the Delawares, using a hand-pump with a nozzle having only two holes. On the 30th, mildew appeared on Salem and I used the Bordeaux again, taking pains to wet the clusters of fruit. That application seemed to arrest any further mildew on that sort, but it did not prevent the destruction of the little bunches already smitten. There was a third application of the mixture to the vines selected for experiment, but I failed to record it. July 5th I finished sulphuring the rest of the vines subject to mildew, and found a Rogers' No. 19 mildewed, like Salem. Grape harvest began September 7th, heavy rain came the 9th and continued till the 19th. After this I noticed that a great many of the vines were losing their leaves, not excepting an occasional Hartford Prolific, and here was my great surprise, Salem was holding its leaves wonderfully and they were green as leeks. This sort had always been about the worst example of leaf failure; Delaware was just as green, while the vines of that sort to which no Bordeaux had been given were badly jaundiced and gave no good fruit. The Niagara treated bore heavily, kept their leaves and perfected every berry, while a neighbor's vine lost its leaves and presented a poor mess of fruit for the dessert.

When I add that I had about a ton of Agawams rendered nearly worthless from leaf failure and mildew, you may guess with safety that I have resolved to use the Bordeaux mixture freely and generally next year.—ALFRED BAROW, *Community Gardens, Kenwood, Madison Co., N. Y.*

**Making Hot-Beds.**—Take a hogshead and bore two or three holes in the bottom. Set it down its full depth in the ground, on a slant, so that the southern side is six inches lower than the northern. Take some good fresh stable manure and thoroughly mix with it an equal quantity of leaf mold or good rich soil. Let this lie in a heap until fermentation has taken place, which will be in two or three days, when it should be turned and allowed to heat and ferment two or three days longer. Then put it in the hogshead and tread well down until the latter is about half full, allowing it to stand till heating takes place again. Fill in with six inches of equal parts well rotted manure and garden mold well mixed. Cover with a sash. If a sash is not convenient, a large piece of coarse muslin may be laid over the head of the hogshead and fastened by means of a tightly fitting hoop.

When the heat of soil is about 85° sow the seed. Water with tepid water, and give air every pleasant day by lifting the cover. On very cold frosty nights, or in snowy weather, cover with boards or matting. The seeds may be sown in drills, and the plants thinned out as required.—S. B. CONOVER, *N. Y.*

**Bread and Butter on Bushes.**—A story is going around to the effect that there has been discovered in Africa a bush, the seeds of which yield a yellow fat, which does not get rancid, and is very similar in appearance and taste to butter. Here is a great opportunity for some live horticulturist in the more tropical regions of California. Let him import a lot of bread-fruit trees and plant them side by side with the butter bushes and hybridize the two, thus securing bread already buttered. This is certainly a great scheme, worthy of every effort upon the part of the profession. — *California Fruit Grower.*

**Creosoted Sulphide of Carbon as an Insecticide.**—For fifteen years sulphide of carbon has been one of the three substances recommended for the destruction of the phylloxera. Of late years it has been enclosed in capsules, which are insoluble in this liquid, and still soluble in water. If the capsule is placed in the ground,

the humidity of the soil causes it to swell and it slowly liberates the sulphide of carbon. To retard this volatilization and prolong its action for several months instead of a few weeks, in order to protect the plants from a return of the insects, all that is necessary is to add creosote to the liquid.

This treatment of the sulphide of carbon is decidedly the best, and it has been preferred to several similar products by the committee on insecticides at the international exposition of 1889. Creosoting the sulphide of carbon renders the capsules capable both of killing and driving away injurious insects. Experience shows that in general five capsules, each containing about 150 grains, to the square yard is sufficient to kill or drive away all insect enemies. We believe that this remedy will be a valuable aid in all departments of horticulture. —*Le Jardin.*

**Experiments in Crossings.**—At the Cornell University station, work in crossing garden plants has become very extensive. The largest efforts have been put forth among the cucurbits, for the purpose of determining first-hand what the limits and influences of crossing are in this polymorphous family. The work of crossing squashes began in 1887, so that this is the fourth season. Last year over 400 pollinations of squashes were made, and the plantings this year cover several acres. Nearly 100 new types of squashes and pumpkins have already been obtained. This work will continue for many years, and probably no results will be announced for several years. Photographs of crosses and selections last year numbered over 300. A large experiment is in progress to determine the moot point concerning the contamination of musk melons by cucumbers, and cucumber crossing has been under way some time. In addition to this crossing, the station is hybridizing extensively in other directions, particularly now with raspberries, blackberries, dewberries, egg-plants, tomatoes, beans, and many ornamentals. The plantation of egg-plant crosses this season comprises some 200 fine plants.—*Agricultural Science.*

**Hydrangea Treatment.** — How shall I prune my *Hydrangea Hortensia, paniculata?* Will it answer to cut back the shoots?—H. H. H.

[Keep down all the weak growth, so that the bush will not become too thick. In spring, cut back the last year's growth a half or more. The flowers are born on new wood.]

**A New Chrysanthemum coronarium.**—We herewith send for your opinion some blooms of a new *Chrysanthemum coronarium.* We have had this strain in cultivation for nearly eight years, but could not get it true. For the last two years it has proved to be constant, but we were able to save only a very small quantity of seed. This year the crop seems to be better, and if so, we shall offer it to the trade under the name of *Chrysanthemum coronarium, imbricatum.* The principal difference from the type is the shape of the flowers, being globular and firm, each petal forming a tube. The habit is also better than that of the old form.—C. Platz & Sohn, *Erfurt, Germany.*

[The flowers are solid and symmetrical, of good form and clear golden yellow color. They appear to possess points of excellence.—Ed. Am. G.]

**Utility.**

In deepest wood
A flow'ret stood
'Neath unknown skies;
Its petals bright
Ne'er gave their light
To human eyes.

But laden fair
With beauties rare
It called the bees;—
And faintest veins
Revealed the gains
They stor'd in trees.

An honest man
With learning's ban
Espied the flow'r;—
"Ah! little swain,
Thy life was vain
Until this hour."

But Nature knew
Of all that grew
No thing was vain;
The restless tease
Of busy bees
Had render'd gain,

In honey'd raids
And stolen aids
That life began;
For Nature staid
Was never made
For haughty man.

**Cosmos.**—In the late October days, after many frosts have cut the dahlias and other tender plants, the chaste white and pink flowers of the cosmos brighten the corner of the garden. It is worth growing if for no other reason than this habit of late blooming. Along with petunias, phlox and *Nicotiana affinis*, it carries the flower garden fairly into the edge of the winter.

**Leaves from My House Garden.**—*An Air Garden.* —Fasten two hooks in a wall 12 or 14 inches apart, and on these lay a bunch of house-leek—not tying it on. As it draws its nourishment from the air alone, it will elongate, and one end where the buds are, will turn upward, and soon bloom like an earth plant. When these blossoms are over, cut off the lower part of the stalk and plant it in a pot.

Another air plant is the sedum or stone crop. Hang a bunch of this by a loose cord to a nail in your room. The stalks will turn up and the buds will all open.

Mantel Garden.—If you have a mantel-piece over a constant fire you can have a pretty garden. Get some smooth bulbs (medium size) of hyacinths. Procure two vases of clear glass, remove the bottom from one; place in one of these a bulb head down, filling it over with good leaf mould. Put in this another bulb top up, and put this vase in the whole vase, which should be full of water. As soon as the bulbs put forth leaves, one set will come up into the air, and the other go down into

the water and there bloom. Care must be taken to have the water the temperature of the room. You may also have in your mantel garden crocuses and tulips, but be sure to use earthen-ware pots for these.

FLOWER-STAND GARDEN.—Place a flower-stand against the wall, where it may remain permanently, so you can put into one of the pots a trellis for climbers. Passion flowers and pinks would be a good choice, and double violets at the bottom will have a good effect. For the other pots select such plants as will not grow tall.

A TREE MIGNONETTE will be a fine addition. To rear this you must plant only one root of mignonette, tying it to a stick. When buds begin to appear, cut them off; other shoots will then start. For these make a hoop and fasten them to it. After they have bloomed, take off the seed pods, and then, by judicious lopping, you will soon have a mignonette tree.—EDITH SOMNER.

**The Thistle Poppy.**—The papaveraceæ or poppy family furnishes many beautiful flowers for us to cultivate and admire. The order includes near twenty genera, of which nine or ten are represented in California. Among these genera is argemone, a genus of some six or eight species of free-flowering border plants, with large, showy, white or yellow short-pediceled flowers. They are stout, glaucescent hardy annuals, with sinuately pinnatifid, prickly-toothed leaves, from which they have become known as thistle-poppies.

*Argemone grandiflora* is described as "growing two feet in height, and producing numerous large white flowers."

*Argemone Mexicana*, a native of Texas and Mexico, grows to about the same height, and produces conspicuous yellow flowers in profusion. As a weed, this plant "has spread to almost all warm countries," but I believe it has not as yet been recorded from California. The leaves are blotched with white and less hispid than in the following species.

*Argemone hispida*, the *chicalote* or thistle poppy of southern California, in the beauty of its flowers almost rivals the magnificent *Romneya Coulteri*. It forms an erect branching bush, one to three feet or more in height, producing a profusion of its large, pure white flowers, closely set among pale green, bristly-armed leaves.

The large white flowers render it very conspicuous on a lawn, by day or night, but the delicate texture of its petals, and unpleasantly hispid character of its stems and foliage, will not render it a favorite with florists.

When seen growing luxuriantly on its native, dry and otherwise almost barren hillsides in California, or in equally dry valleys, its beauty is not likely to be easily overlooked. It extends eastward through Colorado and New Mexico, and has gained a permanent place in the catalogues of American seedsmen.—C. R. ORCUTT, *Cal.*

**Olearias.**—*Shrubs for our Middle and Southern States.* *Olearia Gunniana* is a Tasmanian shrub, long known in the gardens under the name *Eurybia Gunniana*, but as eurybia cannot be generically separated from olearia, the older name gives place to the one given above. The plant grows from three to four feet in height, with hoary branches and polymorphous leaves, which are oblanceolate, coarsely toothed, and hoary beneath. The starry white flowers are very numerous, and cover the ends of the branches with a snowy sheet. In sheltered situations it will stand out of doors uninjured in our usual winters, although in very severe ones, and in cold situations, it may be preserved from injury by a small amount of protection.

About London this shrub is often found, smothered with bloom, in the spring months, and it is undoubtedly a town plant, although the flowers get smirched with "blacks."

Of olearias eighty-five species have been described; of these, sixty-three are Australian, and the remainder natives of New Zealand and the neighboring islands. *O. Haastii*, white, flowering in dense subterminal hoary cymes, is undoubtedly hardy in this country, and is a dwarf shrub everyone should grow.—*Gardener's Chronicle.*

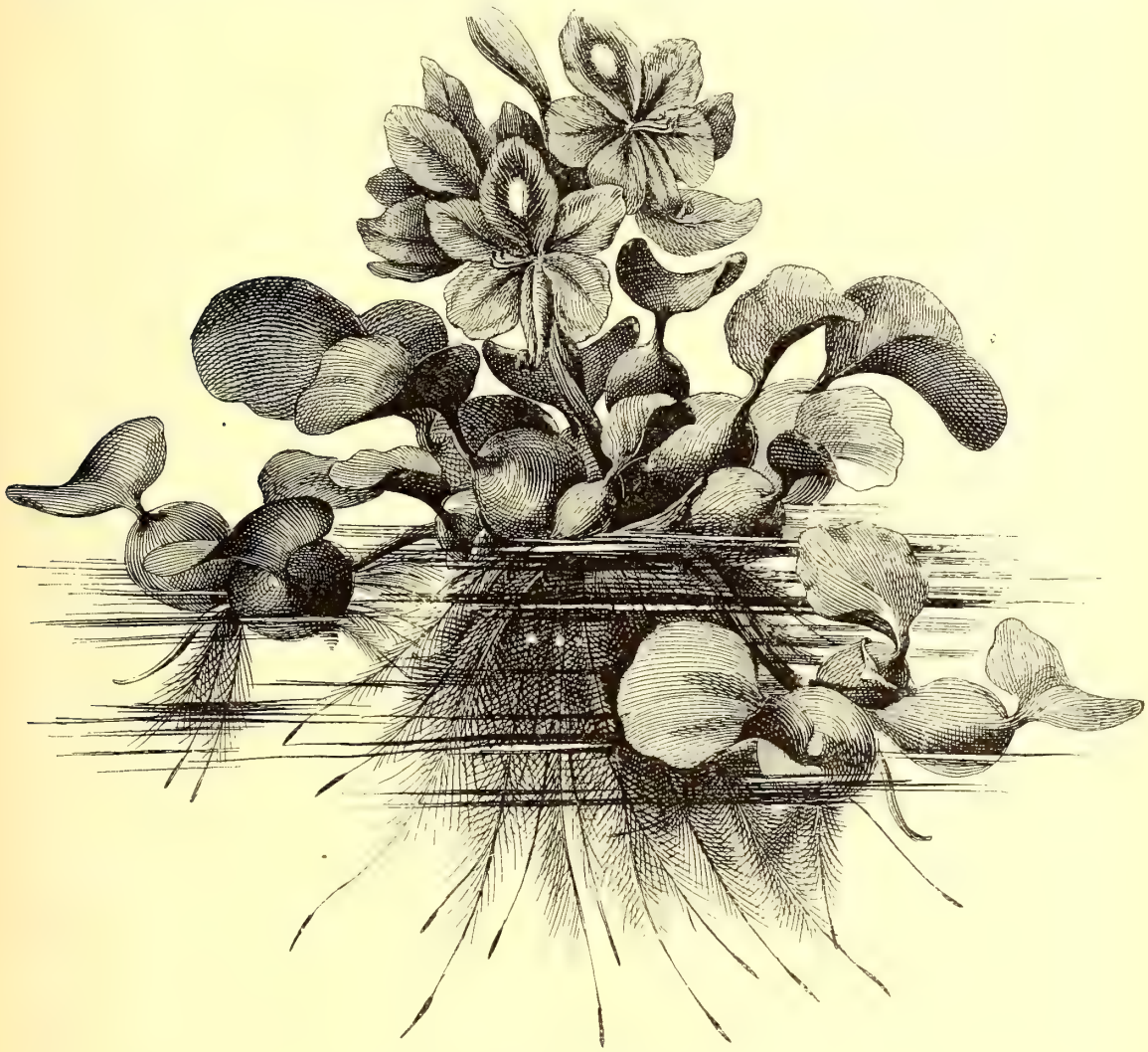
**Best Chrysanthemums for Market.**—What kinds of chrysanthemums are best for cut-flowers for market? CHAS. T. D., *Long Island.*

*Answer by B. M. Watson, Jr.*—No list of the six best chrysanthemums for the cut-flower trade is likely to suit any one given combination of circumstances; experience alone will determine what kinds will prove the most profitable. I would suggest as the sorts likeliest to be successful where large and fine flowers are required. Belle Hickey, Fair Maid of Guernsey, white; Jardin des Plantes, W. H. Lincoln, yellow; Cullingfordii, deep crimson, and John Thorpe, deep lake. An almost equally good list would be, Domination, Robt. Bottomly, white; Gloriosum, Neesima, yellow; Mrs. C. H. Wheeler, orange and red, and Lilian B. Bird, shiny pink. Mrs. Alpheus Hardy has proved a paying kind where it has been well grown. Grandiflorum and Thunburg are fine late yellows; Helen Galvin, a new one, promises to be one of the best of whites.

Up to the present year the demand for cut-flowers has been for yellows and whites. Now there is a call for a larger variety; if this is to be permanent, additions to the above list should be made; say, Source d'Or, yellow and orange; Bouquet Fait, rose and white, Tokio, dark orange red, with yellow, not very large; Cannon Farrar, white shaded pink; Wm. Robinson, crimson yellow; E. G. Hill, yellow, with deep purplish shading, and Diana, a pure white, incurved red, and of moderate size.

**Good Perennials.**—A garden of perennials in good variety is a wonderful thing, and a constant surprise; and to my thinking it is the only one that amateurs who have no greenhouses should attempt to carry on. Nearly all of the hardy plants offered by our nurserymen are good, and very few are worthless. Double pyrethrums are very pretty, and the newer sorts of campanulas are good, although there is nothing finer than the old fashioned Canterbury bells. The hundreds of varieties of phloxes, pæonies, lilies, larkspurs, etc., are mainly good. *Scabiosa Caucasica* is very satisfactory, and too much cannot be said in favor of hardy poppies, especially

the Iceland varieties. The various kinds of *Iris Germanica* are beautiful, and the finer varieties are too little known. It is a great surprise to me, after growing the English and Spanish iris, that they are so seldom seen. The English iris has the most beautiful blue, purple and white colors, while the Spanish iris shows fine combinations of purple, yellow and brown. Both are hardy but require a dry situation in winter. *Iris Kaempferi*, or the Japan iris, is firm. I have not always found it sure of flowering, but it will repay a little trouble.—P. F. Blodgett, *Vermont.*



WATER HYACINTH.—(*Pontederia crassipes*, var. *major.*)

**The Water Hyacinth.**—The illustration represents an aquatic plant that is still so new as to be absolutely unknown to the majority of the people, although florists have it for sale. It is the *Pontederia crassipes, major*, also called the water hyacinth. It bears a cluster of pale lilac flowers, that remind one of a truss of rhododendrons. The individual flowers are about two inches in diameter, the top petal being blue in the middle, with a yellow spot in the center of the blue. But although the flowers are beautiful, it is the queer bladder-like expansion of the petioles that rivets the attention of those that see it for the first time.

I have a specimen in a fish globe, and although the latter is filled with well-water and contains not a particle of earth, the plant seems to thrive, for it has not only bloomed as you see it in the drawing, but it has thrown out two new runners since I had it; and to all appearances it is going to get along without any earth. This makes it the more attractive, since even the roots are beautiful. They are of a dark purplish black, tipped with a black lance-like point. I am told the plant is very tender, and therefore it must be kept in a warm room in winter.—William Graf, *Philadelphia.*

**Berberis Thunbergii** has advantages enough to merit the foremost place among ornamental berried

plants, either hardy or tender. It comes into bloom and leaf among the earliest shrubs in spring, and it bears an enormous crop of scarlet berries that begin to ripen in August. These berries not only hang on to the plants all winter, but actually till the following May, when the plants again are in full flower and foliage; indeed, for this reason I think this barberry is prettier in May than at any other time, And the bush is very hardy, of the neatest and prettiest form, thrifty, and it can be multiplied in any quantity from seed.—WILLIAM FALCONER.

**Black Snakeroot.**—The December cover, concerning which our friends ask, represents the common black snakeroot or black cohosh, *Cimicifuga racemosa*. This is an interesting herb, rising from four to six, or even eight feet high, and inhabiting rich woods throughout the northern states.

**Crape Myrtles.**—Every sweet, old stately southern garden of a sweeter long ago was sure to hold, somewhere in its midst, as quite a feather in its cap, the plumy branches of a crape myrtle, fairly smothered with bloom.

The purple species, *Lagerstræmia Indica*, was most common, but shades of crimson, scarlet, rose-pink and pure white were often seen growing into tree-like proportions, and quite disdaining the name of shrub. But alas, for this pride of southern gardens! Frost is no respecter of plants nor persons, and the cold winter of 1878 remorselessly mowed down many proud and tropical foreigners that had wandered away from home, to thrust aside or encroach upon our beautiful natives, and among them, the crape myrtle from the East Indies was obliged to fall. Spring found its branches bare and leafless in every garden, and only clumps of scions springing up about the root, showed that the plants were not all quite dead.

But those scions! how they did grow, forming dense, miniature jungles about the stump, and bursting when about two feet high into great panicles of bloom. One of the prettiest flower-beds I ever saw was upon the grave of an old myrtle tree.

The trees grow best in a sheltered, somewhat damp situation, and in strong rich soil; but they were often grown as screens and hedges in divers situations.

To get fine panicles of bloom from pot plants or small shrubs, cut the branches back closely in spring, much as you do a rose bush, and give liquid stimulants once or twice a week. Their best blooming time is in early summer, but sometimes they produce an after-glow in autumn. The plants may be wintered in a cold cellar at the north. The white variety is sometimes forced successfully for winter bloom.—LENNIE GREENLEE, *Greenlee N. C.*

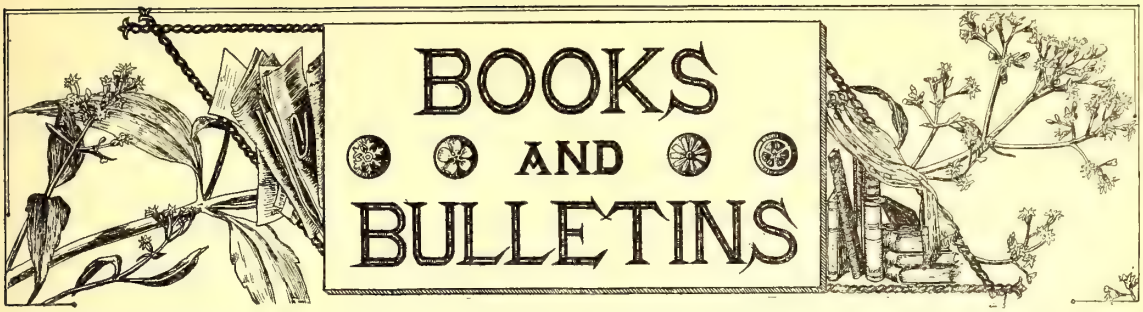
**Cultivation of Lilium auratum.**—Mr. Bam, amateur florist, of Reading, Pa., has a fine auratum lily in bloom (June 26, 1890). It is a vigorous, healthy plant, with several offsetts about it. Mr. Bam said there is no difficulty in keeping it, but he thought it was more easily cultivated in pots than in the ground. When first planting a bulb, he places it in the bottom of a good-sized pot, in a mixture of sand and wood earth. The pot is then set in the cellar, to remain during cold weather. In the spring the pot is taken out and filled up with a compost of sand and old cow manure. In this mixture he has grown the bulb for years. It is top-dressed every year, and the offsets removed. He says it is in this kind of soil that the Japanese cultivate the auratum lily.

Travelers say that much of the soil of Japan is sandy and that in the vicinity of cities it is black with manure, or poudrette. A lady of this city is successful with the auratum lily. She cultivates it in pots, and gives it a top-dressing once a year.—A. G.

**Hedges for the South.**—(See AMERICAN GARDEN, Nov., 668). There was never a hedge so good for the south as osage orange. It is perfection in every respect. If properly kept, it constantly improves. A fence is dead, mechanical, and stiff. A good hedge is always bright and interesting. Osage orange hedges will last a hundred years, and they are stock proof if properly made.—JAMES W. TOWNSEND, *Armiston, Ala.*

**The Blue Chrysanthemum.**—There is no blue-flowered chrysanthemum outside the gardens of China or Japan, and that any exist there is an exceedingly doubtful matter. A blue variety has occasionally appeared in the artistic productions of the Japanese, and from this fact enthusiasts suppose that some such a flower must bloom in security in some secret garden of the Mikado or his trusted subjects. All attempts to unearth this treasure have so far proved futile. This blue chrysanthemum is the great Eldorado so eagerly sought by most raisers of new varieties. It is reasoned, with some show of sound judgment, that if such a flower ever did exist, or is in existence, it was probably some variation of a commoner and less carefully guarded type. It remains then to go on with the work and try every art known to the skilful cross-breeder. But the blue variety supposed to exist may have been a sport, *i. e.*, a fixed natural variation of a bud, whereby a branch may be developed which in some particular differs distinctly from all others of the same plants. Thus the common scarlet salvia of the gardens frequently produces branches that bear only white flowers. Instances of this kind are common to the experiences of all practical horticulturists. But with our present knowledge of plant growth such a change cannot be brought about at will, and therefore, in the event of the blue chrysanthemum having been the result of sporting, nothing can be done but attend to the plants in the ordinary way and watch and wait for the development of conditions favorable to the production of the desired variation.—MICHAEL BARKER, *in Boston Transcript.*

**For Spring Bedding.**—Plans should now be made for the spring bedding. Coleuses, iresines, etc., will need to be rooted in February in the north, and the stock plants should be got ready by putting them into a vigorous condition for producing cuttings.




Reserve Food-Materials in Buds and Surrounding Parts. *By Byron D. Halsted. Memoirs of the Torrey Botanical Club, Vol. II, No. 1. Pp. 26. 2 plates. 50 cents.* For some time Dr. Halsted has made a particular study of the reserve materials in plants, especially in the twigs of fruit-plants, and he has before published upon the subject. The present contribution gives the results of his full studies, and it gives a rational basis for understanding both the position and extent of reserve food materials, and the relations which they bear to hardiness of the parts. The author has confined himself particularly to buds. The "grit" which the grafter finds in twigs is a measure of maturity and relative hardiness, because it indicates that the starch is densely stored in mature and thick-walled cells. Such twigs, when treated with iodine, give the characteristic starch reaction in a marked degree, and they also usually give an equally pronounced test for albuminoids. In terminal buds the albuminoids occupy the heart or vital portion of the bud, while the starch reinforces it from the rear. This is a beautiful disposition of forces—the protein lying at the point of growth ready to be used as the basis of protoplasm, which is the vehicle of life, and the starch packed behind it in readiness for use in the construction of tissue. Hardy plants give strong starch reactions, even comparatively late in winter or spring, while tender ones show more sugar, which is one of the earliest stages in the transformation of starch. The crystals found in buds and twigs form no criterion of relative hardiness, and the same may be said of tannin. Blossom-buds contain near their points a greater supply of albuminoids than the leaf-buds do. Dr. Halsted finds that spines serve as reservoirs of food, as well as afford protection from foes. This is interesting, because it shows how completely nature makes use of every organ; and it may be that it affords a hint why wild plants are often hardier than their cultivated but spineless offspring.

**Reserve Food.**

Catalogue of Canadian Plants. *Part V—Acrogens. By John Maconn. Pp. 180. Geological and Natural History Survey of Canada.* Professor Maconn's flora of Canada has been running through several years. The present number takes the work through the vascular cryptogams, and it gives extensive additions and emendations to the earlier parts. The additions and corrections, comprising about 125 pages, indicate that there has been great activity in the study of botany in Canada during the last few years. A large part of the additions have been discovered by the author himself, who is an indefatigable explorer of Canadian botany from ocean to ocean. Few men have had so good opportunities to study continuously the flora of a great region. The addendum also embodies the results of the labors of specialists in the various groups. A number of new species are added.

**Plants of Canada.**

The Catalogue is not a manual, but it gives full synonymy and habitats, and is in those respects much better than a manual. When completed, it will undoubtedly make the best plant catalogue yet compiled in America.

Second Annual Report of the Delaware Experiment Station, 1889. Most of the results dealing with horticultural matters which this report contains have been reported in The American Garden. A few things are new to us. Professor Chester made an experiment with sulphide of potassium as a remedy for pear scab. A few trees in a very badly infested orchard were treated five times with a half-ounce of the material in a gallon of water—June 11th, 25th, July 6th, 18th, August 2nd. The effect of the treatment was marked, although the season was an unusually favorable one for fungous diseases. It was estimated that on the treated trees 26 per cent. more pears were marketable than upon the untreated trees.

**Pear Scab.**

Professor Chester made some culture tests from yellows peach shoots, with a view to determining if bacteria were present. He was unable to breed bacteria, both in nutrient gelatine and in an infusion of healthy peach wood.

**Yellows.**

Bulletin No. 10, Delaware Experiment Station. *Diseases of the Vine Controlled by Several Different Salts of Copper. By Frederick D. Chester. Pp. 32. Illustrated.* Following up his work of 1889, Professor Chester made experiments during 1890 in a variety of ways upon three vineyards. The investigations are to the point, and they should command wide attention. There are several striking features in them. They show that anthracnose or scab can be held in check by treatment, that treatment in one season lessens injury in the next by preventing the maturing of the fungi, that other copper compounds than Bordeaux mixture can be used to combat black-rot, that unsprayed vines in a sprayed vineyard are by no means accurate checks to an experiment, because they are not re-infested from neighboring vines, and that the use of carbonate of copper for the last one or two sprayings in the place of Bordeaux mixture prevents the coloring of the grapes. It is not certain, however, if this late use of carbonate of copper is any safer than Bordeaux mixture, so far as

**Grape Diseases and Remedies.**

health is concerned, A gratifying incidental result of the experiment is to the effect that one vineyard of somewhat over an acre in extent yielded $674.30 per acre, after deducting the expenses of harvesting, shipping and commissions.

Professor Chester's general conclusions are as follows: "(1) In cases where vineyards have become seriously affected by disease, so that it is necessary to use heroic measures, the Bordeaux mixture or the carbonate of copper in suspension in water, with glue, offer the most promising results. The latter, on account of its cheapness, has points in its favor. (2) The carbonate of copper and carbonate of ammonia mixture is to be preferred to the ammoniated carbonate of copper, and may be used for the last application where the Bordeaux mixture is previously applied, in order to overcome the necessity of washing the fruit, or it may be used with the winter treatment for all applications in vineyards in which the rot has been reduced to a minimum by one or two years' treatment with stronger fungicides. (3) The modified eau celeste and mixture No. 5, U. S. Department of Agriculture, are effective fungicides, but on account of their tendency to scorch the foliage, are open to objection. (4) Where the Bordeaux mixture is used, the last application with this mixture should be made lightly, and the final application should be made with either the carbonate of copper and carbonate of ammonia mixture, or with the modified eau celeste. (5) In using the Bordeaux mixture it is not necessary to plaster the vines; one gallon to every five vines of average size is sufficient. (6) The cost of application where the Bordeaux mixture is used need not exceed three cents per vine for the season, and with greater economy in the use of the material, this can be reduced. (7) By the use of the carbonate of copper in water, the cost of treatment can be diminished about one-half; but as this item is small compared with the value of the fruit, it is questionable whether it would be justifiable to select the cheaper mixture, until further experiments have been made. (8) Complete annihilation of rot in a vineyard cannot be expected from one years' treatment, but may be assured as a result of persistent effort. (9) Anthracnose can be controlled with either the Bordeaux mixture or the precipitated carbonate of copper. (10) The nozzle to be used in applying fungicides should throw a misty spray, and the nearer it approaches this the better. [Recommends Galloway's new lance nozzle.] (11) Wet every part of the vine, but avoid unnecessary waste of material. (12) The pump should have the parts that come in contact with the fungicides made of brass, and should give a strong and steady pressure. (13) The receptacle for holding the fungicide should be of liberal size, and should be drawn by a horse. (14) For diseases of the grape, spray the vines before the buds swell with a solution of sulphate of copper, one pound of the sulphate to twenty gallons of water. Make the first application in the middle of May, then every two weeks for five or six applications."

**Professor Chester's Conclusions.**

BULLETIN No. 7, VOL. III, OHIO EXPERIMENT STATION. *Strawberries, Raspberries. By Wm. J. Green. Pp. 16.* The best small fruit report which has been made by an experiment station is Mr. Green's report on strawberries in this bulletin. If such investigations as this should be applied to the study of varieties, complaint could not be made that testing varieties is unprofitable.

**A Good Strawberry.**

Mr. Green hopes that "variety testing, as commonly understood, may be largely discontinued." The author discusses the essentials of a good strawberry, and he thinks that they are as follows: "To meet the wants of strawberry growers, a variety ought to have sufficient health and vigor to adapt itself to widely varying conditions, and to possess one or more marked characteristics. It is not worth while to seek to find varieties that are adapted to particular soils, since varieties that have a limited range are generally found to be variable and untrustworthy. The most valuable varieties are the least variable, and are easily suited as to soil and climate."

*What Relation do Length of Bearing Season and Fruitfulness bear to each other?*—"If varieties of strawberries are separated into two classes, viz: those that continue a long time in bearing, and those that have a short season, it will be found that the most prolific fall into the first class, and the least productive into the second. It is also true, in general, that the greater the number of pickings during the season, the greater the total product. It might seem that the aggregate crop would depend as much or more upon the quantity of fruit ripe at each picking, as upon the number of pickings. It would also seem that varieties which ripen slowly would be more in danger of dry weather or other unfavorable causes than those that yield their crop in a short time; but such does not appear to be the fact. A short strawberry season means a short crop, whether varieties are considered individually or in the aggregate, and the converse is equally true. A variety that gives three pickings during the season will yield about half as large a crop as one that gives six.

**Seasons of the Strawberry and Fruitfulness.**

"These generalizations refer particularly to varieties that have well-fixed characteristics. Some of the variable varieties may, in many cases, appear to be exceptions. There are also varieties that have neither a long nor a short season, hence can hardly be classified. All things considered, the long season varieties are more sure and profitable than those that continue but a short time in bearing, and yield comparatively few pickings."

*How do Early and Late compare with Medium Varieties in Fruitfulness?*—"Nearly all of the very early varieties continue but a short time in bearing, give comparatively few pickings, and produce light crops. The same is true, in a more marked degree, of the extremely late ripening sorts. The effect is the same as though the last pickings of the early varieties, and the first of the late had been destroyed. Both early and

**Early and Late Strawberries.**

late hold out but for a short time. The late varieties usually cease bearing at about the same time as the medium or second early, although commencing a week or ten days later. In general, the medium or second early sorts are those having a long season. Although not all that are found in this class are highly fruitful, it is true that the most fruitful come within it."

"One thing is clear, *i. e.*, the most prolific varieties are found among those having imperfect flowers. Nearly all of those named in this class are very prolific, the Ohio being the only exception. Among those having perfect flowers none are found that are extremely prolific, the Wilson and Capt. Jack being possible exceptions under favorable conditions. Taking averages for the two classes we find that the varieties having imperfect flowers stand thirty-eight per cent. higher than those having perfect flowers. If we take four of the most prolific in each class, the imperfect flowered sorts stand thirty per cent. higher than those having perfect flowers. There can be no doubt that the production of pollen is an exhaustive process, hence the varieties having perfect flowers are at a disadvantage. No doubt some of the perfect flowered sorts are very nearly equal to any in fruitfulness, and under certain circumstances, may be fully equal, but the chances are against them when unfavorable conditions occur. Given two varieties of equal vigor and productiveness, one having perfect and the other imperfect flowers, the extra tax of pollen bearing on one will so weaken the plants as to render them more subject to the evil effects of fungi, insects, dry weather, frost, etc., than those that produce no pollen.

**Sex and Fruitfulness.**

"There can hardly be a question that the best market varieties at the present time have imperfect flowers. This is not alone because of the greater fruitfulness of varieties of this class than those having perfect flowers, but because of more general reliability, *i. e.*, they more uniformly produce good crops. In many respects it may be desirable to have varieties with perfect flowers only, but it is probable that future development will be along the line of still greater specialization. The highest development of fruit-bearing qualities in one class, and of pollen bearing in the other, gives promise of greater reward than to combine the two functions in one variety."

"The following varieties have been thoroughly tested and are suited to the wants of those who grow berries for market: Bubach, Eureka, Haverland, Crescent, Warfield. Where large berries are desired rather than quantity, the following can be recommended for home use or for market: Cumberland. Crawford, Gandy, Louise, Lida, Miami, Pearl. The new varieties that seem to be most promising are Enhance, Farnsworth, Ivanhoe, Middlefield, Muskingum, Michel's Early, Parker Earle, Shuster's Gem, Waldron. Those that have good points, but are doubtful and need further testing are Cloud, Lady Rusk, Stayman's No. 1, Daisy. The following will no doubt be dropped soon: Hoffman, Jessie, Logan, Pineapple."

**Varieties of Strawberries.**

"The black cap varieties that are now considered the most reliable are Gregg, Hilborn, Ohio, Palmer.

"The red sorts that succeed best generally are Turner and Shaffer; the best for shipping are Brandywine and Marlboro. Muskingum, Royal Church and Thompson's Early Prolific are the most promising of the new varieties."

**Varieties of Raspberries.**

BULLETIN No. 8, VOL. III, OHIO EXPERIMENT STATION. *Plum Curculio Experiments. Remedies for Striped Cucumber Beetle. The Rhubarb Curculio. The Clover Stem Borer. Potato Blight Experiments. By Clarence M. Weed. Pp. 16. Illustrated.* Professor Weed made experiments last season with Paris green as a remedy for curculio upon plums under commercial conditions. An orchard of 900 trees, in a large fruit region, was sprayed May 8, 15, 26 and June 2, with 1 lb. poison to 200 gals. water. The spray saved more plums than were saved by the ordinary jarring process. "So far as one experiment can be relied upon, it indicates that this method is as efficient as jarring, while it is vastly cheaper and easier of application."

**Spraying for Curculio.**

Studies of remedies for the striped cucumber beetle have also been continued, and Professor Weed still believes that covering the plants with cheese cloth or thin plant-bed cloth is "practical and efficient." From these experiments it appears that the most promising insecticide for preventing the ravages of the beetle is tobacco powder applied in liberal quantities to the hills.

**Cucumber Beetle.**

The life history of the rhubarb beetle, which was briefly described last year, has been worked out. The pest breeds upon the early dock.

"From the discovery of the breeding habits of this rhubarb curculio in dock, it seems evident that the best way of preventing its injuries will be to destroy, early in summer, the plants in which it develops. If the dock plants are pulled up, roots and all, say late in June, before they have gone to seed, and burned, a great many of the insects will be destroyed."

**Rhubarb Beetle.**

Professor Weed has also repeated his trials of Bordeaux mixture as a remedy for potato blight, and he again finds good results to follow its use. Ammoniacal carbonate of copper was somewhat beneficial, but far less than Bordeaux mixture. It is not certain what this blight is with which the author experimented. It is supposed to be the bacterial blight which has lately come to light and not the genuine potato rot.

**Potato Blight.**

BULLETIN No. 66, MICHIGAN EXPERIMENT STATION. *The Plum Curculio. By A. J. Cook. Pp. 8. Illustrated.* Professor Cook now thinks that the arsenites are not reliable remedies for curculio, although his previous ex-

periments pointed strongly in the opposite direction. He also considers the carbolated lime remedy very unreliable or even worthless. He thinks that plum trees set in apple and cherry orchards will attract the curculio, enabling the insects to be fought to advantage. We doubt if plum trees, unless nearly equal in number to the other trees, will attract sufficient insects to protect the other fruits, and we do not believe that growers will ever plant "*numerous* plum trees" in other orchards for this purpose. Such operation would be too expensive—would interfere too much with the continuity and value of orchards. The author recommends the use of the chip trap, and especially the common jarring process which "is to-day the surest, cheapest and best method to banish the curculio and save our plums." Chickens and stock running in the orchard also lessen curculio. The arsenites find no place in Professor Cook's recommendations this year.

**The Curculio Again.**

The curculio is considered to be a friend for three reasons: because it thins plums for lazy people, lessens production and therefore advances prices, and enables us to plant plum trees in apple orchards so that we may kill it!

Bulletin No. 67, Michigan Experiment Station. *Fruit Testing at the South Haven Sub-station. By T. T. Lyon. Pp. 32.* Mr. Lyon reports upon a variety of fruits. The rejected strawberries, those "unworthy or not requiring farther trial" are the following: Acme, Boone, Cohanzick, Dewey, Early Canada, Emerald, Garibaldi, Hathaway Nos. 3, 5 and 9, Richmond, Shirts, Sunapee, Surprise, Warren.

**Strawberries Rejected.**

"The following varieties of raspberries afford a satisfactory succession for family use, while the surplus, if any, will prove available for market: "First, Thompson; second, Turner; third, Herstine; fourth, Golden Queen; fifth, Cuthbert. With high culture and careful winter protection, improved quality may be secured by adding the Brinckle.

**Red and Yellow Raspberries.**

"Among blackcaps of established reputation a valuable selection for a family garden would be Souhegan, Tyler or Doolittle, for early, followed by Hilborn (the genuine) and Nemaha, with Shaffer for canning. For a market list Gregg may be substituted for Hilborn."

**Good Black Raspberries.**

"A good succession of blackberries for a family plantation is, Lucretia dewberry, Early Harvest, Kittatinny (with winter protection), Snyder, Taylor. For market, Early Harvest, Wilson or Wilson Jr. (with winter protection), Snyder, Taylor."

**Blackberries.**

"The following varieties of currants will constitute a satisfactory selection for home or domestic uses: White Dutch, although slightly deficient in vigor, is the mildest and richest flavored, and, at the same time, the most beautiful of currants. It is abundantly productive. Red Dutch, although slightly smaller in berry than Cherry, Versaillaise or Fay, is longer than these in bunch, at least equally productive, while it is decidedly superior in flavor. It is generally recognized as the best of the red currants. Victoria is slightly later and more acid than Red Dutch, and rivals it in productiveness. In localities in which the twig borer is troublesome, this may very properly be substituted for Red Dutch, even for a home plantation. Lee is a desirable black currant for the home plat, when fruit of this species is desired for culinary or other purposes.

**Currants for Michigan.**

"*For Commercial Plantations.*—Cherry, Versaillaise or Fay will, either of them, yield good returns of large sized, attractive looking fruit, with possibly slight, undetermined differences of yield. As in the case of home plantations, the Victoria, on account of its comparative exemption from the depredations of the borer, will be found more profitable in infested localities. Crandall, a recent novelty, has been represented to be a hybrid between the native (*Ribes aureum*) and the Cherry currant (*R. rubrum*), but neither the foliage, bloom nor fruit affords the slightest indication of such hybridization. Among the plants thus disseminated, wide differences exist in habit of growth, as well as in size, quality and quantity of fruit, the cause of which is charged to be that the plants disseminated are the product of a batch of seedlings, and not, as was first claimed, of a single selected plant. Its value as a useful fruit is yet undetermined.

"The European varieties of gooseberries only prove reliable in specially favorable locations, or with special treatment. For general planting, whether family or market purposes, only those usually supposed to be of native parentage can be safely relied on. Houghton is the oldest of these, and although the fruit lacks size, and the plant is of straggling habit, it is so thoroughly hardy, vigorous and productive, and the quality so satisfactory that it may well, as it does, hold a leading place, even in a list for home use. Smith, though the least vigorous of the so-called natives, is yet a healthy though moderate grower, and withal, very productive. Its fruit is the largest of the class, as well as of superior quality. With liberal culture and judicious pruning, it will very surely prove eminently satisfactory, whether for family or commercial planting. Downing, though scarcely equaling the Smith in either size or quality, is yet so sturdy and vigorous, and withal so productive, and the fruit so large and even sized, that it is very generally preferred for commercial planting. Industry is an imported variety of *Ribes grossularia*, which has been considerably disseminated as being less liable to mildew than others of its species, but several seasons' experience with it at this place fail to warrant such claim."

**Varieties of Gooseberrries.**

"From the experience and observation of this as well as previous years, the following lists are suggested for the consideration of plants of this fruit. To those who prize high quality, even with the penalty of somewhat

diminished returns, and are willing to devote the needful care and labor, the following may be expected to yield satisfactory results: Jessica, Lady, Early Victor, Delaware, Brighton and Empire State, and on suitable soils and when the season will suffice to mature them, Iona and Excelsior. For planters who require varieties which will mainly "take care of themselves," and still yield at least some returns, even though of lower quality: Lady, Moore's Early, Worden, Hayes, Niagara, with Isabella when the season will suffice to ripen it. For the market grower who wishes to work for customers who value quality and are able and willing to pay for it: Early Victor, Delaware, Brighton, Ulster. For growers for average city or village customers who generally 'buy by the eye': Moore's Early, Worden, Concord, Niagara."

**Pres. Lyon's Selection of Graps.**

Mr. Lyon thinks that Summer Doyenne, Clapp, Bartlett, Sheldon, Howell, Onondaga, Anjou and Lawrence constitute a good list for "the average of small planters." His market list is as follows: Summer Doyenne, Tyson, Sterling, Clapp, Bartlett, Howell, Onondaga, Bosc, Anjou, Lawrence.

**Pears.**

Notes are made upon a variety of other fruits.

BULLETIN No. 33, VOL. II, INDIANA EXPERIMENT STATION. *Small Fruits. Entomological Notes. The Absorption Power of Soils. Pp. 32. Illustrated.* Professor Troop mentions the following ten varieties of strawberries giving the highest yields: Bubach, Enhance, Hampden, Jessie, Park Beauty, Cumberland, Green Prolific, Haverland, Logan, Warfield. In a graphic chart of "comparative yields of ten leading varieties," however, the Haverland, Bubach, Jessie and Warfield are all represented as equal in productiveness. The ten varieties having best quality according to the list are Black Defiance, Crawford, Gandy, Henderson, Sharpless, Brunette, Cumberland, Haverland, Michel and Warfield; but according to the chart, Haverland, Cumberland, Henderson and Sharpless stand at the head. In the chart the Haverland stands at the head in combination of productiveness and quality, yet the variety is not mentioned in the list of five varieties of best quality and greatest productiveness. We do not understand these records. The following raspberries, currants and gooseberries are recommended: "Brandywine and Cuthbert raspberries are two of the best red varieties, the latter for late. Tyler is superior to all cap raspberries. The currants, Fay, Moore's Ruby, Wilder, Ruby Castle, Red Dutch, White Dutch, Lee's Prolific, Crandall and Black Naples are recommended in the order named. For farmers, Early Orange and Downing gooseberries are recommended.

**Small Fruits. in Indiana.**

"To prevent black-rot in grapes, dissolve two pounds of sulphate of copper in two gallons of hot water. In another vessel, dissolve two and one-half pounds of soda carbonate, and mix the two solutions. After chemical action is over, add one and one-half pints of ammonia, and thin the whole to twenty-two gallons. Spray this on the vines from time to time with a force pump, from the time the berries are the size of small peas, till all danger of rot is over.

"For family use, the following grapes are recommended for quality and productiveness: Concord, Delaware Gœthe, Martha, Moore's Early, Wilder, Worden."

Professor Webster has continued his observations concerning the injury to fruits by curculio. He finds that plum trees among apple trees will not attract the curculio away from the apples. This is diametrically opposed to Professor Cook's statements from Michigan. He finds that the variety of plum and apple whose blooming season covers the greatest period of time will best withstand the work of the curculio.

**Curculio.**

"If anything is to be gained by using another fruit to draw off the curculio and protect the plum, the nectarine will probably serve as well as the apple." But we do not believe that catch-plants will be found profitable in large orchards.

Notes are made upon some little known strawberry and raspberry insects.

BULLETIN No. 7, RHODE ISLAND EXPERIMENT STATION. Professor Kinney gives an extended tabulation of varieties of fruits in this bulletin. The tables comprise habit of growth, description of fruit and time of ripening. No lists for recommendation are made.

**Rhode Island Fruits.**

BULLETIN No. 88, CALIFORNIA EXPERIMENT STATION. *The Use of Fertilizers in California. By E. W. Hilgard. Pp. 4.* At last California soils need fertilizing! "The fortieth anniversary of the admission of California into the Union reminds us that she has ceased to be a stripling. With this advance in dignity comes the inference that, however fertile her soils, it is to be expected that those long occupied, or heavily cropped, will now require serious care in order to keep up or restore production. That this is really so is proved by the rapidly increasing correspondence on the subject that is addressed to this station; and to avoid the unnecessary rehearsal of general statements in each individual case, it seems desirable to put in print for general information what can be stated in a general way on this subject. Of course, many individual cases will still require special consideration on account of peculiar conditions of soil or location, for, in a great many instances, the failure to produce satisfactory crops is not at all due to soil exhaustion, but to improper physical conditions of the sub-soils, unsuitable cultivation or irrigation, alkali, etc. The fact that orchards and vineyards form costly investments of much greater permanence than the annual crops that occupy the vast majority of the cultivated land east of the Rocky mountains, and the high returns so often realized from them, has brought the manure question forward here much earlier than has usually been the case in the United States."

**Californian Needs.**

The California soils have had a one-sided wear, because of the continuous growing of the same crops. As a rule, the soils of the state contain enough lime and potash, but phosphoric acid and nitrogen are in small quantities. The following observations concerning the demands made by certain crops are suggestive: "It will be seen that, for equal weights of these fruits, grapes take from the soil by far the largest amount of mineral matter, of which nearly five-tenths is potash; they also carry off the largest amount of phosphoric acid. For seedless grapes the latter item would, however, be considerably smaller.

"Next in the drain of total mineral matter from the soil stands the orange. It also draws heavily on the potash, and also upon the nitrogen of the soil, but less than the grape upon phosphoric acid. This independently of the seeds, the analysis having been referred to seedless fruit; seed-bearing (seedling) fruit would draw more heavily both on phosphoric acid and nitrogen.

**Fertilizers for Fruits.**

"Pears come next as regards total mineral matter, but draw lightly on nitrogen.

"Plums (including prunes) are conspicuous chiefly for their heavy draught on the nitrogen of the soil, greatly exceeding, in that respect, the orange for equal weights, and enormously for an (assumed) average crop.

"The difference between apples and pears in respect to soil exhaustion for an equal weight of fruit is quite striking, the amount of potash in apples being less than half; the phosphoric acid only a trifle over half as much as in the pear, while nitrogen is equal in both and quite low as compared with the orange, which has over four times as much, and must, therefore, be accounted relatively much more nourishing to man, as well as more exhausting to the soil."

"To the citrus-growers, then, who at present appear to be most concerned about the fertilizer question, I would say that well-cured stable and sheep-corral manure apart, their best resort at present is to the commercial phosphates and superphosphates of high and honest grades, mixed, either by themselves or by the manufacturer, with a proper proportion of Chili saltpetre or ammonia sulphate, and generally no potash whatever."

**Manures for Citrus Fruits.**

Professor Hilgard gives directions for preparing bones, and he wants a state fertilizer law.

BULLETIN No. 72, NEW JERSEY EXPERIMENT STATION. *Plant Lice and How to Deal with Them. By John B. Smith. Pp. 28. Illustrated.* Professor Smith gives admirable accounts of the lice attacking the following crops: Wheat, cabbage, peach, cherry and melon. The following remedies are given for the cabbage louse:

"One of the best of the remedies is the whale-oil soap of commerce, or the soap and kerosene emulsion. The kerosene emulsion is equally effective, and for penetrating power is even better. In all experiments for me this season the result was uniform and the effect satisfactory. * * * The fish-oil soap was perfectly effective at the rate of one pound of soap to eight gallons of water. Another very satisfactory remedy was found in ground tobacco. This was used with excellent result, put on early, while the plants were wet, and dusted on thoroughly. It has the great advantage of being a fertilizer as well as an insecticide."

**Cabbage Louse.**

The new peach aphis, which works both upon the top and root of the tree, is dispatched as follows: "The dealing with this insect above ground is easy. It succumbs readily to either the kerosene emulsion or the fish-oil soap, and the application of the insecticides to peach trees is usually not difficult, because of their moderate size. The young trees suffering most, they can usually be reached with the power afforded by a knapsack sprinkler, such as was recommended for cabbage aphids. In nurseries where this insect is working on the roots, I should recommend periodical dressings of kainit of potash. This will not only act as an efficient fertilizer, but will also serve to destroy many of the lice. The application should be made just before a rain if possible, so that the salts can be at once dissolved and carried into the ground. Wherever the solution comes into contact with the aphides it will kill them, and the salts will remain until taken up by the plant. The kainit is better than the muriate because it contains more salt, and at the same time it seems less likely to injure vegetation if put on too heavily. The application should be made when injury to the trees is noticed, *i. e.* when they look sickly, refuse to grow without apparent cause, or when an examination shows the presence of the lice in the orchard." The cherry louse is fought in the same way. "As the insects hatch upon the cherry, early in the season, and the swarms which appear afterwards are descendents of these, one or two sprayings with either the kerosene emulsion or the whale-oil soap will generally suffice to clear the trees and to keep them free for some time. Winged forms from other localities will form new colonies, but these will not increase rapidly enough to get the better of the trees when they are in full leaf."

**Peach and Cherry Lice.**

The remedies for the melon louse "are the same as for the cabbage louse, and, from the nature of the plants, the application of insecticides must be made in the same way. With the cyclone nozzle the underside of the leaves can be reached without difficulty, and the great bulk of the lice destroyed at a single application."

**Melon Louse.**

BULLETIN No 21, CORNELL EXPERIMENT STATION. *Tomatoes. By L. H. Bailey and W. M. Munson, Pp. 16. Illustrated.* The following conclusions are drawn from tomato tests: "1. The tomato plant is quickly susceptible to careful selection. 2. As elsewhere in the vegetable kingdom, the character of the plant as a whole appears to have more hereditary influence than the character of the individual fruit. 3. Very heavy manuring does not lessen productiveness. 4. Neither ni-

trate of soda nor muriate of potash alone are profitable tomato manures upon thin soil. 5. Very early setting of stocky plants in the field, even in dark and raw weather, augmented earliness and productiveness this season. 6. Seedlings gave far better results than cuttings. 7. Trimming the plants lightly late in summer gave a greatly increased yield. 8. A double or monstrous flower upon a young plant is no indication that succeeding flowers upon the same plant will be double, and produce irregular fruits. But varieties which habitually bear double flowers are also the ones which habitually bear irregular fruits. 9. Cool and dark weather in early fall, and early fall frosts, are the leading drawbacks to profitable tomato culture in the north. To avoid these dangers as much as possible, plants must be started early and forced rapidly. 10. The essential general points in profitable tomato culture are these: Careful selection and breeding; early sowing; frequent, or at least, occasional transplanting to obtain stocky plants; rich soil, well prepared and well tilled. 11. There is evidence that varieties of tomatoes run out, even under good culture. 12. The best market tomatoes appear from our tests to be Ignotum, Favorite, Bay State, Atlantic, and perhaps Ruby among the red varieties; Beauty, Mikado, and possibly Potato Leaf among the pink or purple varieties; Golden Queen among the yellow sorts. Among the novelties, Ruby and Chemin Market are most promising."

**Tomatoes in New York.**

A new tomato, the Ithaca, is described and figured.

Bulletin No. 10, Hatch Experiment Station of Massachusetts. *Report on Special Fertilizers for Greenhouse Crops. Report on Small Fruits. By S. T. Maynard. Pp. 14.* For two seasons Professor Maynard has made experiments upon special fertilizers under glass. He has tried carnation, lettuce, tomato and parsley, and has used a variety of fertilizers. His conclusions are as follows: "Of the nitrates, the nitrate of potash has given the best results, but sulphate of ammonia give better results than either [nitrate of potash or nitrate of soda], especially in the production of a foliage crop. Of the potash salts, the sulphates give better results than the muriate. Bone black shows a marked effect in increasing the number of blossoms."

**Greenhouse Fertilizers.**

"To learn when the peach buds were destroyed, observations of their condition were made every week from December 1, 1889, to March 13, 1890, and at each observation 500 buds were cut open and examined. On December 21 the first buds were found injured. On December 28, 6 per cent. had been destroyed. From this time up to January 22, no larger per cent. was found to be injured, the lowest temperature up to this time being 11° above 0°. On the 23d of January the temperature dropped to 8° above 0°, and January 25 to 7° above 0°, but the evidence of injury did not show itself until February 1, when 14 per cent. were found injured. This state of injury remained until March 27, when 52 per cent. were found destroyed. Then on March 7 the temperature dropped to 6° below 0° and held nearly at 0° the following night, after which about 86 per cent. of the buds were found to be injured. This was the average of all the varieties examined, but some were more injured than others, and at the time of blossoming the average remained about the same."

**When the Peach Buds were Killed.**

Despite Professor Maynard's attempt to protect the buds of peach trees in Massachusetts after "another year of earnest effort to find something to protect the buds from the effect of the cold we must again acknowledge ourselves baffled. We have demonstrated that large peach trees can be loosened at the roots and laid down on the ground for winter protection and be again set up successfully, but we have thus far failed in saving the buds. We shall continue our efforts, and if any grower can suggest any way that offers even the slightest hope of success, we will carefully test it; for the peach tree can be grown successfully in all parts of Massachusetts, and if some means could be found to save the buds from winter's cold, peach growing would be a profitable industry, supplying our markets with one of the choicest and most healthful of fruits."

**Protection for Peach Buds.**

Reports are given upon strawberries, raspberries and blackberries. The author advises hill culture of strawberries in order to lessen expense of cultivation.

Bulletin No. 3, Louisiana Experiment Station. *Report of Horticultural Department. By H. A. Morgan and J. G. Lee. Pp. 20.* This is a catalogue list of fruits and vegetables grown by the Louisiana station last year, with some very brief and often pointless notes. The best thing in the bulletin is the opening sentence: "Of all the kinds of agriculture adopted by this state, truck farming bids fair to become the most prominent."

**Louisiana.**

Bulletin No. 4, Louisiana Experiment Station. *Irish Potatoes. By W. C. Stubbs, H. A. Morgan and J. G. Lee. Pp. 20.* Experiments were made at the Louisiana station upon the varieties of potatoes, the best regions from which to procure seeds, fertilizers, profits of the crop in the south, and, of course, upon methods of cutting for planting. The following conclusions were reached concerning varieties with reference to yield: "Six of the above varieties yielded over four hundred bushels per acre, viz: Boston Peerless, Vermont Early Rose, Beauty of Hebron, Cayuga, Callun's Superb and Russett. Eleven gave over three hundred and fifty bushels, viz: Parson's Prolific, Enos Seedling, Home Comfort, Late Favorite, Webb's Early, Sylvian, Extra Early Vermont, Dunn's Seed, Early Puritan, Dictator, Platt's No. 5. Thirteen followed with yields over three hundred bushels per acre, viz: Baker's Imperial, Strawberry, Bliss' Triumph, Burbank, Sunset, Great Eastern, English Kidney, Rural Blush, Irish Cup, Scotch B., Dunnmore, James Vick and Buffalo Beauty. Of the remainder, seven gave less than two hundred bushels

**Irish Potatoes in Louisiana.**

per acre. The lowest yield was 170 bushels per acre, with the highest 435. Should the record above be maintained through a series of years, it would show the necessity of planting a variety adapted to this soil and climate, as the first element of successful culture."

The general conclusions of the potato experiments are as follows: "Select for planting varieties known to be adapted to soil and climate. Western-raised potatoes are as good for seed as those raised in the east, and are usually cheaper. There is no necessity of buying seed from either, as home-grown seed are equal if not superior to any. Cotton seed, or cotton seed meal, mixed with a high grade acid phosphate furnishes an excellent and cheap fertilizer for potatoes, and should be used liberally. That cuttings containing from two to four eyes are perhaps the best size of the seed, when planted on a large scale. That any early potato crop, when properly harvested and shipped, can be made very profitable."

CHRYSANTHEMUM LITERATURE. C. Harman Payne, the well-known English chrysanthemum specialist, sends us advance sheets of a bibliography of the golden flower. The portion devoted to writings in English is here transcribed for the benefit of the many admirers of the chrysanthemum in America.

**Chrysanthemum Literature.**

"On the Cultivation of the Chrysanthemum," with plain instructions for its propagation. London, N. D. 1840 (?).

"Tyas' Popular Flowers: the Chrysanthemum," its propagation, cultivation and general treatment in all seasons. With a colored frontispiece. London, 1843.

"A Treatise on the Cultivation of the Chrysanthemum" for the production of specimen blooms; with an enumeration of the best varieties founded on the experience of G. Taylor, to which is added a list of the best sorts of those let out in 1851 and 1852, with cultural hints and descriptions of a selection of Pompon and Anemone varieties. London, N. D.

"On the Chrysanthemum," with particular reference to its cultivation in or near large towns, to which is added a suitable selection of large and Pompone varieties. By J. Dale, gardener to the Honorable Society of the Middle Temple. London, 1856.

"Culture of the Chrysanthemum" as practiced in the Temple Gardens, to which is added a list of plants suited to the atmosphere of London and other large towns, with hints for their management. By Samuel Broome, F. H. S., gardener to the Honorable Society of the Inner Temple. London, 1857.

"Garden Favorites: the Chrysanthemum," its history, properties, cultivation, propagation and general management in all seasons. By Shirley Hibberd. London, 1857.

"The Chrysanthemum, its History and Culture." By John Salter, F. R. H. S. With colored illustrations and engravings on wood, by Andrews. London, 1865.

"Culture of the Chrysanthemum" as practised in the Inner Temple Gardens, with a list of plants, including all the newest varieties. By John Newton, gardener to the Honorable Society of the Inner Temple. London, 1871.

"The Art of Dressing Chrysanthemums for Exhibitions." By F. T. Davis, F. R. H. S., Park Nursery, Plumstead, S. E. Woolwich, 1878.

"The Chrysanthemum, its Varieties and Cultivation." By D. T. Fish. London, 1881.

"Culture of the Chrysanthemum," with select list of large-flowering Japanese and Pompone varieties. By John Wright, gardener to the Honorable Society of the Middle Temple. London, 1883.

"Culture and Exhibition of the Chrysanthemum," with select list of plants. By W. Jupp, gardener to J. Boulton, Esq., Torfield, Eastbourne. Eastbourne, 1883.

"The Chrysanthemum," its history, culture, classification and nomenclature. By F. W. Burbidge, Curator of Trinity College Botanical Gardens, Dublin, etc. London, 1884.

"Catalogue of Chrysanthemums." Prepared by the Committee of the National Chrysanthemum Society. 1884.

"The Chrysanthemum," for exhibition and decorative purposes, with cultural details, useful hints and reliable selections of varieties for all purposes. A lecture delivered at Yeovil on February 27th, 1885, by William Iggulden, etc. London, 1885.

"A Short History of the Chrysanthemum." By C. Harman Payne. London, 1885.

"The Cultivation of the Chrysanthemum," for decorative or exhibition purposes. By George Kidson, principal of Lansdowne School, Hull. Hull, 1885.

"Chrysanthemums and their Culture," with a list of select varieties for exhibition and for conservatory decoration. By John Bradner, of Arley Hill Nursery, Bristol. Yeovil, 1885.

"Prize Essays on Chrysanthemum Culture," and rotation of vegetable crops. By John Breen, Bromborough, Birkenhead, Cheshire. Awarded by the Liverpool Horticultural Society, 1884-85. Bolton, 1886.

"Catalogue of Chrysanthemums." Prepared by a specially selected Committee of the National Chrysanthemum Society. London, 1886.

"The Chrysanthemum Annual, London, 1887-90.

L. H. B.

NITRATE OF SODA FOR MANURE, AND THE BEST MODE OF ITS EMPLOYMENT. *By Joseph Harris. Pp. 96. Published by the Author. 10 cts.* This is a careful compilation, with comparisons, of the experiments that have been made by different investigators with nitrate of soda on various crops. The conclusions are clear; but care must be used, as the author points out, in the use of nitrate of soda, on account of its extreme solubility, and the vigor with which it starts both crops and weeds alike. The ideas set forth in the pamphlet, as to nitrification, are quite in accord with the views of the best authorities on the subject, and the book is well worthy of consideration.

H. S.

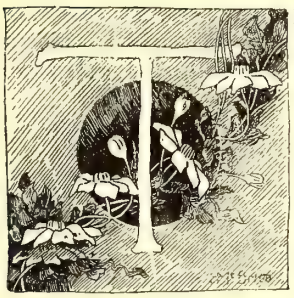
CYPRIPEDIUM MASEREELIANUM. One of the best new hybrids.

# The American Garden.

*Vol. XII.* *FEBRUARY, 1891.* *No. 2.*

## GOVERNMENT SEEDS.

AN ACCOUNT OF THE NATIONAL SEED DISTRIBUTION, BY THE EX-CHIEF OF THE SEED DIVISION.



THE foundation of the world's prosperity is an abundant crop. A prime basis for a good crop is good seed. Good seed means vital seed, fixity of type, fecundity of product, and adaptiveness to locality. The reliable seedsman should furnish the first three, and the grower must determine the most suitable locality by experience. Pure seeds are cheap at current prices, but imperfect ones are dear at any price. The primary object of the distribution of seeds by the Department of Agriculture to those engaged in agricultural pursuits, is to give increased value to production by the introduction and distribution of improved varieties that will increase the annual average yield of the staple crops of grain and vegetables, and more rapidly and more generally introduce the very best varieties of seeds into new states and territories, as well as into the older ones, where the annual average crop is being diminished by seeding with unselected and inferior seed. The practice of securing selected seeds from foreign countries, and from localities in our own where, by careful selection, breeding and hybridization they attain their greatest perfection, and sending them to be used in less favored localities, is in full accord with the best attainable light on the subject. In the effort to improve a variety of wheat, for instance, the interests of the farmer, the miller, the baker and consumer are all to be considered. The field for extensive inquiry is an ever-enlarging one. To aid in this important work, the system of general distribution by the government was established, that the merits of well bred, fully ripened, perfect seed could be tested in different localities and soils, so that both the quality and quantity would be improved and increased. The results attained justify the statement that in no department of the general government has the expenditure of so small an amount been productive of as much good as that expended in the introduction and dissemination of valuable seeds and plants. The constantly increasing number of requests for Department seeds is the best evidence that they are of value, and are needed. When the people cease to be dependent for their existence upon the products of the soil, it will then be time to relax every effort which tends to increase those products. When the Department of Agriculture ceases its efforts in this direction, which the masses of the people have so unqualifiedly approved, and which have been so beneficial in promoting the public interests and the health and happiness of the American people, it will then be ample time to undo the beneficent action of the framers of the organic law creating the Department of Agriculture.

### THE SEED AND PLANT DISTRIBUTION.

During the administration of President John Quincy Adams, the consuls of the United States were instructed to procure and forward to the State Department such plants and seeds as they deemed most desirable for trial in this country. The first distribution of rare seeds and plants was made by Hon. Henry L. Ellsworth, the first Commissioner of Patents, after the re-organization of that office after 1836, before any action had been taken by Congress. Many members, however, came to the aid of the Commissioner, and cheerfully tendered to him the use of the franking or free postage privileges accorded to

them. Improved varieties of wheat, corn, etc., were sent out, and the benefits to agriculture were fully attested by numerous testimonials from all parts of the country. In 1839 Congress appropriated $1,000, to be taken from the Patent Office fund, "for the purpose of collecting and distributing seeds, prosecuting agricultural investigations and procuring agricultural statistics." In 1840 30,000 packages of seeds were distributed and statistics were compiled from the returns of the 6th census and other reliable sources. The annual appropriations from 1842 to 1854 barely exceeded $5,500. In 1848 the quantity of seeds distributed amounted to 75,000 packages. In 1854 the annual appropriation for the distribution of seeds and cuttings was increased to $35,000 and the amount has since been increased from time to time, until it is now $100,000, which is an amount by no means proportionate to the increase in the number of people now engaged in agricultural pursuits.

On the 15th of May, 1862, the act establishing the Department of Agriculture became a law, and President Lincoln appointed Hon. Isaac Newton as the first Commissioner. In 1863 the number of packages of seeds distributed was 1,200,000, and of bulbs, vines and cuttings 25,750. It is a noticeable fact that the administration of the first Commissioner has been the only one during which a distribution of plants, shrubs, vines and cuttings was systematically carried on, the average distribution amounting in the three years following to 37,000 packages annually. During the commissionership of Hon. Horace Capron, a special distribution of seeds to "meteorlogical observers" was made, instead of the distribution of plants, and the same was continued during the administration of Hon. Frederick Watts. In 1877, when Hon. William G. LeDuc was appointed Commissioner, the distribution to the "meteorological observers" was discontinued and one to "Grangers and special farmers" was instituted in its stead. Upon the accession of Commissioner Loring to the office, the distribution to the "Grangers and special farmers" was cut off, and that to Senators, Representatives and delegates in Congress proportionately increased. When Hon. Norman J. Colman was appointed Commissioner, the quantity to members of Congress was continued and slightly increased, as was the miscellaneous distribution ,and a special distribution was made by him to "Experiment Stations and Agricultural Colleges" and to "Agricultural Societies." The following tabular statement shows the kinds and quantities of seed issued from the seed division of the Department of Agriculture, under the general appropriation act of Congress, from July 1, 1888, to June 30, 1889.

| Description of Seeds. | Varieties. | Senators, Representatives and Delegates in Congress. | County statistical correspondents. | State statistical agents. | Miscellaneous applicants. | Experiment Stations and Agricultural Colleges. | Agricultural Societies. | Total. |
|---|---|---|---|---|---|---|---|---|
| | | *Packages.* | *Packages.* | *Packages.* | *Packages.* | *Packages.* | *Packages.* | *Packages.* |
| Vegetable | 163 | 2,967,088 | 175,120 | 51,946 | 503,666 | 3,648 | 8,756 | 3,710,224 |
| Flower | 144 | 215,001 | 20,160 | 3,720 | 68,844 | ..... | 82 | 307,807 |
| Honey Plant | 1 | 32 | ..... | ..... | 417 | 173 | 372 | 994 |
| Tobacco | 18 | 105,212 | 66,600 | 4,781 | 8,293 | 337 | 1,024 | 186,247 |
| Tree | 6 | 32 | ..... | ..... | 643 | ..... | ..... | 675 |
| Sunflower | 1 | ..... | ..... | ..... | 3,222 | ..... | 290 | 3,512 |
| Pyrethrum | 1 | ..... | ..... | ..... | 9 | ..... | ..... | 9 |
| FIELD SEEDS. | | | | | | | | |
| Wheat | 4 | 541 | ..... | ..... | 2,141 | 107 | 148 | 2,937 |
| Oats | 2 | 2,281 | 3,524 | 286 | 1,317 | 218 | 687 | 8,313 |
| Corn | 10 | 11,546 | 3,518 | 438 | 4,577 | 365 | 815 | 21,259 |
| Barley | 1 | 1,173 | 50 | ..... | 220 | 36 | 53 | 1,532 |
| Buckwheat | 1 | 10 | ..... | ..... | 513 | 48 | 116 | 687 |
| Rye | 1 | 67 | ..... | ..... | 169 | 25 | 50 | 311 |
| Sorghum | 39 | 478 | 214 | 178 | 1,834 | 734 | 2,872 | 6,310 |
| Kaffir corn | 2 | ..... | ..... | ..... | 404 | 214 | 496 | 1,114 |
| Broom corn | 1 | ..... | ..... | ..... | 215 | ..... | ..... | 215 |
| Turnip | 10 | 399,113 | 109,872 | 23,580 | 10,536 | 732 | 4,176 | 548,009 |
| Sugar beet | 2 | 365 | 196 | 123 | 1,436 | ..... | 64 | 2,184 |
| Mangel-Wurzel | 1 | 3,430 | ..... | ..... | 1,078 | ..... | 77 | 4,585 |
| Grass | 9 | 10,441 | 345 | 216 | 3,551 | 213 | 615 | 15,381 |
| Clover | 7 | 10,512 | ..... | ..... | 2,457 | 146 | 378 | 13,493 |
| Millet | 1 | ..... | ..... | ..... | 108 | ..... | ..... | 108 |
| Teosinte | 1 | 90 | ..... | 683 | 725 | 46 | 158 | 1,702 |
| Forage plants | 6 | ..... | 143 | 84 | 852 | 356 | 1,312 | 2,747 |
| TEXTILE SEEDS. | | | | | | | | |
| Cotton | 6 | 4,700 | 5,328 | ..... | 1,428 | 174 | 489 | 12,119 |
| Ramie | 1 | ..... | ..... | ..... | 38 | ..... | ..... | 38 |
| Grand total | .... | 3,732.112 | 385,070 | 56,035 | 618,693 | 7,572 | 23,030 | 4,852,512 |

The average weight of the seeds distributed through the mail by the Department of Agriculture each year, for the last five years, ending with June 30th 1888, was 400,000 lbs., or 200 tons. The official, clerical and working force required to carry on this work aggregates about one hundred persons, of whom about ninety per cent. are laborers employed by the day.

VALUE OF THE SEED AND PLANT DISTRIBUTION TO THE COUNTRY.

The following, taken from the annual reports of the Commissioners to the President, indicates the value of the distribution. The first Commissioner (Newton, 1863) says: "The dissemination of sorghum and imphee seed has been worth millions of dollars to the country." The second Commissioner (Capron, 1868) says: "The result of a single importation of wheat has alone been worth more than an annual appropriation for the whole Department. If but a tenth of the seed distributed is judiciously used, the advantage to the country may be tenfold greater than the annual appropriation for Agriculture." In 1870, J. R. Dodge, Statistician and Editor of the Department reports at that time, says: "While the cost of the seed distribution in 1869 was but half a dollar for each thousand of the people, there is reliable evidence that a single specimen of grain in one of the thirty-seven states has realized in enhanced production ten times the amount expended for all seeds sent to all the states that year." The third Commissioner (Watts, 1871) says: "The increased production of wheat, oats and grasses by reason of the distribution of new and improved seeds, pays more than ten times the whole amount expended by the Government in this Department, and such is the appreciation of this by the farmers of the country that the demands upon us are increasing to a degree beyond our ability to supply." The fourth Commissioner (Le Duc, 1878) says: "The increased production per acre by the Excelsior White Schönen oats some years since was 2.5 bushels per acre, and a like increase is reported from a distribution of the Board of Trade oats in the northern and the Rust Proof in the southern part of the country during the past two years. But the average increased yield fairly attributable in like period to improved varieties of seed would amount to forty million bushels, now worth $15,000,000. Taking the last three years as compared with the three previous years the increase was two bushels per acre. This in forty millions acreage yearly would be eighty millions of bushels increase, or a gain to the country (at present prices) of about $80,000,000 per annum."

A prominent agricultural writer in speaking of the benefit of the "seed distribution" says: "A great deal of good has been done by the Department of Agriculture. The introduction of the sorghum plant is a noticeable example, for the value of the crop, according to the census of 1880 was $11,000,000. Scores of varieties of most excellent seeds have been put within the reach of the masses of the people." Maj. R. L. Ragland, of Virginia, says: "The beneficial results arising from the introduction of the Fultz wheat, sent out by the Department has, every year since its dissemination, more than paid the whole cost of the Department. A crop of Fultz grown by me the third year from seed originally received from the Department gave twenty per cent. in yield over the old varieties, and sold for a profit of $561 over what could have been realized from the old kinds."

Maj. Henry E. Alvord, then Director of the Houghton Farm Experiment Station, in a report to the Department dated May 4th 1886, says; "The seeds received this season, as a whole, for the first time in my experience with the Department, answers the definition of new and useful." Professor E. H. Jenkins, Vice Director of the Connecticut Experiment Station says; "The seeds have been of good quality, not more failures than we expect from those of our seedsmen." Dr. C. A. Goessmann, Director of the Massachusetts Experiment Station at Amherst says: "The seeds have been of good quality, and in several instances of particular interest to our locality."

The following extracts from letters received at the Department in 1887 from the few of the many recipients of seeds, are but a fair sample from the hundreds received each year:

"When I compare the vegetables that are now in our market with the market of forty years ago, there is a marked difference, and I believe the distribution of seeds by the Government has been a potent factor in making the change." "We have found all seeds sent to us from your Department exceptionally clean and of good germinating qualities." "All seeds received from the Department have germinated well, and proved true to description. I consider the distribution of great value to this country, as it places new and desirable varieties in the hands of people in different localities." "The garden seeds received from you compare favorably with those received from our best seedsmen, and possess the advantage of being more certain to germinate." "I am confident that the system of distribution by the Department of Agriculture has not only introduced many new

and valuable varieties, but has been the means of improving standard seeds." "After thirty-five years experience as gardener in Louisiana, these seeds are the best that I have ever planted, and give the most satisfactory results."

A great number of valuable economic plants and varieties of fruits have also been distributed, and successfully grown in localities to which they were adapted. The most notable instance, perhaps, is that of the introduction of the Bahia, or, as it is now generally known, Washington Navel orange, into California. This is now conceded to be the best variety produced in the United States. Its introduction is said to have been worth, to California alone, more than all the Department of Agriculture has ever cost the country.

METHOD OF PURCHASING SEEDS.

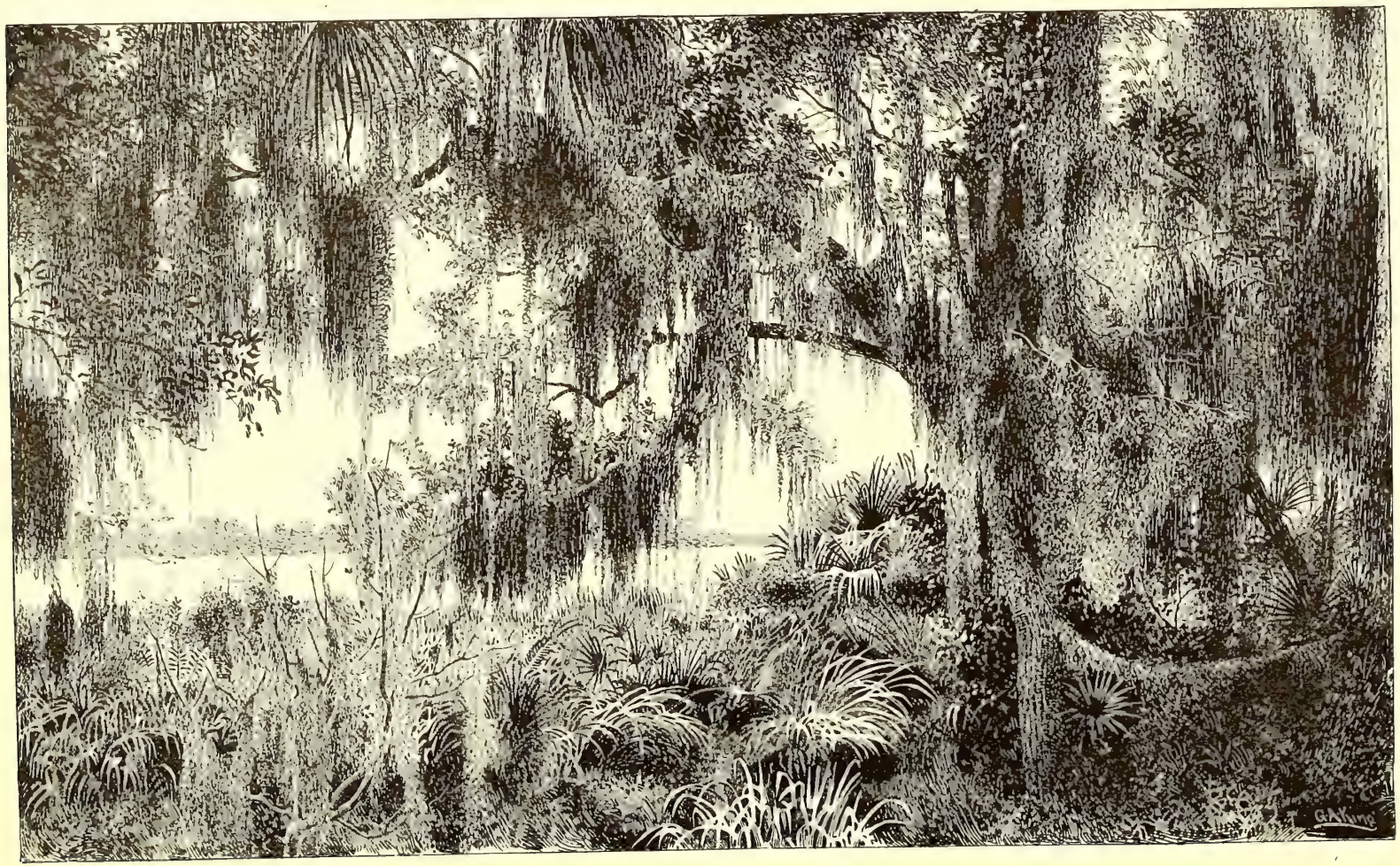
Prior to March 7th, 1889, when Hon. J. M. Rusk, Secretary of Agriculture, assumed the duties of that office, the method of purchasing seeds was that of receiving bids from responsible seed growers and seed firms, who were required to give a guarantee that the seeds furnished would not only be true to name and of good germinating quality, but also cleaned with extra care so as to be free from weed seeds or eggs or larvæ of injurious insects. Since September, 1885, all seeds received by the Department, are tested not only in a seed tester, but in the plant propogating houses, and when necessary, by either the entomologist or botanist. If the guarantee is not verified they are promptly rejected. The average germination of all seeds accepted has been 93 per cent. When, however, the percentage in those varieties which are somewhat difficult approximates 75 to 85 per cent., the seed is regarded as being of sufficient value to warrant its purchase and distribution. In the test of flower seeds, the percentage usually ranges somewhat lower.

The present method of purchasing seeds which is undoubtedly an improvement over the former method, is that of employing a special purchasing agent, whose duty it is to visit personally different sections of country, and inspect, as far as possible, the product of which seeds are offered to the Department, and to look up such as seem to possess specially desirable characteristics.

The seed-testing apparatus now in use, which is often called the "Geneva tester," consists of two heavy block-tin pans, 17 inches in length by 12 in width and 2¾ in depth. These pans are painted inside and out. Two and one-eighth inches from the bottoms of the pans, a ledge half an inch in width is soldered to the sides. It is upon these that the ends of the brass rods rest which support the V-shaped pockets which reach nearly to the bottoms of the pans. The brass wires, No. 9 size, are each 11¾ inches in length. To make the pockets, take two strips of unbleached thin muslin, each 10½ by 2½ inches, and turn a hem $\frac{7}{16}$ of an inch on each; then stitch the two pieces together 1¼ inches from the unhemmed edge. The supporting rods are passed through the hems and project half an inch beyond the ends of the pockets. The bottoms of the pans are covered to the depth of half an inch or more with water, so that the lower edges of the pockets come in contact with it and the seed is kept moist by means of capillary attraction. The seeds to be tested, numbering 25, 50 or 100, are placed within the muslin trough and moistened, and each pan is then placed near the window and each is covered with a heavy pane of glass. The date the test is begun and closed is carefully noted, as well as the per cent. of the seeds that have germinated. For use on the farm, for determining the vitality of corn, grass, clover and other seeds, any comparatively shallow pan will answer the purpose, provided the depth of the pockets is diminished, as the ends of the rods can rest on the sides of the pan, and an ordinary pane of glass can be used as a cover to retain the proper degree of heat and moisture. By this method, the proper degree of ventilation will be given, and the side ledges two and one-eighth inches from the bottom of the pan can be dispensed with. If the pan is supplied with water, the plants will continue to grow, and the pockets, through which the roots will have penetrated, can, after the wires are withdrawn, be subdivided with a pair of scissors, and the plants be transplanted with the pieces of cloth, and their growth will thereafter be rapid and continuous if the season and the necessary conditions are at all favorable. By this method, not only can the purchase of worthless seeds be obviated, but if already purchased, the proper amount of grass and other seeds to sow to the acre may be definitely determined, even though one quarter or third of the seed possesses no vitality whatever.

METHODS OF DISTRIBUTION.

The present method of distributing the seeds is clearly indicated in the tabulated statement of the 1888-9 distribution. The question as to the best method has been a vexed one with each successive Commissioner of Agriculture since the Department was established. Commissioner Newton, in his fifth annual report, of 1866, suggested that if members of congress would set apart a considerable portion of their quota now distributed to individuals, to be



A Bit of Nature's Drapery—A Florida Scene. (See page 70.)

divided among the state, county and local agricultural and horticultural societies, they would reach those who would more fully appreciate the seed, and make it to the interest of the farmers to connect themselves with such organizations.

In line with the previous suggestion, I find on page 213 of the Department report for 1873, the following: "A plan adopted by an agricultural society in Tennessee is a very good one and worthy of imitation by communities as well as by other societies of a similar character; that is, of requiring every member who receives seeds for experimenta purposes from the Department, to return to the society at least as much as the quantity received if experiments turn out favorably. In addition to having the seeds of valuable varieties on hand for seasonable distribution, the advantages of gradual adaptation are gained."

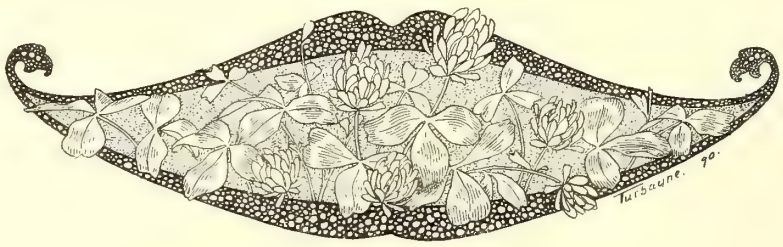
Another plan suggested is that of having each congressman who resides in an agricultural district select six or twelve intelligent farmers, and divide his quota of field seeds equally between them, with the agreement on their part, that after the second year's crop is harvested, one-half of it shall be sold, at the prevailing market price of such product, to farmers and planters who reside within the counties composing the congressional district, and that a record of such sales, giving the name and post office address of the buyer, shall be sent to the Secretary of Agriculture, that it may be entered upon the records of the Department.

The method that has been suggested of making each experiment station a seed distributing centre for the state does not seem to be a feasible one, as it would necessarily interfere too much with their special lines of work, as well as be a more expensive method than the present one.

The Seed Division, as now conducted, is not a mere seed warehouse. It is something more. The annual reports which have emanated from it since 1884 indicate this. They teem with interesting facts that are of practical value. They show what new varieties of seeds have been distributed and the results effected. The question as to what seeds are best adapted to different localities, even in the same latitude, but affected by various altitudes, winds and ocean currents, is becoming one of no small importance, and points to the practical benefit of judicious care in the selection of seeds to be planted, and great watchfulness as to results.

We are distinctively and pre-eminently a nation of farmers, inasmuch as not less than 44 per cent. of the entire population is engaged in rural pursuits. General Washington and the presidents who immediately succeeded him in the early history of our country urged upon both houses of congress the importance of placing agriculture as well as commerce immediately under the fostering care of the government. Will not the people's representatives recognize the fact that our welfare as a nation depends largely upon the better development of American agriculture? In the solution of the agricultural problems which are of so much importance in a country extending through so wide a range of latitude, a climate so diversified, and with agricultural interests the greatest in the world, the Department of Agriculture must ever be an important factor.

WM. M. KING.



# A BIT OF NATURE'S DRAPERY.

NEARLY all tropical countries abound in wild jungles which to the eye of the lover of nature are always enchanting. Along the southern coasts of our own United States may be found scenery which is in no wise inferior to that of similar character in other countries. It is not so strictly tropical as some, but there are palms of several species, and exogenous trees of stately proportions, bearing orchids, and an undergrowth of creepers and shrubs which make a mass well nigh

impassable, except as one's way is cut out with knife and axe.

Several species of the genus of air plants known to science as tillandsia are found growing upon their branches, both living and dead. Some resemble the pineapple in leaf and manner of growth, and bear handsome flowers. But to my mind there is no other one species of plant, either terrestrial or aerial, that goes so far toward making up the beauty of this region as *Tillandsia usneoides*, which is commonly called "Long Moss." However, it is not a moss of any kind, and radically differs from all the mosses in having true flowers, although they are rather inconspicuous. If closely observed at the proper season, pods nearly an inch long and the thickness of a darning-needle will be found which open and set loose upon the wind a number of seeds with downy attachments. These catch upon almost any obstacle and germinate in the moist air. Small pieces of the old plant become detached in various ways and grow wherever they find lodgment.

The branches and leaves are threadlike, soft and pliant like moss. The natives gather large quantities of it, and by soaking it in water, the outer parts are rotted, and when dried and beaten off the remaining part resembles black horse hair in color and texture, and is used for stuffing cushioned furniture.

A common error is to believe that this plant is a parasite instead of a mere epyphite. It will grow upon a dead tree or branch as well as upon one that is alive. All its sustenance is obtained from the air, and this must be moist and warm as it will die in that which is either dry or cold. A little frost will not kill it, but freezing, if at all severe, is certain death. Long bunches hang from almost every available support, and the quiet gray color harmonizes beautifully with the green of other vegetation.

As the wind sways these long tresses with noiseless grace, the drapery of the loom is put to shame. Nothing in nature is more soft and restful to the eye. During a trip in southern Florida some two years ago, I took a photographic view near Ormond, on the east side of the Halifax river, which is reproduced for the readers of THE AMERICAN GARDEN (page 69). If it gives them pleasure I shall be glad, for a joy that is shared is not divided, but doubled.

*Washington.* H. E. VAN DEMAN.

# WESTERN STRAWBERRY NOTES OF 1890.

THE STRAWBERRY season of 1890 has been peculiar in many respects, notably in the poor and very inadequate results from the crop and the unusually limited growth of the plants producing it.

The supplies reaching St. Louis, Chicago, Kansas City, and other western markets were received from Florida, Louisiana, Mississippi, Tennessee and Arkansas. The condition of the fruit varied from bad to worse. Some reached these markets in fair to good condition, for which the growers may have realized something beyond the cost of production. This was the exception. As the season advanced, supplies were received from points nearer—Kentucky, Ohio, Indiana, Missouri and southern Illinois—the fruit arriving in better condition, apparently; but the poor results continued, for the fruit would not stand up. The crop was large, which, with heavy receipts, culminated in disaster after disaster. There were no fancy prices reported which might entice the unwary shipper. Immense quantities never reached a buyer, but went to feed the fishes in the lakes and rivers.

The planting season is over when the crop is being harvested, else the amount would have been curtailed. In this respect, Dame Nature, however, came to the rescue, and we in this vicinity and over a wide scope of country experienced a severe and long-continued hot and dry summer.

The planting season here was delayed on account of frequent rains and unfavorable weather till near the first of May. The soil was full of moisture, and plants set grew rapidly, making runners as usual; but this did not continue, and the result was not one plant where fifty were confidentially expected. Many young plants, together with those set, perished outright. Some varieties did better than others, all receiving the same treatment—I mean with regard to going through the past hot and very dry summer.

With mine, I place Wilson and Downing, of the older varieties, at the head of the list in this respect. Of the newer varieties, Haverland, Bubach No. 5 and Warfield No. 2 did best, as they also did in Missouri and Ohio, according to reports. Of Parker Earle, Eureka and Princess, I did not lose a plant. Gandy, Gipsy and Miami came next in order, as also Cloud. Hoffman and Burt disappeared entirely. Of the older varieties, Capt. Jack and Sucker State held their own with Downing and Wilson.

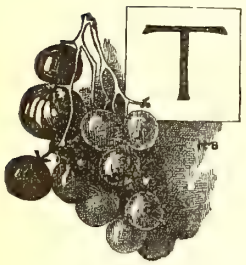
One season's trial with any variety is not enough to establish a good reputation, yet it counts one in the trial. The Warfield No. 2 makes one of the best appearing berries, and carries well long distances. It

is firm and glossy, and the seed showing at the surface gives it character and makes it attractive. Sucker State, which I planted alternately to fertilize the blossoms of Warfield No. 2, yielded a moderate crop of nice, good-sized berries. It does fairly well in a matted row two feet wide, but the Warfield must be cut down to eight or ten inches, not to exceed a foot. It is an early-blooming variety, and should have some such variety as Belmont planted with it, at least in every third row.

Having had some experience in growing strawberries in Florida, I will briefly give some of my observations. To obtain an early maturing crop for northern markets, plants should be set before the close of the rainy season, say during the latter part of July or in the beginning of August. The plants will then become established, and in September cultivation can be given and vacancies filled. Unlike at the north, these plants make no runners till near the close of the fruiting season; hence they are easily kept clean, and they grow best in hills, forming large stools a foot or more in diameter. The Neunan, Hoffman, Wilson and Sharpless succeed there, and some of the newer varieties ma be found adapted to the soil and climate.

*Madison Co., Ill.* E. HOLLISTER.

# RAISIN GROWING IN CALIFORNIA.



THE FACT has been mentioned that a considerable number of women have undertaken raisin culture in this State. Some with the necessary amount of money and the needed executive ability made a grand success by personally *overseeing* the practical work. Others, with hired labor alone have planted hundreds of acres of raisin grapes, and have made fine profits. This could be done in the past, when the number of Chinese in California made labor cheap and abundant. Since the passage of the "Chinese Exclusion Act" all this has been changed, and some of our experienced raisin-growers believe that raisin culture on a large scale can no longer be made profitable. It is even feared that the older raisin-growers will suffer loss this year from the scarcity of labor. Raisin culture, for only three or four months of the year requires a large number of extra hands; and as all vineyards are short at the same time they cannot always be obtained. There has been very little trouble of this sort so far. But the great vineyards will be confronted with the labor question this season, and if such wild plantings as are being made now continue, the raisin-business will "be run into the ground." Labor cannot live throughout the year on four months' work. Yet raisin culture in California, with proper soil and climate, is a very sure and profitable industry.

Then what are we to do? What is the proper remedy for all this? The answer is simply, small vineyards, from 5 to 20 acres in extent, for each family, the family owning the land and doing all this work themselves. A man and his wife, with a fine lot of girls and boys—and all good families should have a whole lot of such—could, if they would all work, make a fine living and save money besides. If twenty acres are being worked, ten may be planted with Muscat grapes, with two or three vines of a dozen other varieties for home use; five acres with other fruits, all very profitable; and the other five acres may be occupied by the house, farm and garden. Raisin culture is one of the surest and simplest of California's industries. A man of ordinary intelligence can easily learn all the details from his neighbors. But he must do his own work; and in the future the grower himself must gather and dry his grapes, put them in the "sweat boxes," and then sell them to the packer.

The great landholders of the San Joaquin Valley realize what profits can be made in the raisin industry, and are dividing their sheep ranches into tracts of ten or more acres. Though the prices asked per acre seem too high to the Eastern man, nevertheless they are not, for more money can be made on ten acres of this land, under irrigation, than can be made on 160 acres in Illinois or Iowa, and that with one-third the hard labor.

In order to reduce these seemingly high prices, the Southern Pacific Railroad Co. established a colony agency, and bonded a large amount of land besides its own immense holdings, and is now selling, to actual settlers only, tracts of 20 or more acres on most favorable terms as to time and contracts. If the settler will work and improve, the company will help him in every reasonable way, and give him a chance to pay for his place from his crops. The price of a 20-acre plot of carefully selected land is about $900. Fine colonies from Holland, Sweden, England, and from the Eastern States, have already been made, and they are all doing well, showing that the labor question may be solved in this manner, and that raisin culture is still and will almost surely remain a very profitable industry. D. B. WIER.

*Sonoma Co., California.*

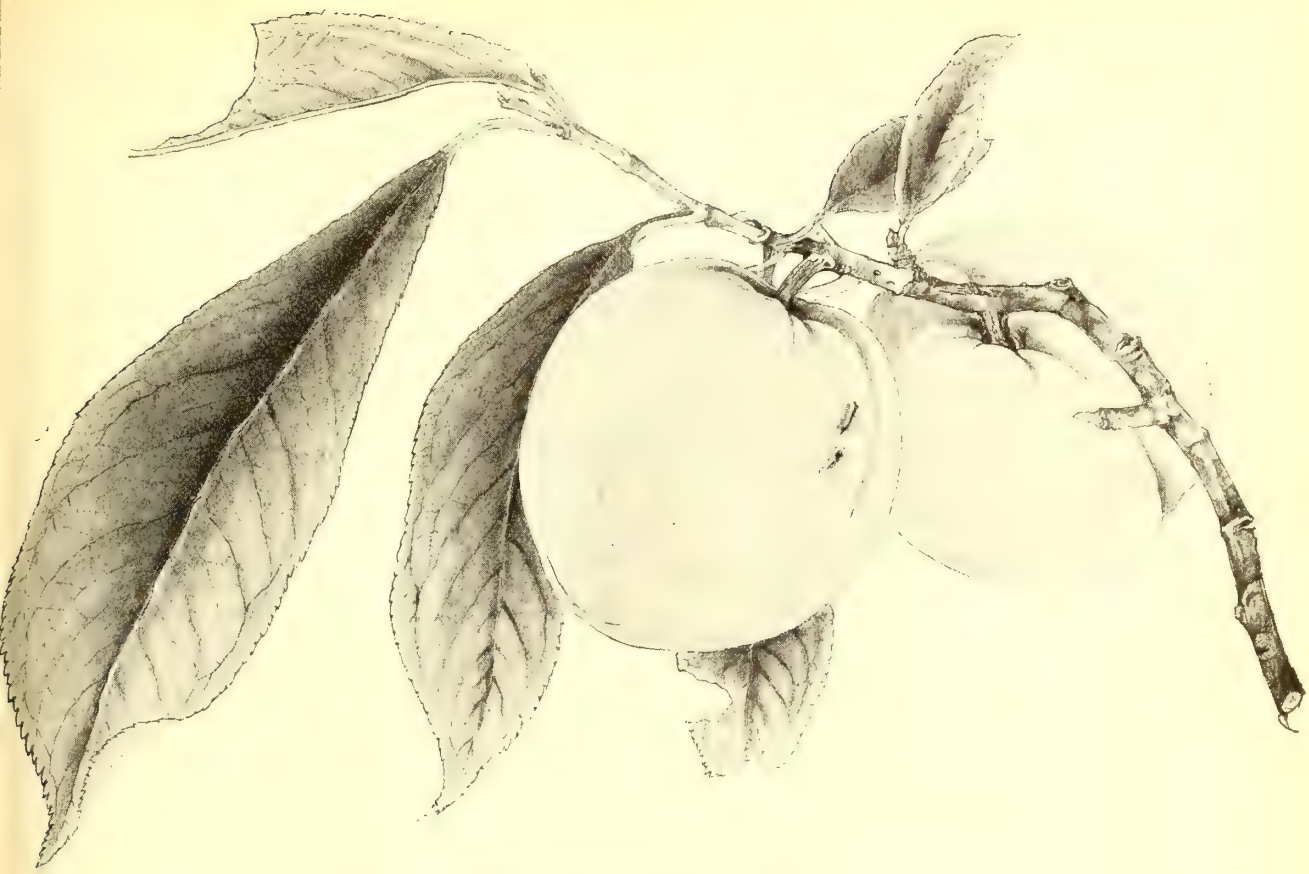


FIG. 1. SHIRO-HATANKIO PLUM. FULL SIZE. (See page 75.)

# THE ECONOMIC PLANTS OF JAPAN—II.

THE STONE FRUITS—OTHER TREE FRUITS.

JAPANESE PLUMS.—No fruit of recent induction has attracted more attention than the few varieties of Japanese plums brought here some years ago, and which of late years have been so extensively advertised and quite generally planted whereever they can withstand our winters. They are valued both for their size and for their quality, two desirable characteristics which are sadly lacking in most of our native American plums. It is therefore no wonder that the advent of these newcomers should be hailed with joy by all lovers of luscious plums. The wonder is rather that our enterprising nurserymen and plum-growers have apparently been content with these two or three varieties, and that they have not instead gone in search of more and perhaps hardier plums of the same kind; for it might reasonably be supposed that a country which could produce those we have would be likely to have others equally worthy of notice. Such, at any rate, is the fact. There are many varieties in Japan, whieh are fully equal to the so-called Kelsey, Ogon and Botan, which are already known here. Let him who doubts this visit the fruit stands in the Japanese portion of Yokohama during June and July. He will be gratified by the sight of a greater collection of varieties than can be found in any horticultural exhibit in this country. Tokio is also well supplied with plums at this season, and so are other towns throughout the country; but the region about Yokohama and a little southward is especially noted for its plums.

There is much uncertainty in regard to the origin and parentage of these plums. They have been there for many centuries, and the varieties differ so much from each other that it is difficult to trace their affinities. It

is, however, believed that *Prunus triflora*, Roxb.* is the parent of all the Japanese varieties which have long stems, and this includes all the best plums of the country. The species is recognized in a small red plum called the Sumomo, which is very commonly cultivated. It is one of the earliest plums to ripen, is nearly round in shape, and usually bright red in color. It is juicy and sweet, and owing to its very small stone it has much flesh for its size. Fig. 2 is a faithful representation of the Sumomo. The tree is of good size, reaching a height of from twenty to thirty feet, the top being rather close in its growth. The short branches are inclined to be slightly thorny, the bark rough, and the young shoots brown. The foliage is dense, the leaves are rather long, with the margin finely serrated. The flowers are long-stalked, white, and three or more appear in a cluster from each bud. This little plum is a favorite, and in its season is more abundant on the fruit stands than any other kind. In quality it is superior to any of our native American varieties.

Quite a number of the many other varieties springing from this species are designated by two general names, a fact which is very confusing to a stranger when he begins to study them. These names are botankio and hattankio, or bodankio and hadankio, for they are variously pronounced as regards the sound of *d* and *t*. These two names are common and are even occasionally heard in this country; but it is a mistake to suppose that they apply to two and only two varieties. They are names of two ill-defined classes of plums, and are applied rather loosely to several varieties which differ in color and size and somewhat also in shape. The only distinction between the two classes that I have been able to establish is based on the shape. The round plums are designated by the term botankio, while those of an oval or pointed shape are called hattankio. A mistake often made by foreigners, and by some natives also, is to suppose that the distinction is based on color, though it is a fact that most of the botankios are red. The name hattankio is also sometimes given to the almond, while botan is the name of the pæony, and ha-botan means cabbage, and one of the many meanings of kio, or kiyo, is large, or great. If these objects had anything to do with the naming of the plums it seems probable that botan referred to the rounded shape and not to the color, since their peonies are found in a great variety of colors, and that hattankio referred to the resemblance in shape to the almond. But as already remarked, these names are used very loosely, as it is an easy matter to find several evidently quite distinct varieties of each class for which both grower and dealer can give you no other name than botankio or hattankio, as the case may be. Sometimes again these terms may have a prefix indicative of the color, or size, or of the place where it is grown. I dwell upon this in order to correct the notion, which has become somewhat fixed in this country, that these terms each designate a single variety of the Japanese plums.

Though abundantly grown in some districts, and generally speaking they may be found all over the country, plums are not such favorites with the people as are several other fruits. Plum trees are rarely planted in orchard form, as are the pears, for instance, but they are scattered here and there about the dwelling houses, or in the gardens, wherever the situation may appear to be suitable. It is also exceptional to find trees that receive much care or training. The bearing branches are often broken off and carried away bodily. It is not uncommon during midsummer to meet a pedestrian with a plum branch, loaded with green fruit, on his shoulder. It may be a present from a friend, or it may be intended for sale, but it shows at all events that the owner has no great regard for his tree. A peculiar trait of the Japanese, which foreigners cannot comprehend, is their love for green stone fruit. The greater portion of their plums, peaches and apricots, is gathered before the fruits begin to ripen, when they are scarcely full grown. A portion, of course, reaches maturity and finds its way to the fruit-sellers in the cities, but it is a comparatively small portion of the crop. And though many of these plums and peaches are then luscious, the grown people do not care much for them; such fruit is bought and eaten mostly by children. It is a sight calculated to put one's teeth on edge to see a dignified, elderly person munch away with apparent relish at a grass green plum or peach! I once enquired of a man thus engaged why he ate his plums before they got ripe. He replied that they had the most taste while green, which was doubtless true. Another reason for this early gathering of the crop is that the unripe fruit is used in the preparation of a kind of pickle called ume-boshi, literally meaning dried plums.

For this purpose the fruit is gathered when nearly full grown and packed in casks with layers of salt; and here it remains for a certain period, generally about a month. Under this process the plums shrink, but they also soften. When they have lain in pickle for the desired length of time they are taken out, packed in small boxes, and distributed throughout the country. They are now used as an appetizer, especially early in the morning. In the tea-house the traveler is frequently offered a few of these salted green plums, with a pinch of brown sugar, as soon as he rises from his bed in the morning. They are said to assist in clearing the throat of phlegm. The taste for them is acquired, as the combination of acid and salt is not relished the first time it is tried. The town of Odawara, in the Kanagawa prefecture, some miles south of Yokohama, is especially netted for its famous ume-boshi.

Very generally the plums are colored while in pickle by means of the shiso, *Perilla ocymoides*, the red leaves

**Prunus triflora* is a very doubtful species. It is known in collections only from one to two specimens from India. If Roxburgh meant to designate the cultivated Japanese plums by this name, it is strange that he should not have left more explicit information concerning it. Professor Tamari, of Tokio, has called the Japanese plum, *Prunus Hattan* (Annals Hort. 1889, 30). Maximowicz, the chief authority upon Japanese plants, seems inclined to refer these plums to *Prunus domestica*, the common plum, but there can be no doubt but that they are distinct species. Until the difficulties are cleared up, *Prunus Hattan* appears to be the best name to use. —Ed. Am. G.

of which are wrapped about each fruit when it is put in, and they impart their color to the plums. The green fruit is also used in the preparation of vinegar. The

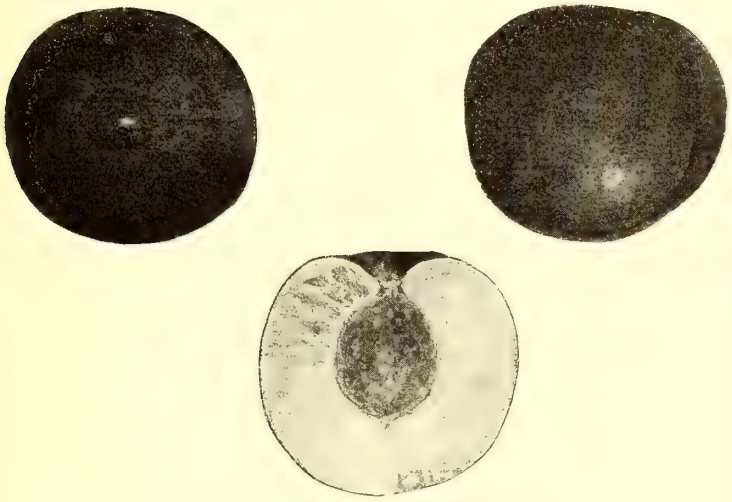


FIG. 2. SUMOMO PLUM. FULL SIZE

juice is pressed out, and becomes intensely acid when it is exposed to the air a short time. This kind of vinegar is commonly used by country people, who make it themselves.

The following are a few of the varieties of plums grown in the neighborhood of Tokio: Sumomo, a small red plum; clingstone, rather early, and of fair quality; illustrated, natural size, in Fig. 2. Shiro-sumomo, a small white plum, belonging to the same class as the above, the color being the chief point of difference. Shiro is the Japanese word for white. Shiro-togari-sumomo, white, pointed; togari means pointed, and hence the name is literally descriptive of the fruit. This is a larger variety than either of the preceding ones. Hatankio, or Togari-sumomo, red, pointed, large fruited. This is a somewhat common variety, of excellent quality. Shiro-hatankio is a white, pointed, large fruited variety, which is illustrated in Fig. 1, natural size, together with a twig and some leaves. It is somewhat less common in the Tokio market than the preceding red variety, but can always be found in Yokohama in its season. Strictly speaking, it is yellowish-white when ripe. Botankio (also name of the class), large, round, red plum. There are several varieties which differ somewhat in size and color which are merely called botankio without the use of descriptive prefixes. One of these of excellent quality, and which is also a good illustration of the class, is represented natural size in Fig. 3. The drawing was made from a rather small specimen. The plum is brick red in color, with numerous yellow dots. The flesh is juicy and the stone remarkably small. Shiro-botankio is a large, round, white-fruited variety which differs from the last only in color. Urabeni-sumomo, medium, pointed, scarlet-fleshed. Yonemomo, large, round, scarlet-fleshed. There are still many others, but not having procured detailed descriptions of them, mere enumeration here is of no value. The plums are grown throughout the length and breadth of Japan.

PRUNUS DOMESTICA, L. Jap., *Seiyo-sumomo* (literally meaning foreign plum). The varieties of this species, which is our common plum, have been introduced in Japan, but are not generally known, if known at all, beyond the environments of foreign settlements, and those regions reached by the Kaitakushi in its attempts to introduce and naturalize foreign fruits. The Kaitakushi was the name of a department of the government (commonly translated Colonization Department), which, however, was abolished long ago. Its object was to colonize the northern island with Japanese, and to this end large numbers of fruits and other economic plants from the West were introduced, the climate there being somewhat like that of central and northern Europe.

PRUNUS TOMENTOSA, Thunb. Jap., *Yusura-ume*. This is a species said to have been brought to Japan from North China. It is only a bush or very small tree, and produces a great abundance of small plums, which ripen early in the summer. The growth is branching and crabbed, for which reason the plant is also used for hedges. The outer bark peels off readily; the leaf is small, oval, serrate and pointed. The flowers are pinkish-white, showy in early spring, at which season it is a most effective ornamental plant. It blooms before the leaves are out. The internodes of the branches are very short, the flowers almost sessile, and there being two or more at each node the whole branch appears like a close flowered spike of pink. A short branch with its leaves and fruit, all natural size, is illustrated in Fig. 4

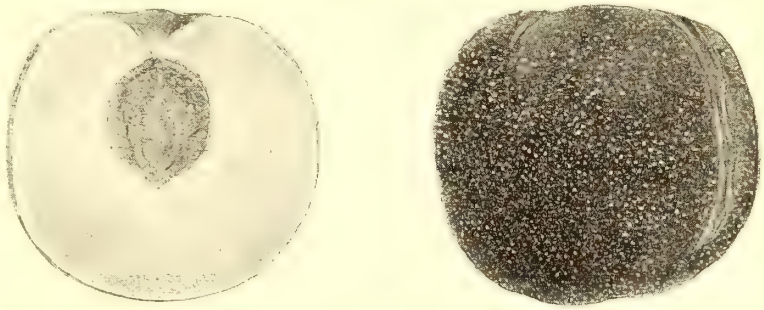


FIG. 3. A BOTANKIO PLUM. FULL SIZE.

p. 77. The fruit is scarcely as large as a cherry, and it is not unlike the morello cherry in color and flavor. It is, of course, too small to be of any value in this

country as a fruit, though it is said to make good jam. Nor does it receive any great share of attention in Japan. The fruit is, however, esteemed good, and more especially the unripe fruit, which is pickled in salt as described in the case of other plums. It is also boiled in honey and served as a delicacy. The plant is worthy of culture in the west, more particularly for ornament.

PRUNUS JAPONICA, Thunb. (*Prunus domestica*, Thunb.). Jap., *Niwa-ume*. This small shrub should not be omitted in an account of Japanese plums. It is, however, grown for ornament as well as for its fruit. There are several forms, the ornamental ones having double flowers. The varieties vary also in the size of the leaves and in vigor of growth. The fruit is a small long-stemmed plum of a sweet and agreeable flavor, but it is too small to attract the attention of fruit-growers here. The flowering forms are well-known in America.

PRUNUS MUME, Sieb. and Zucc. Jap., *Ume*, *Mume*. The fruit-bearing varieties of this species do not take a high rank; in fact, the fruit appears to be an incidental product rather than the main aim of their culture. This is the parent of the hundreds of varieties of the flowering plum, and the trees are cultivated for their flowers. The Japanese entertain a love for their plum flowers which is akin to passionate adoration. They are cherished alike in the poorest hut and in the princly mansion. No door-yard is too small or park too grand to afford space for the humble, cheerful, fragrant plum flower. The early varieties begin to bloom soon after New Year in the latitude of Tokio, and from then until the end of March a succession of bloom is kept up by the different varieties. The flowers vary in color from white through innumerable shades to dark red, and from single to very double.

As stated, the fruit is generally secondary to the blossom, but there are, nevertheless, several varieties which are grown, partly at least, for the fruit. They have been divided into two classes, based upon the size of the plums, namely, large-fruited and small-fruited. The following named kinds belong to the large-fruited class: Yoro, Hana-ka-mi, Bungo, Katayama-bungo, Kashiwagi, Naniwa-rinshiu, Yatsu-busa, Aujiku. Among the small varieties the following may be named: Gariobai, Kobai, Robai, Ko-mume, Yoshino-ko-mume, Toko-mume, Kaga.

As a a matter of fact, nearly all of the flowering kinds also yield some fruit, especially those with single and semi-double flowers. All of these plums which have come under my observation have been perfectly round, and have varied from less than an inch to an inch and a-half in diameter. In color, they are mostly green or greenish-yellow, though some are white and others red. They are all short-stemmed, and cling closely to the branches, like the peach. The majority are clingstones, and in the matter of quality they cannot compare with the varieties of *Prunus triflora*, being rather acid and lacking flavor. They are mostly gathered while green, and are made into ume-boshi by the simple process of pickling in salt, as already described.

The stone fruit which, in point of importance, follows next to the plum, as indicated by culture and general esteem, is the

PEACH. Jap., *Momo*, *Issai-momo*. The peach is an introduced tree. It was probably brought to Japan from China, and its importation took place at a very early date, as is shown by its having spread to all parts of the country, and by the number of its varieties of local origin. Peaches are not grown largely, and they are not shipped to distant markets, as is the case in the United States. For a brief season, fruit grown near-by may be found on the fruit stands in local markets, and it is also peddled about the streets for a short season in late summer. Like the plums, peaches are always gathered too early, while still green and crisp, and of course they are sour. What they would be if allowed to ripen is, therefore, merely a matter of conjecture. The Japanese do not like ripe peaches. They associate their softness with decay, and hence the reason for gathering them so early. But another reason for picking them before they are full grown may be found in the fact that they are invariably greatly injured by insects, and the crop would be a total loss to the growers if not picked green.

A codlin moth, *Carpocapsa Persica*, which has recently been named and described by Prof. Sasaki, of the agricultural college at Tokio, is extremely destructive to the peach. Ninety per cent. of the crop is infected by the larvæ of this one moth. In some districts in the Chiba prefecture, which adjoins Tokio on the northeast, peaches are grown to some extent, and are sold in Tokio, the nearest large market. Most of them are eaten out of hand green, as they are. They are, apparently, not so popular as the plum for purposes of pickling.

The Japanese never bud their peaches. Propagation always takes place either from seed, or by means of grafting. They can teach us nothing in regard to pruning, care and general culture of the peach. Some foreign varieties have been introduced, but they are as yet little known, and it is doubtful if peaches of any kind will ever be considered of much value in Japan.

The following are among the leading varieties: Wase-momo, an early peach; Nakate-momo, medium peach; Okute-momo, late peach; Kan-momo; Natsu-momo, summer peach; Aki-momo, fall peach. Two varieties, the Sumitsu-to and Han-to, have been imported from China. In addition to these, two kinds, the Koshigaya and the Matsobushi, are chiefly grown in the neighborhood of Tokio. Each takes its name from a village where it is supposed to have originated. Further inland three other kinds, Sa-momo, Gogatsu-momo and Nen-momo, are most common.

THE NECTARINE.—This fruit is rarely seen in Japan. The only variety I have seen was a large, handsome fruit which I found in the latter part of August, 1888, on a fruit seller's stand in a town named Sakata, on the coast of the Sea of Japan. The dealer did not know its name, and it was not ripe enough to judge correctly of

its quality, which, however, promised to be good. I have since learned that this variety is called Mikuni-no-momo, meaning bald peach. Its size was the most conspicuous point, for the fruit measured three inches in length and two inches across, but it was flattened on two sides. It would probably be a valuable acquisition to this class of fruits in the west.

The Japanese peach is of good size, uneven; both skin and flesh of a dark yellow, almost orange color. The skin is thickly sprinkled with minute red dots, and at times it has a decided red cheek. But it is so austere as to be almost unedible out of hand, even when fully

FIG. 4. PRUNUS TOMENTOSA. FULL SIZE. (See page 75.)

PRUNUS ARMENIACA, L. Jap., *Andzu*. THE APRICOT. —The apricot is not indigenous, but has probably also been introduced from China. It is, however, commonly known among the people, but is not extensively cultivated. It does not seem to be appreciated, and but little attention is paid to it. The illustration here given (Fig. 5) shows the only native variety that has come under my observation, though there are undoubtedly others.

ripe, being at once both sour and astringent. And even when made into marmalade its austerity clings to it to an unusual degree. The ripe fruit is sometimes dried in the sun, and afterwards steeped in alcohol for some time, before it is eaten. Soaked in this for sixty days, they are said to be good. Another way in which they are used is to soak them in hot water for some hours

and then pack them in sugar, when, after the lapse of a couple of weeks, they are pronounced excellent. There are several varieties of foreign importion equal to those found in America.

A stone fruit highly esteemed all over the western hemisphere is known in Japan only in name. I refer to the cherry. The cherry is grown by the Japanese only for its blossoms, and there are numerous varieties with most exquisite flowers of great size, and some of them even very fragrant. But the trees yield no fruit, or but a very scant crop of exceedingly small cherries, not at all fit to eat. Those cherries which may occasionally be found in the neighborhood of foreign settlements, or at the open ports, have been introduced from abroad. The fruit is not yet sufficiently known to be appreciated. The only form of the cherry tree whose fruit is used is

PRUNUS BUERGERIANA, Miq. Jap., *Inu sakura* (literally the Dog Cherry). This large tree is found wild in the mountains in most parts of Japan. The fruit is small and inferior, but it is sometimes gathered and pickled in salt, when it is eaten as a condiment or appetizer. The wood of this species is used for stamp making.

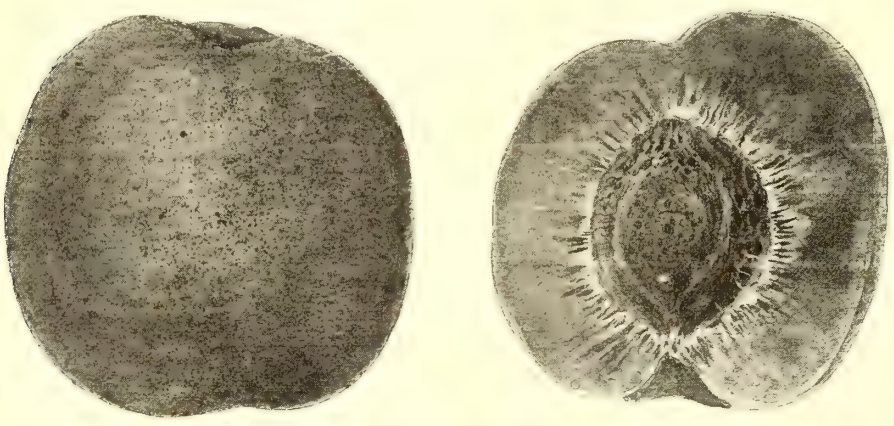


FIG. 5. ANDZU APRICOT. FULL SIZE. (See page 77.)

ZIZYPHUS VULGARIS, Lamarck. Jap., *Sanebuto-natsume*. ZIZYPHUS VULGARIS, var. INERMIS, Bunge. Jap., *Natsume*. JUJUBE. These two forms of the jujube are said to be indigenous to Japan, as well as to India and western Asia. The last named form is the one most commonly cultivated. It is a small tree, attaining a height of from thirty to forty feet. While young, the tree has an upright growth, with but little tendency to spread; but the old trees which have come under my observation have had a dense spreading top. The branches are not thorny, as is the case with some other species of the genus. The young shoots are numerous, but short, slender and pliable, and the casual observer might take a twig and its leaves early in the season for a pinnate leaf. The fruit is borne on the current year's growth. A remarkable feature of the tree is that most of these bearing shoots die back to the old wood each year, and in the spring new shoots start again from adventitious buds in the same place, producing in time a swoolen knob-like growth on the end of the old branch. Here and there an unusually vigorous shoot will appear and become permanent.

The leaves are alternate, small, dark green and shining above, and lighter below; ovate, obtuse, margin bluntly serrate, and the petiole is short. The flowers are inconspicuous, greenish yellow, appearing in small clusters in the axils of the leaves in the beginning of July. The fruit ripens about the end of September. The most common kind is oblong or oval, an inch long, three-quarters of an inch thick, brown or russet when fully ripe, and containing a cylindrical, pointed stone, or hard seed. When fully ripe, it has a very sweet, pleasant taste, but the flesh is dry and spongy, and it deteriorates rapidly after it is picked by drying up and losing what juice it has. It is abundant on fruit stalls for a short time in the fall, and may prove good for pickles and preserves.

The illustration (Fig. 6) shows a bearing twig in flower, the leaves and an average sized fruit, all natural size. The single flower which is also represented has been enlarged to show its structure. The tree is an abundant bearer and quite ornamental. At first sight it does not look unlike an acacia, with its somewhat rough bark and small, two-ranked leaves. It would be well to try its culture here, both for its fruit and for ornament. It will probably be hardy in all but the coldest regions of the United States. It is said to be much grown in northern China and in Corea, and both of these places have cold winters. The Chinese preserve the fruit in honey, and then it ranks high as a delicacy. The Japanese eat it out of hand as gathered, and they also use it in medicine.

I have seen an old and rather large tree of the sanebuto-natsume in an old garden in Tokio. It answers the description already given, except that the fruit was round instead of oblong, and in color it was light red. Had the color been a darker red, the fruit could easily be mistaken for a small Wild Goose plum.

HOVENIA DULCIS, Thunb. Jap., *Kempo-nashi*. A fruit-bearing twig with some leaves (natural size) is illustrated in Fig. 7. The specimen represented in the illustration was taken from the top of an old tree some 60 or 70 feet high, growing in a garden in Tokio. This remarkable tree is peculiar in that the flower-stems swell into an irregular meaty mass, which becomes edible and quite

pleasant to the taste after having been touched by the first frosts in the fall. It has a fruity flavor reminding one somewhat of pears, which, perhaps, suggested the name nashi. The fruit proper is a small, dry, three-celled capsule, which is entirely distinct from the edible portion, as may be seen in the illustration. Each cell contains one black seed. The edible "fruits" are quite small, but they make up in number what they lack in size. On old trees nearly every twig terminates in a seed vessel with its enlarged peduncle. The labor of gathering the fruit is considerable, and usually results in the breaking of the branches some distance from the top, because it is next to impossible to climb high enough to reach the tips by hand, and they have as yet no implement to pick them with. The task is usually delegated to small boys. As a fruit tree, it can, of course, have no great value; but coupled with the interest which this peculiarity awakens, it has merits which will render it useful for ornament and shade. As already stated, it grows to a large size. Its whole appearance bears much resemblance to our basswood. Like it, it has broad ovate leaves, quite large on young, thrifty

FIG. 6. JUJUBE. ZIZYPHUS VULGARIS, VAR. INERMIS. FULL SIZE. (See page 78.)

shoots, often measuring five to six inches long and four to five inches broad. The bark is smooth, brownish-gray; habit of growth moderately spreading, and branching much, affording a dense shade in summer. It is doubtful if it would be hardy in the extreme north of the United States.

THE FIG (*Ficus carica*, L.; *F. hirta*, Sieb.). Jap., *Ichijiku*. The fig is not a native of Japan. It is supposed to have been introduced by the Portuguese something more than two hundred years ago. However that may be, the fig tree is well known there, and is very generally distributed all over the country, especially in southern and central Japan. But, strange as it may seem the fig is not a popular fruit. It can be grown with the greatest ease and without protection, and from the character of the fruit, one would imagine it would be much cherished. Not so, however. A few trees are occasionally planted about the dwellings, and the ripe fruit may be found on the fruit stands in their season, but there is no general admiration of them. I have seen but three varieties of them, and I am unable to say whether they originated there. All three were alike called ichijiku, with some descriptive adjective to indicate size or color. One was a large purple fig of rather indifferent quality; another a small fruit of the same color, of the highest quality, and the third a small yellowish fruit, also of good quality. There are, doubtless, several other kinds in various parts of the country.

FIG. 7. HOVENIA DULCIS. FULL SIZE. (See page 78.)

THE POMEGRANATE (*Punica granatum*, L.); Jap., *Zakuro*. The pomegranate is grown rather more commonly than the fig, and is found quite as far north. It, too, is an introduced plant, probably also brought by the Portuguese from the shores of the Mediterranean. They utilize this shrub or small tree in a threefold manner. It is, perhaps, first and foremost esteemed for ornament. Its large and beautiful scarlet flowers are often seen on the flower peddlers' stands, as well as in the gardens. The flower vender carries his stock of goods on two light wooden trays, or in baskets, suspended from the ends of a pole that is slung over the shoulder. Flowering branches, often several feet long, of the plum, cherry, pomegranate and others, are thus peddled from door to door. The flowers are always cut with long stems and a liberal allowance of leaves, and they are never made into bouquets. Those which fade easily are often stuck into a joint of bamboo filled with water and tied to this portable stand, thus presenting a novel appearance.

Again, the pomegranate is valued for its fruit, and lastly, the young leaves are sometimes fed to silk worms when the crop of mulberry leaves is short. The fruit is about the size and shape of a Bartlett pear, though some varieties are more apple-shaped; purple or red-dish-yellow in color, and when ripe, it bursts open, displaying the little bags of crisp, juicy flesh, each of which encloses a seed. They pick them usually too early, as in the case of their plums and peaches, and for this reason the foreign buyer is apt to misjudge the quality of the fruit. If allowed to ripen fully, few fruits are more delicious. They have several varieties —some quite sour, others very sweet and high flavored.

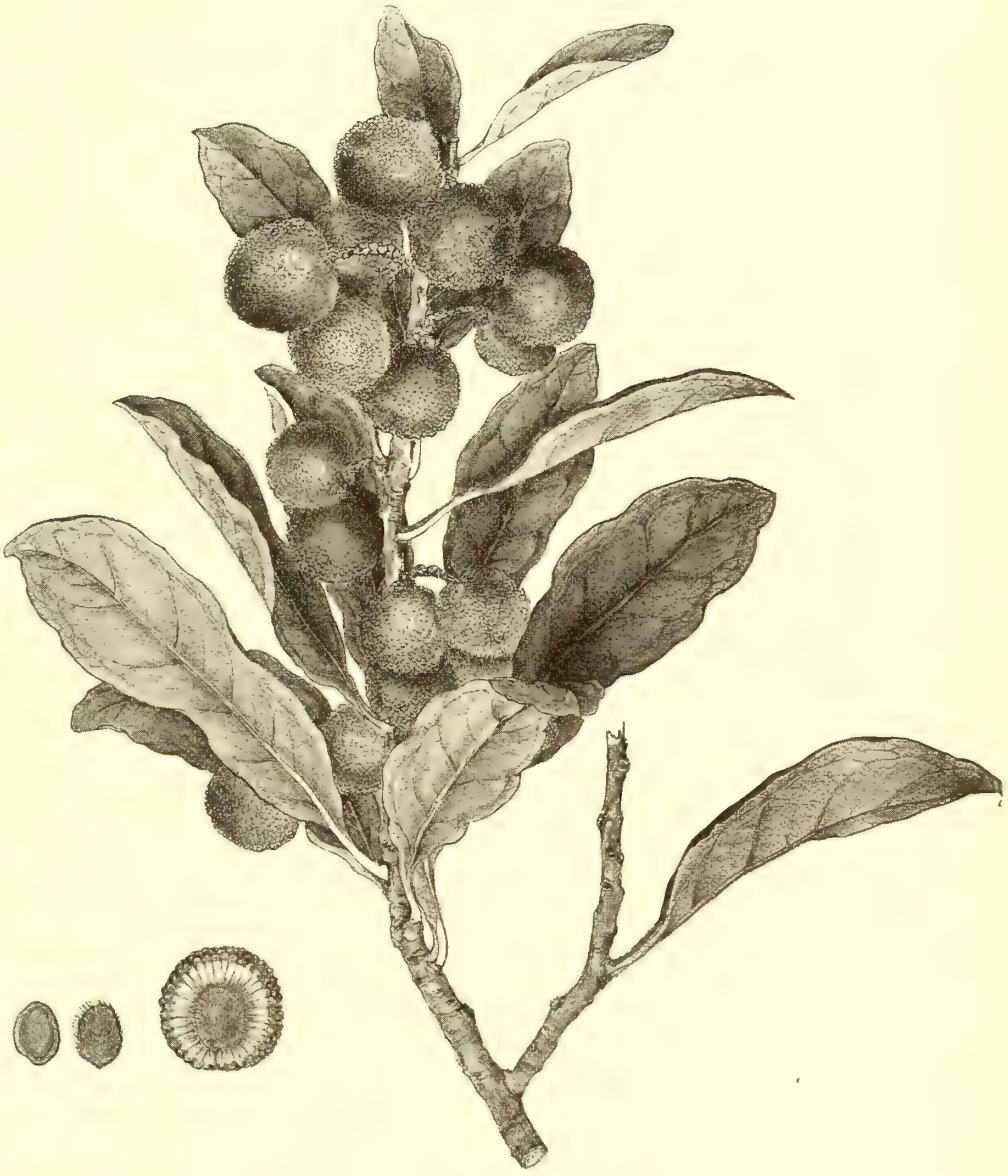


FIG. 8. MYRICA RUBRA. FULL SIZE. (See page 82.)

In this connection it may be well to mention three other fruits which are grown only in the extreme south, namely, the pineapple, the guava and the rose apple,

none of which, however, are natives of the country, but nevertheless are of some importance in the regions where they can be grown. Of the three,

THE PINEAPPLE (Jap., *Annanasu*) appears to be the most important. I have frequently seen quantities of them in the stores of certain fruit dealers in Tokio, grown on the small southern islands, and they are probably also shipped to others of the large cities which afford a market. They are even canned in the south in the same manner as in this country, and thus distributed in the northern cities. It is but just to add that neither the fresh nor the canned fruit I have had opportunity to see can compare with the fruit found in the American market in size and quality.

THE GUAVA (*Psidium Guaiava*). Jap., *Banjiro*. Though one of the fruits of the south, it has not attained the importance commercially that the pineapple has. It is said to do well there, and there is apparently no reason why the fruit should not be made into jam and canned for market, as is done elsewhere.

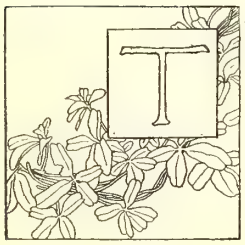
THE ROSE APPLE (*Eugenia Jambos*; Jap., *Futo-momo*) comes in the same category. All that can be said of it at present is that it can be grown there, and is so to some extent.

MYRICA RUBRA, Sieb. and Zucc. (*M. Nagi*, Cass.). Jap, *Yama-momo*.—This very pretty evergreen tree is closely related to the sweet gale (*Myrica Gale*), well known in America. It is a small tree, attaining a height of some fifteen to twenty feet, with oblong or lanceolate dark green somewhat leathery leaves. They are some three to four inches long, smooth and glistening, lighter green below and with nearly entire margins. A fruit-bearing twig with leaves is illustrated in Fig. 8, natural size. This tree, or large bush, grows especially in the mountains of southern Japan. Its name, yama-momo, indicates its habitation, as it means, literally, "mountain peach." How far north it grows wild I am not prepared to say. One Japanese authority asserts that it grows all over Japan, a statement I am unable to verify. But it is certain it is much more abundant in the south than in the central portion of the country. The largest specimen I have seen is in the botanical garden in Tokio. It is about twelve feet high, with a very dense, spreading, round head, and begins to branch a short distance above ground. It is very ornamental. The fruit when fully ripe is pleasantly acidulated and juicy. It is apparently made up of a large number of densely crowded sections, quite distinct from each other, but radiating from a small central stone or hard seed. On the specimen illustrated the fruit was red, but there are varieties with fruit of different colors. A white-fruited kind is said to be of very excellent quality, and having comparatively large fruit. The tree is commonly propagated by seed, but the Japanese assert that it can also be grafted on the mulberry. It is planted by them partly for fruit and partly for ornament, but not largely for either purpose. The bark is an important dye-stuff, and will be further mentioned in treating of dye-stuff-yielding plants.

*Kansas Agricultural College.* C. C. GEORGESON.

# NOTES FROM A GARDEN HERBARIUM—III.

MORE ABOUT THE DEWBERRIES.



THREE months ago (November issue, page 641) in describing the dewberries, I remarked that the Bartell and Mammoth varieties "are clearly distinct from the Lucretia," and referred then with considerable doubt to the type of *Rubus Canadensis*. Since then my colleague, Professor Dudley, has shown me a suite of wild specimens of the same rubus which he has collected in this vicinity. I am therefore able to make some definite notes upon it.

In order to understand these dewberries, it is necessary to draw distinctions between *Rubus Canadensis*, which comprises the dewberries, and *Rubus villosus*, the high blackberries. The chief distinction lies in the inflorescence. In the blackberries, *R. villosus*, the flower cluster is long and racemose, as shown in Figs. 1 and 2, pp. 720 and 723, December issue. In the dewberries it is essentially cymose, as shown in the accompanying illustrations, and in the frontispiece of Lucretia dewberry in November issue. Figs. 1, 2 and 3 are good illustrations of the dewberry flower cluster. The peduncles are few and erect, and the central one is the oldest. The peduncles are sometimes one, two or three in number and are so scattered as to appear to be solitary and axillary. I do not know of any other character which will separate clearly the dewberries and blackberries, but so far as I have observed, this character does. Those familiar with our brambles will here recall the description of the variety *humifusus* of *Rubus villosus*, which is characterized by 1 to 3-flowered clusters, but I am satisfied that this variety is nothing more than *Rubus Canadensis* itself. The description of the plant, as originally given by Torrey and Gray, clearly indicates this fact. Professor Britton has recently loaned me Torrey's collection of brambles, and the only plants of this variety in the collection which appear to have passed through his hands are unmistakeably *R. Canadensis*. In the Gray Herbarium there are no authentic specimens of this variety, if I remember correctly.

The general habit of the dewberries and blackberries is clearly different. The dewberries are trailing, with a tendency to root at the joints, while the blackberries are erect or ascending. But these characters seem to

FIG. 1. BARTELL DEWBERRY—RUBUS CANADENSIS, VAR. INVISUS.

be elusive in some forms, of which the dewberries I am about to describe are examples.

*Rubus Canadensis* itself is distinguished from its varieties by its comparatively weak stems, low habit, ovate elliptic and finely toothed leaflets, short and often divergent peduncles, small flowers and fruit. In cultivation, it appears to be represented only by the variety once sent me as "Lucretia's Sister," Fig. 2. I do not know that this variety possesses any merit.

The Bartell and Mammoth dewberries are distinguished from the species by a different habit, by long, erect and smoother peduncles, and by very different leaves. This variety I shall call *Rubus Canadensis*, var. *invisus*, new variety (*invisus*, "overlooked"). Stem stout and stiff, often partially ascending; leaflets much larger than in the type, broad and thin, smooth or nearly so, the teeth very large, simple and rounded, with a minute point at the end of each; peduncles long and straight; young flower buds bearing a prominent tip, formed by the connivent slender ends of the sepals; flowers and fruits much larger. All these differences are well shown in Figs. 1 and 3. The detached leaflet in Fig. 1 is an admirable likeness, considerably reduced, of the leaflets of this variety; the

FIG. 2. "LUCRETIA'S SISTER"—RUBUS CANADENSIS.

same figure also shows the ascending character of the stem.

This variety *invisus* grows in open woods here at Ithaca, where it looks very different from either *Rubus Canadensis* or *R. villosus*. Professor Dudley, who has given it considerable attention, thinks that it may be found to possess sufficient distinctness to make it worth specific rank. It is certainly more unlike the type of *R. Canadensis* than is the var. *roribaccus*.

My specimens of the Bartell and Mammoth varieties

are from the New York Experiment Station at Geneva, although I once grew them. Mr. Hunn, horticulturist of the station, writes me as follows concerning these

FIG. 3. BARTELL DEWBERRY—RUBUS CANANDENSIS, VAR. INVISUS.

berries: "The Bartell and Mammoth dewberries were received from Frank Ford & Son, Ravenna, O., May 6, 1885. The Station report of 1886 says: 'Have made a very vigorous growth of wood and yielded a few fruits. They appear to be of little value in this locality.' Report of 1887: 'There appears to be no difference between these; both have a very vigorous growth of new wood, many of the branches being from ten to fifteen feet in length. A few fruits were produced, some of which were very large. The fruits were sour and of poor flavor.' In 1888: 'These varieties were removed, in consequence of which they have not been reported on.' This year they gave considerable fruit, but of poor quality and extremely difficult to harvest. I am of the opinion that they are of but little value grown as running plants, but if grown on a trellis they are more fruitful and of better flavor, as the sun would have a tendency to make them sweeter. I have cut back the canes we have to within four feet, and shall try them on wires another season. We received this spring of C. P. Bauer, Judsonia, Ark., a variety said to be found wild in that section, which he says is very productive, fine flavor and very vigorous, running to the length of forty feet in one season (not a very desirable quality, I imagine).

Mr. Hunn has sent me a specimen of the Bauer variety, and it is *Rubus trivialis*, a species which has not been cultivated before, so far as I know.

To recapitulate: our rubuses grown for fruit, as outlined in these three papers, appear to be as follows:

I. DEWBERRIES—

Lucretia's Sister, *Rubus Canadensis*, Linn.
Lucretia, *Rubus Canadensis*, var. *roribaccus*.
Bartell, Mammoth. } *Rubus Canadensis*, var. *invisus*.
Bauer, *Rubus trivialis*, Michx.

II. BLACKBERRIES—

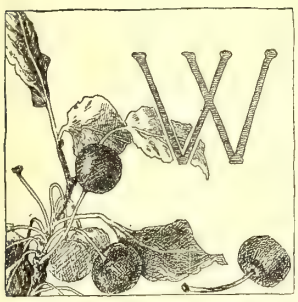
The large thick-fruited blackberries, *Rubus villosus*, Aiton, var. *sativus*.
Early Harvest, *Rubus villosus*, var. *frondosus*, Torrey.
White Blackberry, *Rubus villosus*, var. *albinus*

III. RASPBERRIES—

Fontenay, and its kin, *Rubus Idæus*, Linn.
Cuthbert, *Rubus strigosus*, Michx.
Shaffer, Caroline, Philadelphia, Reliance, and others. } *Rubus neglectus*, Peck.
Gregg, Hilborn, Ada, Ohio, and others. } *Rubus occidentalis*, Linn.

L. H. BAILEY

# WHAT IS AN ORCHID?



WHAT IS an orchid? This is the question asked by everyone who visits our large floral establishments, and it is the one which is seldom or never answered. It is not strange that people should be confused, for orchids as we see them in the great greenhouses and in the exhibitions show almost every conceivable variation in form and color and marking of the flowers, and the habits of the plants are almost as diverse. Some suppose that orchids are air plants, but the larger part of them, at least in temperate climates, are not. Some suppose that they all have peculiarly thickened bulb-like roots, yet great numbers of them do not. Others define orchids as parasitic plants, yet there are comparatively few species which are parasites. Some suppose that they are peculiar to tropical countries, but there are many native to Canada. In fact, the orchids are among the most diverse of all plants, and yet the order is clearly and pretty sharply defined.

What, then, is an orchid? The most peculiar mark is the union of the stamens and pistil into one organ, known as the column. The pollen is nearly always borne in masses, known as pollinia, although it is granular in a few species, as in some cypripediums. The perianth or floral envelope is composed of six parts—three sepals and three petals—and it is always irregular. In fact, this irregularity of form and arrangement gives to the orchids much of their charm. The upper two petals often unite into a lip or sac, and by a twist of the ovary they are thrown downwards, so that they appear to be the lower petals. The ovary is one-celled and is borne below the perianth, and the seeds are numerous and very minute. Orchids are always herbs, and they belong to the great class of endogenous or parallel-veined plants which includes the irises, lilies and palms.

Such, in a popular way, may be taken as a definition of the orchid family. The species possess innumerable modifications. They are perhaps the most specialized of all plants. Their arrangements for insuring cross-fertilization are wonderfully perfect and varied, as anyone knows who has consulted Darwin's remarkable work upon "The Various Contrivances by which Orchids are Fertilized by Insects." Many of the species possess bulb-like roots, and from this peculiarity the name orchid itself is derived. The salep of commerce is produced from these orchid tubers in Persia. Many species bear green bulb-like bodies at the base of the leaves above ground, and these are known as pseudo-bulbs, literally "false-bulbs." These pseudo-bulbs are used for propagating the plant. They are often cut into pieces much as potatoes are cut for planting. The leaves of orchids are commonly thick and stiff, and the margins are always entire, as, in fact, are the leaf margins of all endogens. Many species are leafless. Numbers of them live upon the trunks of trees in their native tropical forests and obtain nourishment from the air, and these are grown as epiphytes or air-plants in our greenhouses. Some of them are saprophytes, or live upon decaying matter, while many others are parasites proper, drawing their nourishment from live plants. In our northern woods some of the species live upon the roots of trees. These parasites are small, brown and leafless plants whih occur here and there throughout the temperate zone. The leading ones in the north are the coral-roots or corallorhizas.

The species of orchids number over 5,000, of which perhaps half have been brought into cultivation. Bentham and Hooker admit 334 genera. The greater number of the species occur in the tropics, but many species grow in cool temperate regions and a very few enter the frigid zone. The species of the temperate zone which are most familiarly known are the lady slippers, of which there are many species. The lady slippers are known to botanists as cypripediums (a name meaning *Venus' stocking!*). Many exotic species are cultivated, and they are among the most desirable plants for horticulturists. The genus orchis itself includes some 80 species, of which very few are known to cultivation, and none of them, probably, possess much merit for house culture. In our native swamps many very handsome species occur, especially interesting being the shy calypso and the gay arethusa. Orchids are nearly always rare or infrequent. Few soils and locations appear to suit them, or perhaps they are crowded to the wall by more vigorous and cosmopolitan plants. Although the seeds are usually produced in exceedingly great abundance, very few of them appear to find conditions suitable to their growth. The gardener knows how hard it is to raise seedlings of any orchid. The seed pods are usually dry and mostly uninteresting fruits, but the pod of the vanilla is the source whence comes the vanilla of commerce. Some of the species, of which the vanilla is an example, are climbing vines. Many of the orchids bear perfectly green and inconspicuous flowers. Botanists will recall the green and obscure flowers of some of the little habenarias which grow upon moist banks and in cool woods.

The orchid family, *Orchideæ*, is commonly divided into five great groups, the divisions being founded chiefly upon characters of the anthers. In the cypripedium tribe, the anthers are two, but in the others only one anther is present. The genera best known to gardeners are the following:

I. Tribe Epidendreæ.
- Masdevallia,
- Dendrobium,
- Dendrochilum,
- Spathoglottis,
- Phaius,
- Cœlogyne,
- Calanthe,
- Epidendrum,
- Cattleya,
- Lælia.

II. Tribe Vandeæ.
- Cymbidium,
- Zygopetalum,
- Oncidium,
- Miltonia,
- Lycaste,
- Coryanthes,
- Stanhopea,
- Catasetum,
- Maxillaria,
- Odontoglossum,
- Ada,
- Phalænopsis,
- Ærides,
- Vanda,
- Saccolabium,
- Angræcum.

III. Tribe Neottieæ.
- Vanilla,
- Goodyera.

IV. Tribe Ophrydeæ.
- Orchis,
- Aceras,
- Disa.

V. Tribe Cypripedieæ.
- Cypripedium,
- Selenipedium.

# ORCHIDS AT HOME.

NOTES FROM BRAZIL.

THE traveler in the Amazonian region who expects to see great displays of orchid bloom is doomed to disappointment. Orchids there are in countless numbers, but they are mostly species with inconspicuous flowers, or such as possess no brilliancy of color. And it requires experience to find even these; the untrained eye will overlook them in the profusion of climbing vegetation and in the dense foliage of the forests of second growth, while in the primeval forest they are only found in the tops of the trees hundreds of feet above one's head, and their presence is only betrayed by perchance a fallen flower or oftener by a breeze of spicy fragrance wafted from above. Anything more desolate than the old forest can hardly be imagined; all is gloomy, the great tree trunks rise high without a branch, the ground is covered with decaying leaves, nothing green meets the eye, the rays of the sun never penetrate, the air is surcharged with moisture, and often chilly; there is no undergrowth of any kind, but often great roots from aroidaceous plants which have their home far on high, hang down, rooting in the moist soil and often attaining huge dimensions. High in the tree tops is the home of both animal and vegetable life, but that home is inapproachable, and its inhabitants are invisible.

During a sojourn of many years on the middle and upper Amazon, during which I have wandered on foot and voyaged by canoe many thousands of miles, I remember but a very few places where orchids impressed me as a conspicuous feature of the scenery. Some of these I propose to describe.

It is four o'clock on an afternoon in May. The sun, which has blazed fiercely since six in the morning and which has forced us to recline most of the day under the arched palm "tolda" which covers the stern of the canoe, is sinking in the west. The breeze from down river which has filled the little triangular sail since about ten o'clock is dying away, and the intolerable glare from the broad bosom of the river and the white mud banks is changing to a soft and pleasant light. As far as we can see, before and behind, stretches the yellow waste of water; on either side a dense high wall of foliage with no break, only here and there little bays filled with floating grass or with thousands of that beautiful aquatic plant, *Eichornia speciosa*, which has not inappropriately been called the water hyacinth. Suddenly a slight change of course shows a break in the wall of foliage, caused by the entrance of a narrow "igaripe" into the main river. We, mindful that darkness will soon fall suddenly, order the paddlers to make for the southern shore, and we find what appears to be a deep but narrow branch, or possibly the mouth of a small stream which doubtless forms the outlet of one of the myraids of lakes which on both banks of the Amazon lie parallel to the main river. We enter the stream under a dense arching canopy of foliage which, but for the westering sun, would bring us into darkness; but in a few minutes the stream broadens and we see before us a narrow winding river, dense walls of foliage to the water's edge on either side; masses of vines—passifloras, bignonias, and many species of convolvulus, with other climbers unknown to us—draping every branch and trailing in the water. Monkeys and parrots, startled by our abrupt intrusion scamper and fly away with loud protestations against our invasions of their home, and soon the only sound is the steady plash of the paddlers in the dark sluggish water.

The stream continues winding, the vegetation preserving the same general features for some distance, and the rise of land suitable for a night encampment which we had hoped to find does not appear. We had noticed no orchids, and their non-existence seemed strange, for generally on the branches of the trees overhanging

these igaripes the green flowered epidendrums abound, and occasionally we find *Rodriguezia secunda*, *Oncidium*

of foliage, and we feared we were doomed to pass the night in the canoe in a low igaripe, where tens of mil-

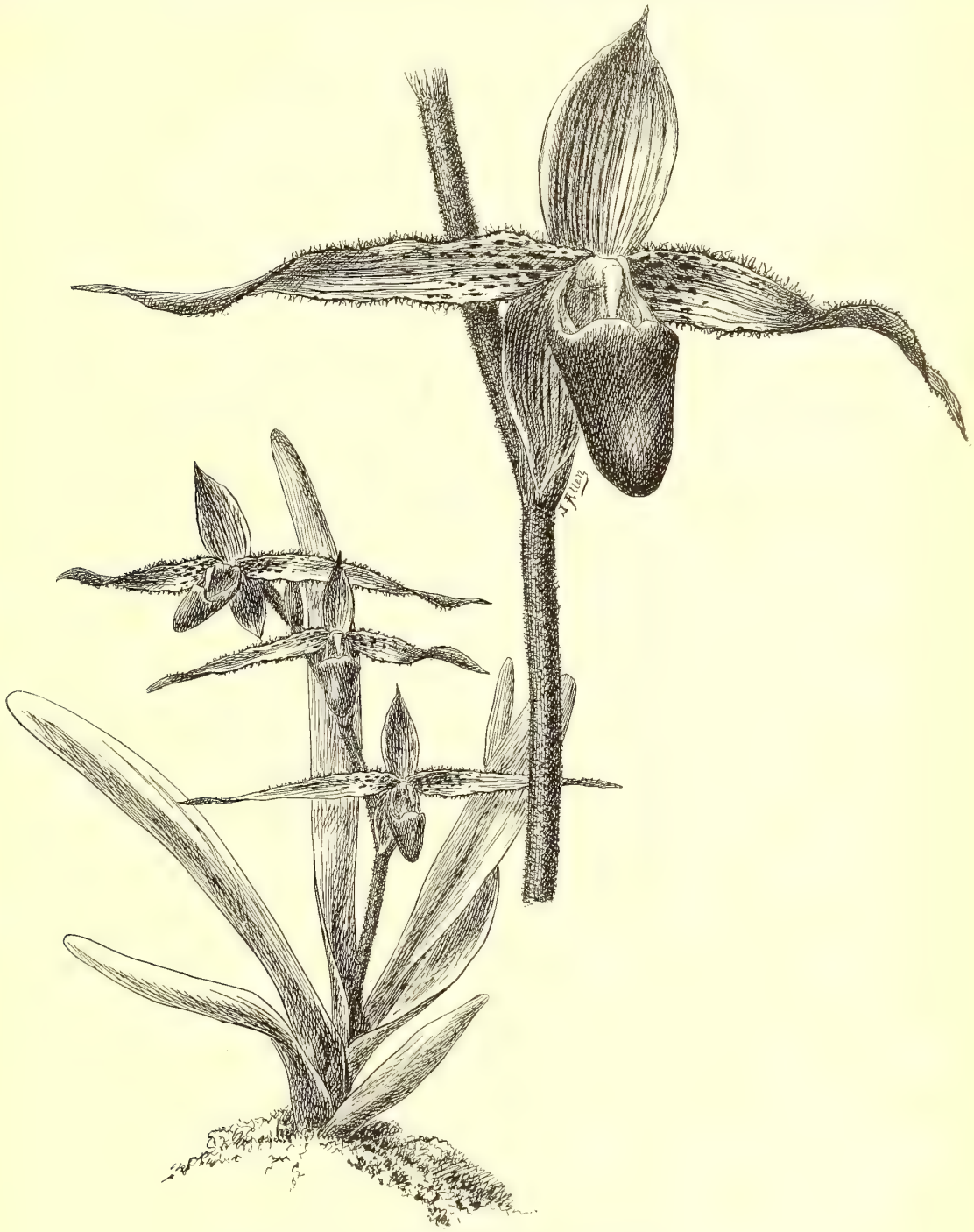


FIG. 1. CYPRIPEDIUM ROTHSCHILDIANUM. See page 89.

*Cebolleta* and that charming little orchid, *Oncidium iridifolium*.

Suddenly the stream seemed to end in an abrupt wall

lions would be a low estimate of the numbers of the ever companionable mosquitos!

But no! The stream turned a right angle, spread out

wider, and far before us we saw higher land. But all thoughts of camping, the consequent supper and a good night's rest free from mosquitos were lost in the beauty of the scene which burst upon our sight.

On our right the boughs of low trees which drooped to the water's edge were laden with tens of thousands of plants of *Brassavola Martiana*, all in full bloom. Many of the masses were many feet in diameter, and the long terete pseudo-bulbs hid all the forest growth. The spikes of delicate white flowers seemed a mantle of color, and the air was heavy with the rich, spicy fragrance. This alone would have been enough for a feast to the eye and a rich boon to memory, but it was only a part of the beauty. On the left bank of the stream some accident had killed the trees, which were of the same low character as those on the right bank, and in every possible place, clothing every branch, were small tillandsias, all in full bloom, the rich scarlet bracts making in the sunlight a glow which almost dazzled the eyes. And this not here and there, but as far as the eye could reach—on the one bank the rich color of the tillandsias, on the other the soft snowy clouds of the brassavolas, the fringed lips of the countless flowers giving an indescribable delicacy and grace to the picture.

There was no intermingling—not a tillandsias on the one bank, not a brassavola on the other. Even our stolid Tapoia paddlers were moved into exclamations of surprise, and the scene was one which can never be forgotten.

All night, as we lay in our hammocks gazing through the tree tops at the stars which seemed in the clear, pure atmosphere like great jewels hung in the sky, listening to the gentle break of the waves of soft sound which at night always fill an Amazonian forest, the air full of perfume wafted up to us in the gentle night breeze, we dreamed of the beauty of the scene, and when in the early morn we again saw it in the light of the rising sun on our return to the main river, we found it none the less beautiful.

Never now do we see that brassavola and tillandsia, both very common plants on the Amazon, without thinking of the unnamed igaripe where they grow in such luxuriant profusion.

*Brazil.* EDWARD S. RAND, JR.

# SOME OF THE BEST NEW ORCHIDS.

S YET THERE is no indication that the popularity of the orchid family has in any way declined. On the contrary, judging from the ever-increasing mass of plants annually imported, their cultivation is spreading still more widely. It is true that several of our largest and most famous collections have lately been dispersed, but their loss is more than counterbalanced by the numerous, if smaller, collections that are continually being formed. Considering the number of firms now engaged in the importation of orchids, the appearance of new and really distinct species is by no means so frequent as one might expect. This is to some extent explained by the fact that collectors devote their energy less to the discovery of new kinds than to the collection of those whose value at home has already been made apparent. Of course, amongst the hundreds of thousands of orchids which are annually brought to Europe, many so-called new species, and almost innumerable varieties, of necessity occur. It is rarely, however, that a new and beautiful orchid is found in sufficient abundance to allow of its becoming generally cultivated ; some, indeed, are unique, whilst others are represented by so few plants that they all find their way to the establishments of wealthy amateurs, who are willing to pay stiff prices for them. A considerable number of new species have lately been described by the botanists at Kew, but the majority are not of sufficient beauty to render them of more than botanical interest. Those of most promise are enumerated below.

One great feature in orchid culture to-day is the number of people who occupy themselves in hybridizing. The enormous sums that have been realized in past years for mule orchids have stimulated both amateur and professional growers to try their luck in this fascinating employment. A short time ago an orchid, so long as it was of hybrid origin, even if it were no more than a poor combination of its parents, could secure a price utterly disproportionate to its real value. So general, however, has the practice of this art become, and so rapidly does the crop of hybrids increase, that it is very unlikely, in the near future, that this can continue. The results during the past year show that, with a careful selection of material, valuable work can be done by the hybridizer. The object to be kept in view is the union of the good qualities of two parents in the progeny. No better instance of success in this direction could be given than the hybrid obtained by Mr. Cookson between *Phaius Wallichii* and *P. tuberculosus*, which has flowered during the past summer. The latter species is by far the most delicately beautiful in the genus, but it is extremely difficult to keep in good health ; whereas *P. Wallichii*, whilst being distinctly handsome, is a most easily grown plant. In the hybrid it is certain that the flower has not deteriorated in beauty, whilst the habit gives every indication that it has inherited the vigor of *P. Wallichii*.

In the following notes I have selected, from the more

recent introductions, such kinds as by their beauty, distinctness and general merit, appear likely to obtain a permanent footing among cultivated orchids.

CYPRIPEDIUMS.—The most notable of the later additions to this popular genus are *C. Elliottianum* and *C. Rothschildianum* (Fig. 1, page 87), both belonging to the group of which the beautiful *C. Stonei* is the best known species. *C. Elliottianum* was introduced from the Philippine Islands in 1888. It has bright green leaves a foot to eighteen inches long, the flower-scape, which bears two to five flowers, being almost as much in height. The dorsal sepal is oblong, two and one-half inches long, the ivory white ground being striped with dark crimson lines. The petals are five inches long, white, blotched with crimson, the edges undulated and fringed with hairs. The pouch is one and one-half inches long and of a reddish brown color.

*C. Rothschildianum* is very nearly allied to the preceding, the flowers being practically the same in shape, but it is a native of New Guinea. The dorsal sepal is yellowish, striped with black purple, the petals being also blotched and striped with the same color; the pouch is leathery in texture, and of a cinnamon-red color. Professor Reichenbach, who named this species, described it as one of the most astonishing plants he had ever seen, The staminode is of rather remarkable shape, and has been aptly compared to a crane's head and beak.

*C. bellatulum*.—This species, when compared to the two previous ones, effectively shows the wide range of cypripediums, both in habit and flower. It belongs to the dwarfest section of lady-slippers, being closely allied to *C. niveum* and *C. concolor*. Although it rarely exceeds four or five inches in height, it is the largest and most remarkable of this little group. The leaves are leathery and sometimes as much as eight to ten inches long, the upper surface marbled with gray and green. The flower is borne on a scape four inches high, and is usually three to four inches in diameter. The whole flower is white, boldly marked with numerous spots of black purple. It cannot be said to have the charm of either *C. niveum* or *C. concolor*, but is infinitely more striking. To the every-day visitor at Kew a flowering plant is usually the chief object of interest in the orchid houses. It is a native of the islands near Cochin China.

A beautiful and distinct variety of the old *C. insigne* has been introduced lately. It is called Sanderæ; the ground color, instead of being the yellowish-green of the type, is here of a primrose yellow. By many it is considered the finest form of this useful cypripedium yet known to cultivators anywhere.

FIG. 2. VANDA KIMBALLIANA. (SEE PAGE 90.)

The genus cypripedium lends itself to the hybridizer's art more readily than any other, and the list of new hybrids is consequently a very long one. No good purpose would be served by attempting to enumerate them, as they mostly exist only as individuals. The following, however, which have flowered during the last twelve months, are so meritorious as to be worthy of mention. The beauty of all three is so marked that

one cannot help regretting so much time and labor has been spent over worthless hybrids. The two first were raised by amateurs; the last by the Messrs. Veitch, of Chelsea. *C. Aylingi* is the result of crossing *C. niveum* with the pollen of *C. ciliolare*. It is a plant nearly like *C. niveum* in leaf and habit, but bears a flower five inches across, thus showing the influence of the larger-flowered parent. The lip is pure white, the sepals and petals being also white, but with numerous dots of light purple, arranged in streaks. The plant was six years old before flowering. *C. vipani* is also a most delightful plant; it was raised from *C. lævigatum* and *C. niveum*, the latter being the male parent. The flower is nearly five inches across, and chiefly white, the upper sepals and the two side petals, however, having several bright purple stripes running lengthwise. It is noteworthy that the characters of *C. niveum*, whether that species be used as a seed-bearing or pollen-parent, always predominates in the offspring. The third hybrid is *C. Niobe*, raised by crossing *C. Spicerianum* with *C. Fairieanum*, both of which are amongst the most beautiful of orchids. Although *C. Spicerianum* can now be bought for a few shillings, I believe the first plant imported was sold for £105. As for *C. Fairieanum*, the majority of gardeners have never seen it, yet it is as beautiful as it is rare. In the hybrid the dorsal sepal is green, with a broad band of purple down the centre, and numerous similarly colored nerves at each side. The petals are narrow, quite straight, whitish green, veined with purple; the pouch is small, pale green, suffused with purple brown. The seed of this plant was sown in 1884.

*Angræcum Sanderianum.*—This is a native of the Comoro Islands, and is probably the best of all the smaller angræcums. It has only been known two or three seasons, but its beauty and freedom in flowering have already acquired it a wide cultivation. It is a dwarf plant, suitable for basket culture, with bright green, tongue-shaped leaves. The flowers are in drooping racemes, pure white and about two inches across. I have counted two dozen flowers on one raceme.

*Angræcum Germinyanum.* This is a new species, of great beauty and rarity, which flowered at Kew last year. It had been introduced four years ago, by Sander, of St. Albans, from the forests in the interior of Madagascar, where it grows in company with the new *Phaius tuberculosus* and *P. Humboldtii*. It is a plant of scandent, comparatively slender habit, with thick, bright green leaves and pure white flowers. The sepals and petals are three inches long, narrow and tapering. The lip is remarkable in having a long, tendril-like point, the main portion being square and broad. The spur, which is so prominent a part of all angræcum flowers, measures five inches in length.

*Vanda Kimballiana.* (Fig. 2, page 89). This distinct and lovely orchid first opened its flowers in Messrs. Low's nursery last autumn. It has long, tapering, semi-terete leaves. The blossoms are two to three inches across, the sepals and petals being of the purest glistening white, contrasting admirably with which is the beautiful rosy-purple lip. It is well worthy of general cultivation.

*Vanda Amesiana* had been known for a short time previously. It is allied to *V. Kimballiana*, but differs in its broader leaves and in the shape of its flowers. The outer segments are white, flushed with rose, and the lip is rich magenta-rose. It is very floriferous, as many as fifty flowers having been counted on a spike, whilst considerably more are stated to occur on wild plants. The flowers are delicately fragrant.

*Spathoglottis Vieillardi.* (Fig. 4, p. 93). This species is the showiest of all the spathoglottis. It was introduced by Linden, from the Sunda Islands, about three years ago. The flowers are two inches in diameter, and their color is chiefly a delicate lilac; in outline they have a strong resemblance to some of the phalænopsis. For purposes where single flowers could be utilized, such as in buttonhole bouquet making, this plant would be invaluable; the flowers are just the right size and several scores are developed on each scape during the three months it remains in bloom.

*Moorea irrorata.*—This plant flowered during the past summer in the Botanic Garden at Glasnevin, Dublin, and on being forwarded to Kew, was found to differ so essentially from any known orchid that Mr. Rolfe founded a new genus upon it. It is quite an event now for a new orchid to appear that is at once sufficiently distinct to constitute a new genus, and handsome enough to rank as a good garden plant. The habit of the moorea may be compared to that of a houlletia, having tapering pseudo bulbs four-and-a-half inches high, and leaves two feet long. The spike is erect, as long as the leaves, and bears about a dozen flowers. These are two inches in diameter, with spreading, chocolate-colored sepals and petals. The three-lobed lip is bright yellow, striped with lines of black purple. The flower is certainly very striking. The generic name is in honor of Mr. Moore, the curator at Glasnevin. The plant was bought at an ordinary auction sale for a maxillaria.

*Disa racemosa.*—Those who are acquainted with *Disa grandiflora* will be able to appreciate the beauty of this species, which, except in having smaller flowers, is but little inferior to it. *D. grandiflora*, however, although it thrives perfectly in a few localities in England, is one of the most intractable of orchids in others; but from what we know of *D. racemosa* at present, it is quite easily cultivated. At Kew, where *D. grandiflora* is a comparative failure, it grows well and flowers abundantly. The spikes are twelve to eighteen inches high, with ten to fifteen flowers on each, these being two inches across and of a bright rose color. They are at their best about midsummer. I would advise all who have failed with *D. grandiflora* to give it a trial. It can be grown at little expense, requiring no more than bare protection from frost. It was introduced to Kew in 1887 from S. E. Africa, but is now obtainable through the trade. Another extremely pretty disa, called *D. tripetaloides*, has recently made its appearance. It is also easily grown and

blooms profusely. The flowers are on erect spikes a foot high and are pinkish white, dotted with rose, measuring an inch across.

*Phaius.*—About ten years ago a new phaius, called *tuberculosus*, was discovered and brought home from Madagascar. Being of great beauty and quite distinct from the others known, it attracted great attention. Since then two others belonging to the same group have been introduced, viz., *P. Humboldtii* and *P. Henryi*.

*Cattleyas.*—This genus shares with cypripedium and odontoglossum the first place in public favor. Although no startling additions have recently been made to the species already in cultivation, some very beautiful varieties have appeared, especially in the huge labiate section of the genus. One of the finest of these is *C. Massaiana*, a form, or at least an ally, of the gorgeous *C.*

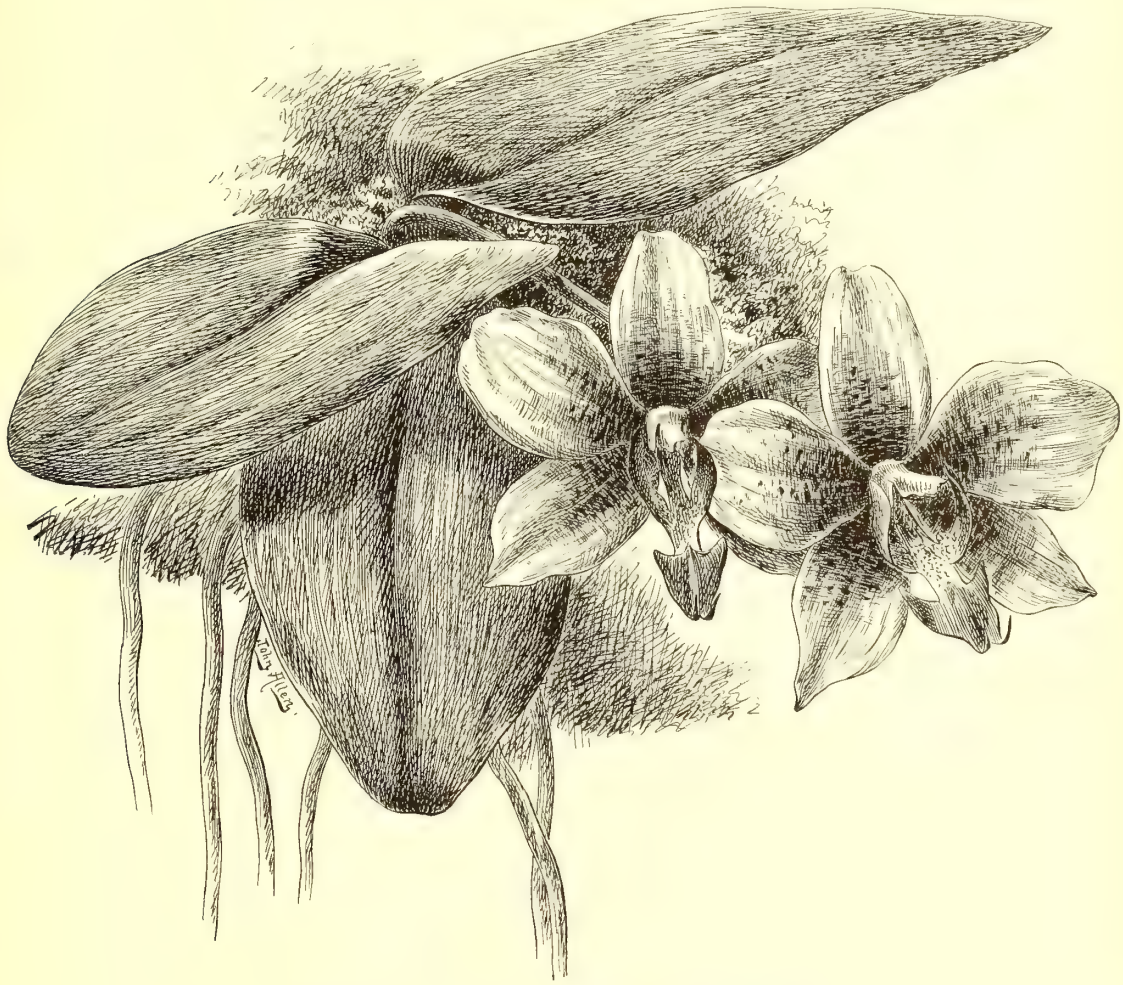


FIG. 3 PHALÆNOPSIS HARRIETÆ. (See page 92.)

During the past summer a considerable number of these have flowered and quite fulfill the expectations formed about them. *P. Henryi*, however, proves to be no more than a color variety of *P. Humboldtii*. This species has short, clustering pseudo bulbs, and pale green plaited leaves about a foot long. The flower-spike is erect, a foot to fifteen inches high, the flowers (of which there are three to six), being oblong in outline, two inches in depth and mainly of a pretty lilac color. The lip, which is handsomely lobed and frilled at the edge, has an orange-colored patch at the base. It grows in damp, shady places in Madagascar.

*Cattleyas.*—This genus shares with cypripedium and odontoglossum the first place in public favor. Although no startling additions have recently been made to the species already in cultivation, some very beautiful varieties have appeared, especially in the huge labiate section of the genus. One of the finest of these is *C. Massaiana*, a form, or at least an ally, of the gorgeous *C. Hardyana*. It has large flowers, with rosy-mauve sepals and petals, and a lip of the richest rosy-crimson, two blotches and several streaks of yellow occuring in the throat. In the same class is *C. Dowiana*, var. *chrysotoxa*, a variety with larger flowers than the true *C. Dowiana*. The outer segments are bright yellow, and the lip, which is beautifully frilled, has a ground color of deep golden-yellow, veined with crimson in the throat and at the edges, leaving a large and conspicuous blotch of golden-yellow at each side of the disk. *C.*

*Mossiæ*, var. *Warocqueana*, is a distinct and lovely form, with white petals and sepals delicately flushed with rose, the lip having an orange-colored patch in the throat and numerous veins of rosy-carmine in front.

There are several other new orchids of considerable beauty and interest which space will not permit of fully describing, but the following may be briefly mentioned. *Lissochilus giganteus* is certainly a most marvellous orchid, and one of the giants of the orchid family. In its native state, the leaves attain to a length of eight feet, the flower spike being twice as high! It was flowered in England in 1888, the flower-spike on one plant being eight feet eight inches high. It grows on the banks of the river Congo. *Ærides Augustianum* is a native of the Philippine Islands. It bears a raceme of about thirty flowers, these being of a light rose, and measuring a little over an inch across. It appears to be allied to the charming *A. Roebelenii*. *Odontoglossum Wattianum*.—It is doubtful at present whether this plant is a natural hybrid or a distinct species. It most nearly resembles *O. luteo-purpureum*, but also shows affinity with *O. Lindleyanum*. It flowered for the first time last December, in Sander & Co.'s nursery. The flowers are clear yellow, blotched with chestnut-brown, and are decidedly handsome. *Masdevallia Lowii* is a distinct and pretty species with sepals an inch in length, roughly pubescent, densely marbled and dotted with maroon-purple, each one terminating in a slender tail an inch long. *Calanthe Veitchii alba* is a hybrid the typical form of which is well known as one of the most useful of winter flowering plants. A perfectly pure white form like the present is therefore a great acquisition. It was raised from the same parents as *C. Veitchii*, viz., *C. rosea* and *C. vestita*. *Odontoglossum Hunnewellianum* is a new species imported from near Bogota, in New Granada. It is named in honor of an American horticulturist, the fame of whose garden has reached this country. The outer divisions of the flower are bright yellow, spotted with dark brown and the lip is creamy white, marked with light cinnamon colored spots. It is not plentiful as yet, but is pretty enough to deserve wider cultivation.

I have already noticed some of the more noteworthy of the hybrid cypripediums that have recently flowered. There remains a few others belonging to different genera whose beauty and interest are so marked as to entitle them to at least passing mention. *Lælia Digbyana Mossiæ*.—This is one of the most notable of the many triumphs that Messrs. Veitch have obtained in this work. It is the progeny of *Cattleya Mossiæ* crossed with *Lælia Digbyana*, and its value lies in its having combined the beauty of the former with the remarkable shape of the latter. The flower is six inches in diameter and of a delicate rosy-lilac, the tip measuring three inches across and showing to a great extent the fringed margin of the male parent. *Odontoglossum Leroyanum*.—Although natural hybrids in this genus crop up in such profusion as to be embarrassing to the botanist who has to name and classify them, the present is the only artificial hybrid that has yet been obtained. It was raised at Amandvilleirs, near Paris, and its parents are *O. crispum* and *C. luteo-purpureum*, between which it is fairly intermediate.

*Phalænopsis Harrietæ*. (Fig. 3, p. 91.) This is unquestionably the most beautiful of the three hybrid phalænopsis that have flowered up to the present. It has recently been brought prominently into notice by a colored plate in the *Garden*. This was made from flowers sent to Kew, by Mr. E. Corning, of Albany, New York, who possesses the plant. It was raised by Messrs. Veitch from *P. grandiflora* and *P. violaceæ*, each of which is certainly the finest species in that section of the genus to which it belongs. The flowers are three inches in diameter, and wax-like in texture, the parts broad and over-lapping, creamy-white, splashed at the base with amethyst-purple. The lip is bright rose-purple, except on the crest, which is orange-yellow. Some, who saw the flowers sent by Mr. Corning, proclaim this hybrid the finest of all phalænopsis.

*Kew.* W. J. Bean.

## CYPRIPEDIUM MASEREELIANUM.

(*See Frontispiece.*)

THIS must be considered the paragon cypripedium with horticulturists. The easy growth, free flowering of the plant, long stem, large dorsal sepal of pure white, and bright and distinct spotting makes it one of the finest of all the cypripediums as yet raised by artificial means. The only thing to be regretted is that the plant is very rare at present, but being very free growing it will soon find its way into every representative collection of orchids.

The supposed parents of this grand hybrid are *C. insigne*, var. *Chantinii*, and *C. Spicerianum*, both classed as the finest of the natural species.

Leaves green and long, resembling those of *C. Spicerianum*. Stem 12 to 15 inches long, dark, slightly downy. Dorsal sepal very large, folded back at its base, and forming an almost orbicular top; the base is of a rich green for about a quarter of an inch, while the remainder of the flower is pure white with rich purple spots in regular lines. Lower sepal, pale green. Petals rather short, undulted green with blackish spots.

Lip large and light green with brown shading. Staminode very light green with lilac tint.

*New Jersey.* W. A. Manda.

# ORCHIDS FOR BEGINNERS.

IT IS MY intention to give a few observations on the cultivation of some of the free-growing and most easily flowered orchids which are the best adapted for amateurs who may be desirous of commencing the cultivation of this, the most fascinating branch of horticulture. The orchids which I intend briefly to put before the reader are all very easily grown, providing they have a fair amount of attention, such as all other plants require to bring them to the highest state of perfection. It will, perhaps, be best to take each family separately, and to give a suitable list in each paper.

I think we cannot do better than to place first of all the beautiful genus cypripedium, or lady slipper orchid. This genus is more sought after by collectors of orchids than any other, and small wonder, when we consider the wonderful form and beauty of the flowers, and the ease with which the plants may be grown. As it is understood that these notes are intended only for those who are contemplating forming a collection of orchids, only the more common species will be enumerated, and none need have fear of failing with them. To have the flowering period as long as possible, we must grow at least twenty varieties. The following list contains sufficient varieties, so that flowers should be produced nearly or quite the year round:

*C. argus*, *C. barbatum*, *C. Boxalli*, *C. caudatum*, *C. ciliolare*, *C. Haynaldianum*, *C. hirsutissimum*, *C. Harrisianum*, *C. insigne*, *C. Lawrenceanum*, *C. Lowii*, *C. longifolum*, *C. lævigatum*, *C. Sedenii*, *C. Spicerianum*, *C. superbiens*, *C. selligerum*, *C. villosum*, *C. venustum* and *Uropedium Lindenii*.

Many of these have very handsome foliage, and are, indeed, scarcely equalled by other plants.

As regards culture, little can be said. It is of great consequence always to keep the plants clean, for without cleanliness no one can hope to be successful. Very few insects trouble orchids. Thrips are their worst enemy, and their presence is made known by the fact that the middle of the young leaves turn rusty. But by occasionally syringing from above, even these pests will soon disperse. The temperature of the house may range from 55° to 70° F.

FIG. 4. SPATHOGLOTTIS VIEILLARDII.
(See page 90.)

Cypripediums require a fair amount of pot room, but care must be taken not to over-pot them. The soil should consist of equal parts of peat and sphagnum moss, chopped up into lengths of one or one and one-half inches. Pot rather firmly. The pot should be one-third filled with clean broken potsherds, rather small, and the plant, when potted, should stand, so to speak, on a small hillock. When purchasing plants an idea can be formed how to repot them by observing how they stand when received. Cypripediums require a very liberal supply of water, more especially from March till the

end of October, and during this time it is safe to say they cannot be over-watered; but at no time should they become dry. The list given above include some very remarkable kinds, but many others could be named. They are all very distinct from each other, and include some of the best and prettiest kinds in cultivation.

If the whole set is grown, there will often be five or six species in flower at the same time, and very rarely less than two or three.

If about five plants of each kind are grown, the flowering season will be greatly prolonged, and more will be in flower at once. Carefully shade the plants from the sun, and during summer sprinkle the stages and paths frequently.

It must be understood that one plant often flowers a month or more after another of the same species. The flowers of cypripedium are very lasting, often remaining in perfection four or five weeks on the plant; and they remain fresh two or three weeks, even after being cut.

H. CLINKABERRY.

*Penna.*

# CYPRIPEDIUMS OR LADY SLIPPERS.

CYPRIPEDIUM is one of the most distinct genera of the whole orchid family, considered either from a botanical or horticultural standpoint. The beautiful foliage that some of the "cypreds" have, such as *Cypripedium Lawrenceanum*, *Hookeræ*, *Dayanum* and *Javanicum*, is so finely variegated and mottled that we have nothing in our fancy foliage plants to compare with them. The flowers themselves, odd in shape and color, and lasting in quality, are remarkable. Some of them, such as *C. Harrisianum*, *insigne*, *villosum* and *Boxalli*, and others, will last from eight to twelve weeks on the plant, and from four to five weeks after being cut. The flowering season extends through the whole year, which is a good recommendation, as we find few single genera that will furnish flowers the year round.

In cypripediums we have over 400 different species, varieties and hybrids, and there is every gradation from the small and neat *C. Fairieanum*, *Schlimii* and *Pearcei* to the large and showy *C. Lawrenceanum*, *grande* and *Schroderæ* to suit the taste of all. Besides numerous natural species, we have also many hybrids, in fact, we have more hybrids than species.

The first hybrid cypripedium (*C. Harrisianum*) was raised by Mr. Dominy on suggestion of Dr. Harris, in whose honor it was afterwards named. This was over 25 years ago, and still *C. Harrisianum* is considered one of the best free-flowering cypripediums.

The culture of this genus is the simplest of all the orchid family. It differs greatly from other orchids in one respect, namely, the resting season. A certain amount of rest is required for cypripediums, but not as much as any other orchidaceous plants.

The hardy kinds, such as *C acaule*, *parviflorum*, *pubescens* and others, do best planted out in cold-frames filled with turfy loam, leaf-mould and peat. In the winter the frames should be protected from the hardest frost, and in the summer partly shaded from the burning sun. Hardy cypripediums can also be grown in pots or pans filled with the same material, and used for planting out, the pots being plunged in the ground, but they do not do as well as when planted in the cold-frame, where, if properly treated, they grow into fine clumps and make a fine show when in bloom.

The evergreen cypripediums we may divide into two sections, the first section including *C. Lawrenceanum*, *barbatum*, *Hookeræ*, *Javanicum* and others, does better on the shady side of the house, while *C. Boxalli*, *insigne*, *villosum*, *Harrisianum* and others stand more sun.

Potting should be done after the plant is through flowering, but with little care it can be potted at any time of the year. The best material for potting is fibrous peat, clean sphagnum moss and clean potshreds. The pots should be clean and well-drained, and only clean material used. The plants should be potted firmly, a little elevated above the rim of the pots, so as to prevent the water lodging around the heart of the plant. Cypripediums can be best grown in low houses, so that the plants may be near the glass, and shaded only from the burning sun. The rest of the time they may enjoy full light and little sunshine, and if so treated, they will make good sturdy growths and flower much better than if kept shaded all the time. The temperature should not be below 50°, nor above 75°, with artificial heat. Top and bottom ventilation should be given to keep the air fresh summer and winter. The plants should be looked over every morning, and those that are dry watered. If good weather, a light syringing will benefit them, but this should be done after the ventilation is given, so that the water will not lie in the hearts of some plants, especially those with the thick leaves.

Beginners starting collections of cypripediums are advised to begin with such varieties they could manage with ease, and which do not require so much care. They are *Cypripedium insigne*, *barbatum*, *Boxalli*, *villosum*, *Harrisianum*, *Sedenii*, *hirsutissimum*, *Lawrenceanum*, *Dominianum*, *argus*, *Spicerianum* and *venustum*.

*New Jersey.* JOS. MANDA, JR.

# ARTIFICIAL POLLINATION OF ORCHIDS.

THE STRUCTURE of the flowers of orchids is so varied that the parts are often hard to recognize by one who has not closely examined them. In most orchids the stigma has the same structure; it consists of a cavity containing a viscid material. But the pollinia, or pollen masses, differ very much. The pollen mass is usually composed of three parts, which can be seen in Fig. 1; *p* shows the pollen mass itself, *ped.* its stalk or pedicel, and *dv.* a viscous disc by means of which the organ sticks to any object which touches it.

Oncidium, miltonia, brassia, odontoglossum and trichopilia have pollinia of similar structure. In these genera, the sticky disc is turned towards the exterior of the column, and the pollen mass is, therefore, easily removed.

Other orchids have the disk turned towards the interior of the flower (Fig. 2), especially lycaste, zygopetalum, scuticaria, vanda, ansellia, anguloa, cymbidium, maxillaria and acineta. Those who work with these flowers should use a hooked instrument, in order to reach the viscous disk more easily. This hook is shown at *i*, in Fig. 2. The pollen mass is seen at *p*, and the viscous disc at *dv*; *st* shows the stigma.

A third series of orchids has pollinia without any viscous disk; the viscid matter, causing the pollinia to become attached to the instrument, is then furnished by an organ situated directly below the pollinia and called the rostellum (Fig 3, *r*). This usually appears in the form of a lip, often split in the middle, as in epidendrum, and projecting beyond the stigma. In Fig. 3 the pollen mass is shown at *p*, and the stigma at *st*. In this class we find the cattleya, lælia, cœlogyne, pleione, masdevallia, epidendrum, calanthe, dendrobium, thunia, phajus, chysis, bletia, cyrtopodium and sobralia. In these flowers the operator must lower the lip of the flower and pass the instrument against the column, using sufficient pressure to carry from the rostellum as much of the viscid matter as possible. The pollinia are then easily drawn out.

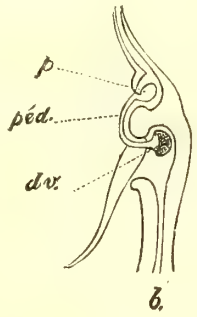


FIG. 1. POLLINIA OF ORCHID.

The peculiar structure of stanhopea has often puzzled those who looked for the sexual organs and thought that they found the stigma on the hip of the flower, which, in these plants, presents a strange form. The pollinia and the stigma are always found upon the same column, here as elsewhere, in perfect flowers. In stanhopea the column is directed downwards, the pollinia have a structure similar to that of lycaste, and the stigma is very straight.

*Disa grandiflora* is another orchid having a peculiar structure. The column has two viscous discs situated on the side and attached to two long masses of pollinia, which are plainly separated. The stigma is situated at the base of the column, and appears in the form of a small cushion, a form which is rare. The pollinia being so very large in this flower, it is not necessary that they should adhere entirely to the stigma.

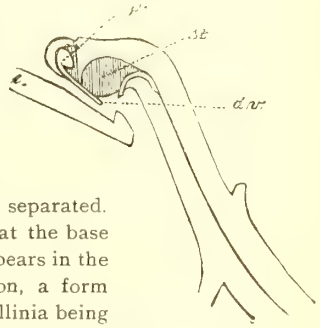


FIG. 2. POLLINIA OF LYCASTE SKINNERI.

The catasetums are the most curious orchids. In them the sexes are separated. The male flowers bear two antennæ (Fig. 4), which, at the least contact, communicate a vibration to the pollinia; these are then thrown straight out with considerable force. Therefore it is necessary to direct the instrument used in pollinating straight towards the center of the flower to receive the pollinia. The female flowers of catasetum are so different that they have been considered as distinct species. The female flowers of *C. Bungerothi*, for example, recall, more or less, the flowers of a cypripedium.

The mormodes have no antennæ, but they also possess the power of throwing out the pollinia when the pedicel is touched. The latter is found on the anterior surface of the column. The flowers of this genus are hermaphroditic. The pollinia of cycnoches are similar to those of mormodes. The sexes are separate, as in catasetum.—*A. Buysseens, in Revue de l' Horticulture Belge.*

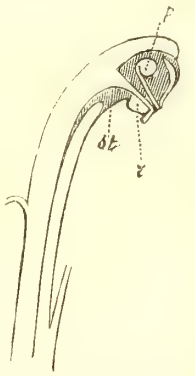


FIG. 3. POLLINIA OF CATTLEYA.

POLLINATION OF THE CYPRIPEDIUM.—The question of the hybrization of orchids, and particularly that of the cypripedium, seems to be the order of the day. Many horticulturists and gardeners believe that the artificial cross-

ing of the cypripedium is difficult, but, on the contrary, nothing is more simple.

The flower of the cypripedium has two sepals, a dorsal, or superior (Fig. 5), and an inferior, which, in reality, is formed by the union of two sepals. The dorsal, or upper sepal, is oblong, oval and in the most beautiful part of the flower. Its color varies from pure white to a purple black, passing through red and yellow. The lower sepal is rather uninteresting, as it is hidden by the lip; in some selenipediums it is quite long, but in most cypripediums it is lanceolate and generally of a greenish color.


FIG. 4. CATASETUM.

The petals are also two in number, for the lip may be considered as a distinct organ. They are elongated, rhomboid in form, and are sometimes very large. Their color is very variable.

The labellum, or lip, is an organ in the form of a sac, having three lobes. The lateral lobes are hardly visible, and the median lobe, which is very much developed, forms the extremity of the sac.

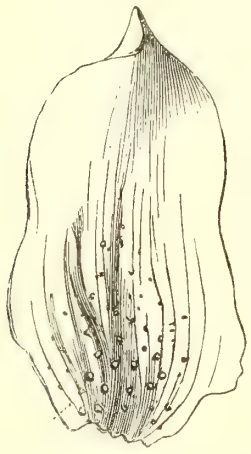


FIG. 5. ERECT SEPAL OF CYPRIPEDIUM.

All the reproductive organs are situated on the column, as in other orchids. At each side of the column, behind the stigma, there is another. The pollen grains are united in masses, called pollinia, which are surrounded by a sticky liquid. The third anther is rudimentary, and its lower part has the form of a hollow shield. This organ is called a staminode, and protects the stigma, which is situated directly under it. The stigma is suspended from the column. It is an ovoid plate, convex on the under side.

Pollination must be performed during fair weather. The sun is not indispensable, but the crosses succeed better when they have been made under bright light. With a lead pencil, or other convenient instrument, carefully detach the pollinia and apply them to the under side of the stigma, at the place where three small lines cross each other. The grains of sticky pollen adhere to the convex surface and throw out prolongations, which fertilize the ovules contained in the ovary. The ovary differs somewhat among the different genera. In selenipedium, instead of being unicellular, it contains three cells. Fig. 6 shows the ovary of a cypripedium, with the numerous and minute ovules at *o*.

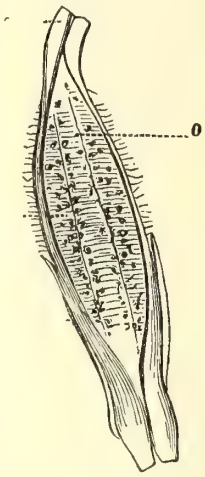



FIG. 6. OVARY OF CYPRIPEDIUM.

The fertilized ovules grow, and at the end of a few months, according to the season, the ovary divides into three parts. The capsule is then detached from the stalk and the seeds dried, or better, sown immediately upon the surface of the soil in a pot. The soil should consist of a mixture of moss and fibrous earth, the same as that in which a strong cypripedium is usually grown. According to the best growers, seeds treated in this manner do better than when sown in any other way. They germinate very irregularly, and sometimes the young plants do not appear for two years after sowing, although they generally appear within six months. The flowers usually appear during the fourth year. If the parents have been carefully chosen, the curious flowers that will be produced will fully repay all the trouble that has been taken.—*Georges Truffaut, in Revue de l'Horticulture Belge.*

[The definite and careful directions above given, together with the illustrations, ought to make it possible for any careful operator to do hybridizing.—ED.]

# FLOWERS IN CALIFORNIA.

## AMONG THE CHRYSANTHEMUMS.

IT WOULD seem difficult to choose from among flora's treasures one flower for preference, but some enthusiast in the east, no doubt, set the seal of approval upon the "Golden Flower;" therefore, the lily droops, forlorn and forgotten, the queen of the garden is discrowned, and the chrysanthemum rears its proud crest. Even in this land of perpetual sunshine, where all the year round flowers of every known variety unfold their glowing petals to the light of day, the craze is in full sway.

For decorative purposes the chrysanthemum stands unrivalled. It has no equal as a plant for bedding, and may be massed in a single color, or grouped so as to blend the colors artistically, with great effect. One favorite arrangement of this gorgeous flower is in the form of a solid bank, training the rear plants of a large bed to a height of six feet or more, then gradually shortening those in the front rows; the plants should be set about

ten inches apart. Groups in pyramids and solid blocks of various shapes are also in order, where lawns are of sufficient extent to admit of elaborate floral decoration. Although the chrysanthemum readily adapts itself to the dry heat of our semi-tropic clime, it seems peculiarly fitted to do battle with the vigorous climate of the east;

"For on winter's icy edge it sets its banner bold,
With fragrance keen as myrrh, with colors clean and cold.
Its petals may be tipped with pink or touched with palest hue
Of yellow-gold, or snowy white—their beauty smiles at you;
And little recks it tho' the frost may chill the nipping air,
It came to see the curtain drop, this flower so debonair."

One can understand why, coming like a benediction upon the dying year, when all other flowers have faded, this flower should be so prized in the frost-bound east, but among our tropical blooms it was an alien, only welcomed when its merits became generally known. The better to worship this new favorite, its devotees have catalogued fully one thousand varieties, a countless array of every shade and of every size, from the tiny chrysanthemum, the first-born of nature, to the hundred-leaved beauties culture hath conceived!

In them the fleeting hue of the sunset, the evanescent gleam of the snow-wreath and the gold of the sunlight have taken tangible shape. There is Bartholdi, with its large purple and white petals; Mrs. Alpheus Hardy, pure white and many petaled; Gladiator, its blood-red globes, the richer by contrast with the pale, brownish-yellow petals of Porcupine; Mrs. J. Laing, an imperial blossom, in color a rich, Indian red; Superbiflora, in a dainty violet and white dress; President Lincoln, a variegated bronze; Duke of Berrick, in robes of palest pink, and countless others of varied hues whose name is legion. But rival of them all, rivaling the sunlight itself, the Yellow Eagle unfolds its golden blossom, perfect in its beauty. They form, indeed, a royal family, these flowers of one line, exhibiting such wonderful variety in size and color.

From the Japanese, who have brought the chrysanthemum to its present state of perfection, much may be learned regarding its successful cultivation. When the plants are bedded in the spring, they grow luxuriantly but unevenly, some roots running out more rapidly in richer veins of soil. To thicken up and mat the roots, cut with a sharp trowel all around each plant, about three inches from the stalk. Repeat this operation frequently until a compact bunch of roots is formed. When transplanted finally, the roots should be compressed and the hole in which they are set filled up with richest earth. Soon the roots commence to reach out, when they are again cut back. The top of the plants receive the same treatment, a single stump or perhaps two or three stumps only being allowed to grow. This process stores up the vital force in the roots, to be thrown into a few perfect flowers. At the proper time, branches are allowed to fork out from the stalk; these are tied to slender stakes and trained to the required height. All buds are removed, save from those points where a flower is desired, resulting in the development of the remaining buds into large, perfect flowers.

FIG. 1. NIAGARA.

The button chrysanthemums are allowed to develop

hundreds of flowers to a single plant, by which process they are still further dwarfed. By carefully cutting off the first crop of flowers, the plants will reward you with a second crop, slightly inferior in size to the first blossoms. J. Torrey Connor.

*Los Angeles Co.*

## CALIFORNIA STATE FLORAL EXHIBITION.

Victoria, Roses, Chrysanthemums.—Our California State Floral Society held its exhibition in the new Academy of Sciences in November. The palms, bamboos and ferns in panels adorn the walls; the electric light gleams on the great leaves and white, rose-centered *Victoria regia*, whose petals open and fall over, one by one, as we gaze, until the pink heart of the white lily is revealed. The seed vessel is like a mossy acorn cup, and the seeds, which are about the size of peas, are arranged around the sides—not at all like the watering-pot top of the pink and white nelumbium or lotus seed vessel. Five or six of the *Victoria regia*, with a number of lotuses, have been blooming in the conservatory at the Golden Gate park the past week.

The vivid colors of the flowers are set off by the

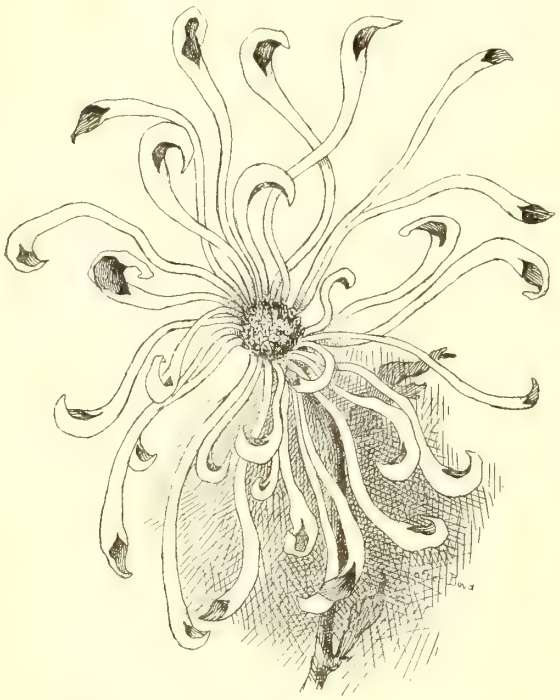


Fig. 2. Eye of the Serpent or Medusa.

asparagus, fern and wildwood bark, all arranged in the wilderness style of highest art. The Turkish rose, the most fragrant, and from which the attar is made, is there, bearing a dozen small white flowers with straw-colored centers. The flowers are not very double, and are about an inch and a-half across. The leaves of the plant are pale green. Shown beside this is the bright pink of Marquise de Viviens and the gold of W. A. Richardson. It is wonderful to see the roses in such full bloom now in Marin county, where they have had no watering at all for many months. A few wild flowers are also in bloom. The *Yucca gloriosa* has pink buds and is in more crowded and compact panicles than the *Y. filamentosa* of the eastern gardens.

A new kind of large, white, single dahlia, drooping in bud, stem and flower in lily form, is beautiful. Its broad, white, curving petals are beaded with pink.

The *Mina lobata* wreaths of yellow pendents and bright red buds, and the new dwarf *Phlox Drummondii* of Quedlinburg, with white eye and white margins of its incised, dark purple petals, were interesting.

The large display of chrysanthemums was the finest I ever saw; new importations came from Japan in endless variety. California was the name on large golden globes, looking like Cuba oranges stuck on leafy sticks, each petal closely curved over the other into a perfect sphere. The Margaret B. Harvey, named after the black-eyed writer, is very handsome; its wide, deep crimson rays, three inches long, showed their golden reverse sides at the curling tips, spreading forth and curving downward from the green-gold center. The pure white Ostrich Plume is very large and beautiful, with the fine downy-prickly growth on the reverse of its numerous incurved rays, similar to the Mikado that bears Mrs. Alpheus Hardy's name. The similar pink one is not so lovely. The Black Prince is six inches across, its petals dark crimson purple. Some of the flowers measured ten inches across when the rays were straightened out, but when I speak of the size, I mean as the flowers appear on the plant. To the ordinary observer, the white Niagara (Fig. 1, page 97) and Yosemite Falls would seem like faded beauties, their drapery veiling their faces, *à la* Skye terrier; but they are charming as they bud and blossom out and bend over in glistening curves.

The Flying Cranes' Feathers are fine and long, and spread straight out in every upward direction. One that is too pretty to be called the Eye of the Serpent (Fig. 2) has tubular quilled rays, two and a-half inches long, of bright yellow color. It opens at the curving tips and shows deep pink within, from a greenish disk. Another, with similar, but short rays, has a beautiful sparkling center, two and a-half inches across, of pink and yellow quills. Still another is pale pink with quill rays that are curled and incised like deer antlers, and bears the appropriate name of Elk-horn. Thousand Sparks (Fig. 3, page 99) is a good new anemone sort.

The exhibition remained open three days, and gave great pleasure to the lovers of flowers in San Francisco.

*San Francisco.* K. P. S. Boyd.

# SUBSTITUTION.

A FLORIST'S VIEW OF THE MATTER.

THE EVIL of substitution in the plant trade is now a matter of no small alarm to the people who annually buy plants for the decoration of their homes and gardens. It has grown so much that complaints are heard from many sources. That these complaints are justifiable in many cases, that florists do sometimes substitute, and that mistakes frequently do happen, goes without saying. The sweeping charge of wholesale substitution and gross neglect of buyers' interests made frequently by amateurs against reputable houses doing a retail plant business, is not always correct in the main. If it were possible for some member of an establishment doing a retail catalogue plant business to investigate in person the numerous complaints made and claims demanded in the course of a season's business, many of the mountains of carelessness and dishonesty charged against reputable houses would be reduced to mole-hills, and the florists, as a class, would be found more sinned against than sinning. The cause of the dissatisfaction in many cases arises from the want of the proper knowledge of varieties of plants, or the lack of suitable cultivation, or both causes combined.

The writer has just returned from a trip through a few of the southern states, having visited several cities where flowers are grown extensively, and shipments from nearly every house in the United States doing a plant business in the south are to be met with side by side. It chanced to be during the period when the chrysanthemums were in bloom, and the ladies in each neighborhood held high carnival among their favorite "'mums." The reputation for good or evil of every florist that offers plants through his catalogues for sale in the southern states is judged entirely by how near true to his catalogue description his plants will produce blooms. We found one woman glorying in the beauty of a large specimen of Mrs. Vannaman sent her as Mrs. Carnegie by an Indiana florist, while her neighbor was heaping anathemas on the head of an Ohio house because she ordered a Mrs. Carnegie *and got it*, but was dissatisfied, as it was unlike her neighbor's; and they both came to the conclusion that the Ohio house had substituted, that Mrs. Vannaman filled the bill and Mrs. Carnegie was not herself at all. She however, had written to the florist about it and he promised to rectify *his mistake!* In a small Georgia town we found a member of the medical profession who had a local reputation for his beautiful flowers and great knowledge of them. We found him thoroughly disgusted, as he said he had been victimised by a New York florist. He said he had spent $20 the past year for chrysanthemums, and paid as high as $1 each for many of them, none of which were as represented. His Ada Spaulding, instead of being pink, was a dingy white, and of no account, his Nymphæa did not smell worth a cent, his G. F. Moseman and others that were to produce flowers eight inches in diameter, were barely three; his Mrs. Alpheus Hardy did not materialize with the ostrich plumage, and complete discord reigned among his tangled bed of "'mums." He led us half reluctantly to the rear of the house, where

FIG. 3. THOUSAND SPARKS. (See page 98.)

he "'mums" and the grass had an all-summer fight for supremacy. On remarking that they did not have much cultivation, we were assured that the bed was prepared at considerable expense and the plants set out, we forget whether he said according to Henderson or Hoyle, after which, to use his own expression, he "let 'em rip." From the drenched and bedraggled appearance of the blooms it was difficult to tell what they were, but sufficient of the characteristics were left so that a practised eye could see that all was not so bad as represented. The varieties were, in the main, true to name, and with a higher cultivation and a judicious thinning of buds and branches, but little, if any cause would be found for complaint. A lady had sent to my hotel a box of chrysanthemum blooms to have them correctly named, as she said they were all sent her under wrong names. As she did not live a great ways off, I walked around and began naming the varieties as best I could. I had not proceded far when the good lady lost all her faith in my knowledge of 'mum nomenclature, for she said that Robert Bottomley was not a bit like the one Mrs. Jones had sent her from a Louisville house, and her Lilian B. Bird was nothing like Mrs. Smith's, both of which were sent out by different houses under the same name. The truth of it was her Lilian B. Bird was true to name, but she was dissatisfied because it was unlike a large vigorous plant of President Arthur, which Mrs. Smith was growing as Lilian B. Bird, under which name the lady said it was sent her by a reliable house that she had dealt with for years.

Such little incidents as these go to prove that substitution is yet carried on to some extent, and complaints

FIG. 1. NARCISSUS BICOLOR, HORSFIELDII.

in many cases may justly be made, but that complaint always goes to where it of right belongs, is a matter of extreme doubt. In villages and small communities where no practical florist is at hand to decide upon the the truth of varieties to catalogue description, things are apt to get badly mixed up. As judged from a criterion that is wrong, nothing but chaos can reign, and he who substitutes most may, in many cases, fare best, providing the substitution is done with some knowledge of the similarity of varieties substituted to those ordered, and not an indiscriminate labelling of plants to suit the order. Priority, in many cases, has much to do in these village tribunals in passing upon the correct nomenclature of varieties of plants possessing some similarity of form or color. A lady may, for instance, have in her garden for years, a rose, a chrysanthemum, or a dahlia, and will have known them under some particular name that may be entirely erroneous during all this time. She may receive a plant from the florist's belonging to either one of these classes named, true to its section and originality, with a similar name but a different color or form to its namesake that had priority in her garden. To say that the new comer could usurp the former favorite of its name would be upsetting the order of things generally found in small gardens, where the housewife is boss and the fire shovel the chief implement of defense against the marauding weeds. Amateurs not having sufficient knowledge of the different varieties of plants should be slow to find fault for the misnaming of varieties unless backed in their judgment by some one more competent to detect the inaccuracies in labeling of the varieties to be passed upon. They should also remember that all catalogue descriptions and dimensions are taken from plants grown in the highest possible state of cultivation, and where all circumstances favor the highest possible development as to size, form, and color, and that poorly cultivated and improperly cared-for plants can not be expected to produce the results claimed for them under a higher state of cultivation. To produce plants and flowers to come up to catalogue descriptions where exaggeration is not indulged in, requires a cultivation equal to that under which the plants were produced from which dimensions and descriptions were taken.

Plants grown in the open air in the southern states, especially chrysanthemums, where they are bleached by the warm sunshine and drenched by the heavy fall rains, will never produce the delicacy of shade and color as is their wont when cultivated under glass further north.

The florists are placed at a disadvantage in all of these little transactions with small buyers among their amateur customers. Let them be ever so confident that their plants are sent out true to name, if complaint should come they cannot dispute it—it would be ruinous to their business to do so, and for this reason thousands of dollars worth of plants are annually given away to satisfy imaginary wrongs, as it is conceded the best policy among retail catalogue houses to satisfy, where possible, all claims made, even when the justice of them is most doubtful. A knowledge of this policy by unscrupulous people causes the florist at times to be taken advantage of.

And thus it is in floriculture; many disappointments and reverses are found both by those who sell and those who buy. To either, the millenium has not come.

*Tennessee.* JAS. MORTON.

# DAFFODILS.

IRISH NOTES OF PLANTS WHICH DESERVE MORE ATTENTION IN AMERICA.

IT IS STRANGE how such quantities of daffodils, now such a fashionable flower, have been naturalized in Ireland, and in the very finest forms, which can be traced to English soil. Yet everyone knows they are of Italian, Spanish, and south of France introduction, and the only rational way to account for their presence in such quantities, particularly in the south of Ireland, is that they were brought by the early Christians with the strides of civilization from the East, and later on by the Huguenots, planted in the grass, and always found in greatest quantity near old ruins, abbeys, castles, town towers, etc.

It is some fifteen years since I first took them in hand to get up stock. My first choice was with a batch of Horsfieldi (Fig. 1), to this day one of the finest in cultivation. Then followed the collection of Capan in quantity, and later on the white trumpet section, of which Leda is probably the most early, and for market purposes the most plentiful. An engraving of Leda appeared in the *Gardener's Chronicle*, June 25, 1887. Such fine things in white trumpets as Bishop Mann, Colleen Bawn (Fig. 2), Gladys Hartland, Minnie Warren, Little Nell and Commodore Nutt have been re-introduced to commerce through the searchings of the writer, and probably yet to be added, Parkinson's true Giant Tortuosus. Indeed, in 1884, at the time of the first daffodil conference, such introductions were

FIG. 2. COLLEEN BAWN.

not known, or believed to be in existence, in England. The White Elephant, at this first gathering of daffodil collectors, was the White Nanus, in the possession of Captain Nelson, and the quantity was limited to one single bulb, while in Ireland Minnie Warren could be counted by the thousand. It was so with Ard-Righ, the best forcing sort in existence, and the earliest (Fig. 3). Then we have Golden Plover, another fine

FIG. 3. ARD-RIGH, OR IRISH KING.

early sort, when it becomes plentiful enough. Lastly, Rip Van Winkle, or Double Minor (Fig. 4). This may be called chrysanthemiflora, from its resemblance to a yellow form of one of the pompon chrysanthemums. It is neat for cutting and very early. All my bulbs bloom during February and March out-doors, and are nearly past their best when they commence to bloom either in Holland or England. That this may be attributed to the humid climate of the south of Ireland is becoming an established fact. Indeed, the bulbs scarcely ever get frozen over, and are in a growing state from the time they make their first rootlets with the autumnal rains, and, to speak in the broadest sense, it is only once in ten years we experience the severity of a Scotch or English winter, and certainly never a Dutch one. The natural consequences are, an early bloom, and afterwards well-ripened bulbs. Market growers for Covent Garden are now aware of this important fact. For instance, Ard-Righ can easily be had in bloom, under glass, early in December, not later than the 20th, from bulbs potted in August or September, and our Irish form of telamonius plenus (double Von Sion), treated in a like manner, forces admirably. As regards out-door cultivation, they delight in a westerly as-

pect, to be planted in good, rich, turfy pasture, with the addition of sea sand, and by all means ample depth of soil, with good drainage. For white trumpet daffodils coarse, gritty stones, roots or fibres of trees, may be mixed with the soil, and, in a good position, they will live and thrive for years, and increase rapidly. Above all things, rank, rich manure must be avoided—it is destructive. For small dwarf roots, with thread-like rootlets, that are more or less naturally surface-feeders —pallidus præcox, for instance—adopt shallow planting; but for tall-growing kinds, such as trumpet maximus, all the bicolors, etc., the bulbs may be planted to the depth of five or six inches, provided the soil be well trenched and drained, as before mentioned. With these particulars as to soil, let me add, get supplies from healthy stocks, and plant early.

In attending the London daffodil sittings, the second week in April, for two seasons, I have been charmed with the magnificent display at South Kensington, yet nearly all are obliged to be "cut in the bud" three or four days prior, and opened under glass. Last season they would have had no show but for adopting this precaution. Still, blooms cut in the bud and forced into flower in this way are never full size, as we get them in the open, in south of Ireland, from the first week in March. Now in Holland they also adopt this plan. Indeed, I was getting "specimens" posted me from the Dutch the 12th of May last year, an extraordinarily late period for trumpet daffodils. The very fact of our early bloom in Ireland, followed by the early ripening of the bulbs, illustrates the point as to why old Irish gardens should possess the white trumpet section in reserve, when they were nearly extinct in England.

New Year's Day will give me my first blooms of Ard-Righ, or Irish King. This we potted and plunged in ashes against a south wall in August, bringing it into a temperature of from forty to fifty degrees night and day. But many of the growers near rich, prosperous towns in England, who grow large quantities for cutting purposes, and who keep the pots or boxes in one continuous temperature of from fifty to sixty degrees, have had supplies a week before Christmas. Daffodils, as a rule, won't stand much heat, unless such as are vigorous. This one combines all the qualities necessary. Tenby is another good-constitutioned daffodil. Pallidus præcox is early, but rather delicate with the market growers of England. Here it does admirably, and when it gets naturalized will be better still. Princeps is another grand flower to force, and so is the Irish form of telamonius plenus. Nobilis, from the south of France, promises well as a market plant. Of this, after another season, I will speak with more confidence.

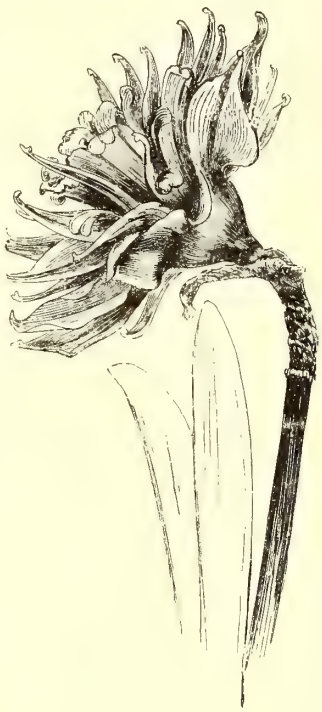
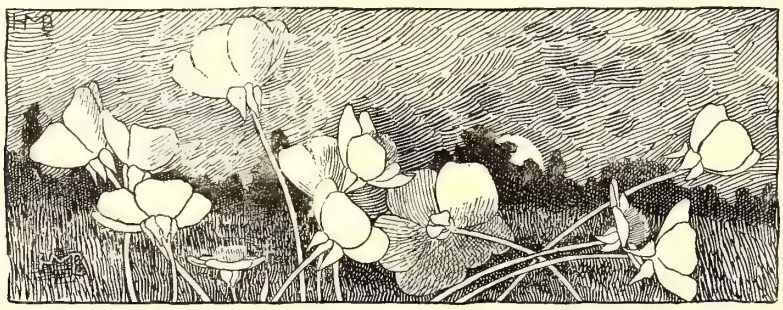


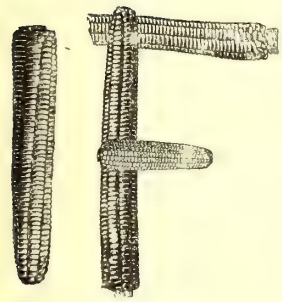
Fig. 4. Rip Van Winkle.

I now give dates at which the principal varieties give their first bloom on my grounds (open air), at Temple Hill, Cork. The soil a rich pasture field, and the manure none: Trumpet section, first average bloom:—Ard-Righ, or Irish King (Fig. 3), February 10th; under glass about New Year's Day; Golden Plover, March 4th; Giant Irish Princeps, February 24th; Horsfieldi, March 10th; Tenby, February 26th; Nobilis, March 6th; Pallidus præcox, January 10th; Variiformis, March 2d; Telamonius plenus, February 28th: Copax, March 6th; Rip Van Winkle (Fig. 4), February 22d; Leda, March 2d.

*Cork, Ireland.* Wm. Baylor Hartland.



# THE NORFOLK TRUCKERS IN MID-WINTER.



THE seasons are determined by the calendar alone, it was winter when I visited Norfolk, for it was between Christmas and New Year's; but, if they are determined by the weather, it must have been April or May. I left two feet of snow and a month of "old fashioned winter," as the old settlers called it, to find myself, a few hours later, in gardens where peas were sowing, crops growing, and the fields busy with the harvesting of spinage and kale. My own Christmas kale had been dug from out the snow, but the Norfolkers picked it from the soft earth in the sunny fields.

Although Norfolk lies as far north as the thirty-seventh parallel, its climate is peculiarly mild. A glance at the map (Fig. 1) suggests the reason. The place is nearly surrounded by broad and open waterways. It lies upon an irregular branch of the Chesapeake, known as the Elizabeth river. It is nearly fifteen miles across the bay from St. Charles to Fortress Monroe and Old Point Comfort, and the noble stretch of Hampton Roads lies between the old fort and Norfolk. The region surrounding Norfolk is intricately intersected with broad arms of the Chesapeake. Elizabeth river itself breaks into three broad portions, one of which sets off the city of Portsmouth, which is but an important tributary to Norfolk. Beyond Hampton Roads, James river stretches away, a broad and majestic stream; and less than fifty miles away is Jamestown, the site of the first successful European colonization, a ruin, without railroad, and practically unknown to the world to which it gave birth.

The position of Norfolk not only insures it a good climate, but gives it unsurpassed transportation facilities. There is constant water communication with New York and Boston, and this competition lessens the tariff by rail. A barrel of kale goes by rail from Norfolk to New York for seventeen cents, while a basket of peaches of five-eighths bushel must pay twenty-one cents from southern Delaware, some 150 miles farther north, over the same road. This inequality of tariff has been the subject of much controversy, but, however it is eventually adjusted, the rates from Norfolk must remain low because of water competition. And the rail facilities, in themselves, are excellent. Railroads are plenty, and across Hampton Roads, upon the southernmost point of the peninsula which lies beyond James river, is Newport News, whose rail connections with the north and west give an immediate outlet for the produce of the truckers. And the minor arms and inlets round about Norfolk afford good water communication with Norfolk and Portsmouth harbors, to which many of the truckers bring their crops in sloops.

It is not strange, therefore, that Norfolk should have become a great vegetable garden for supplying northern markets. The origin of this trucking interest is not recent, yet it is only in the last ten or fifteen years that it has assumed such enormous proportions as to easily lead all trucking centres of the New World. Jerseymen first saw the possibilities of the country. About 1840 Hugh Bates went from New Jersey to Norfolk and began truck gardening in a small way. He brought with him the Jersey methods, and, of course, made hot-beds. The people made sport of him, and even declared that a man who would construct a glass box in which to grow plants would surely bring up at the poor house. But Bates succeeded, and in 1842 he was

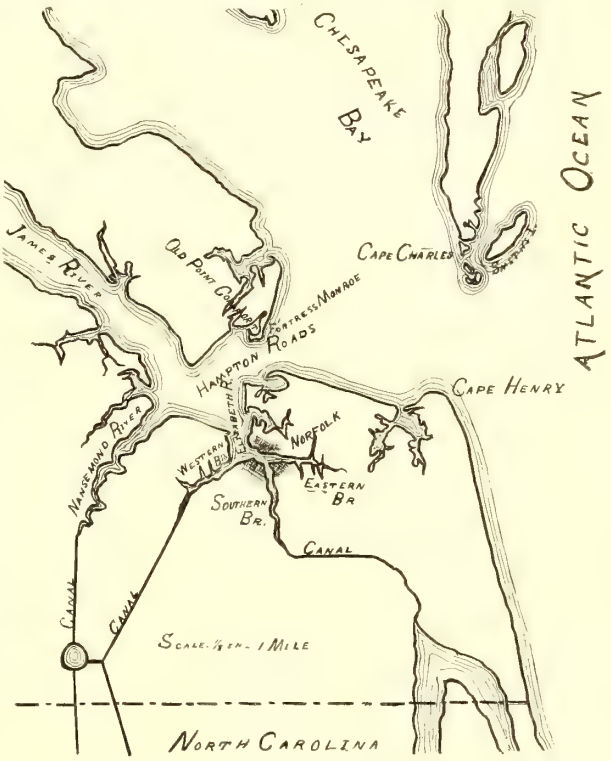



FIG. 1. NORFOLK AND SURROUNDINGS.

followed by W. J. Bishop. In 1844 Richard Cox came from New Jersey. He now owns and resides upon the place where Bates first began his operations, and he is

the pioneer of the trucking interests, his predecessors having some years since abandoned the business. From these beginnings the industry has grown, until it is the largest interest of Norfolk and the region adjacent, and

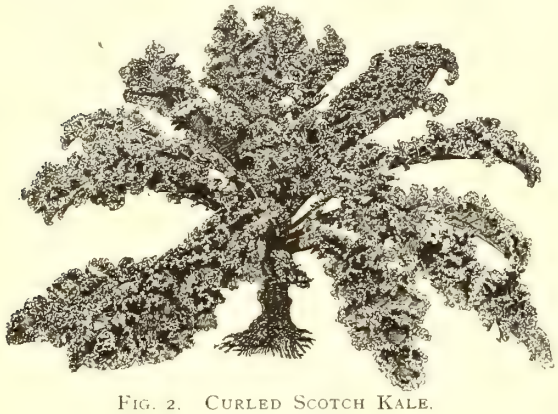


FIG. 2. CURLED SCOTCH KALE.

has attracted the attention of the world. In 1889 the vegetables shipped from Norfolk were as follows:

| | *Quantity.* | *Value.* |
|---|---|---|
| Potatoes | 418,516 bb's. | $1,046,200 00 |
| Strawberries | 7,465,306 qts. | 946,530 00 |
| Cabbages | 347,130 bbls. | 433,912 50 |
| Peas | 185,415 boxes. | 324,476 25 |
| Spinage | 122,829 bbls. | 245,658 00 |
| Kale | 177,707 bbls. | 177,707 00 |
| Beans | 80,935 boxes. | 121,402 50 |
| Melons | 836,152 bbls. | 104,519 00 |
| Tomatoes | 92,591 boxes. | 69,443 25 |
| Cucumbers | 46,280 boxes. | 34,710 00 |
| Lettuce | 8,174 bbls. | 28,609 00 |
| Asparagus | 2,928 boxes. | 17,568 00 |
| Miscellaneous vegetables | 180,949 pkgs. | 536,241 75 |
| | | $4,087,067 85 |

Trucking, however, is not the only interest of Norfolk. The city is rapidly developing as a manufacturing center, and its importance as an entrepôt is very great. It is a point of transport of much the produce of the southern states which is on its way to the northern markets. It is one of the most thriving and promising of the cities of the middle south. All this thrift necessarily enhances the price of land, and some of the trucking farms are held at $400 or $500 per acre. Land is not worth this figure for gardening; but there are large tracts of outlying lands which can be had from $50, or even less, to $100 per acre. These are as well adapted to trucking as any now in use, except in their remoteness from the city; but the constantly increasing railway facilities, and the natural water communications with the harbor, make them accessible. Much good trucking land can be secured at reasonable prices within ten or twelve miles of the harbor. Nearly all the present industry is confined within that limit. Its largest extension is along the western branch (see Fig. 1) lying beyond Portsmouth. It was in this region that the Jerseymen first settled. The region adjacent to Cape Charles will undoubtedly soon become an important trucking center. Congressman William L. Scott has a large farm upon the cape, upon which enormous quantities of potatoes, kale and spinage are grown.

Thomas R. Ballentine is the largest trucker about Norfolk, and one of the most successful. His place lies near the city, and comprises 500 acres. Mr. Ballentine began business on a small scale in 1877, two mules being sufficient to perform all the work. He now keeps thirty mules in constant labor. He grows five crops only,—kale, spinage, potatoes, cabbage and strawberries. This limitation of crops is determined by the character of the soil and by the ease with which these plants fit into a profitable rotation. Kale, spinage and cabbage are winter crops. Kale is sown about the first of September, in the field where it is to stand. Picking begins just before the holidays, and the crop is all off by the first or middle of March. As soon as the kale land is turned over, Mr. Ballentine plants potatoes, in rows four and one-half feet apart, and in May strawberry plants are set between the rows. The potatoes are dug in June, and the land is then given over entirely to the strawberry plants, which are well cultivated till the first of August. The following April and May the berry crop is harvested, and in June the plants are plowed under and the ground is again made ready for a fall planting of kale, spinage or cabbage. Three crops are, therefore, grown in two years, and one of them requires a year in which to mature. This rotation is by no means followed by all the Norfolk truckers, although they all adopt one something like it. Some of them prefer to pick two crops from the strawberries, and a third crop is occasionally gathered.

On the last day of 1890 Mr. Ballentine was busy harvesting kale (Fig. 4). Barrels are drawn into the field, and the pickers simply cut the kale close to the ground, pull off the yellow leaves, and pack it promiscuously in the barrel. The barrel is covered with burlaps, and

FIG. 3. IN THE SPINAGE FIELD.

sent at once to market. The pickers are paid five cents a barrel, and thirty to forty barrels is a fair day's labor, while the best cutters, in good kale, have reached fifty and sixty barrels in eight hours. Mr. Ballentine

expects to harvest 5,000 barrels of kale this season from something over fifty acres of land. On an average, it brings one dollar per barrel in New York, and fifty cents covers the expense of packages, transportation and selling. The variety most commonly grown about Norfolk is the Green Curled Scotch, a good mature plant of which is shown in Fig. 2. A plain-leaved blue kale is also largely raised. Kale is a hardy plant, of the cabbage tribe, and is much esteemed for winter "greens." The varieties are numerous, and variable in shape, habit and color. They are far the handsomest of any plants grown in the vegetable garden, and many of them are worth place in coarser ornamental borders. For a brilliant and constant display of attractive shape and color, few plants equal them.

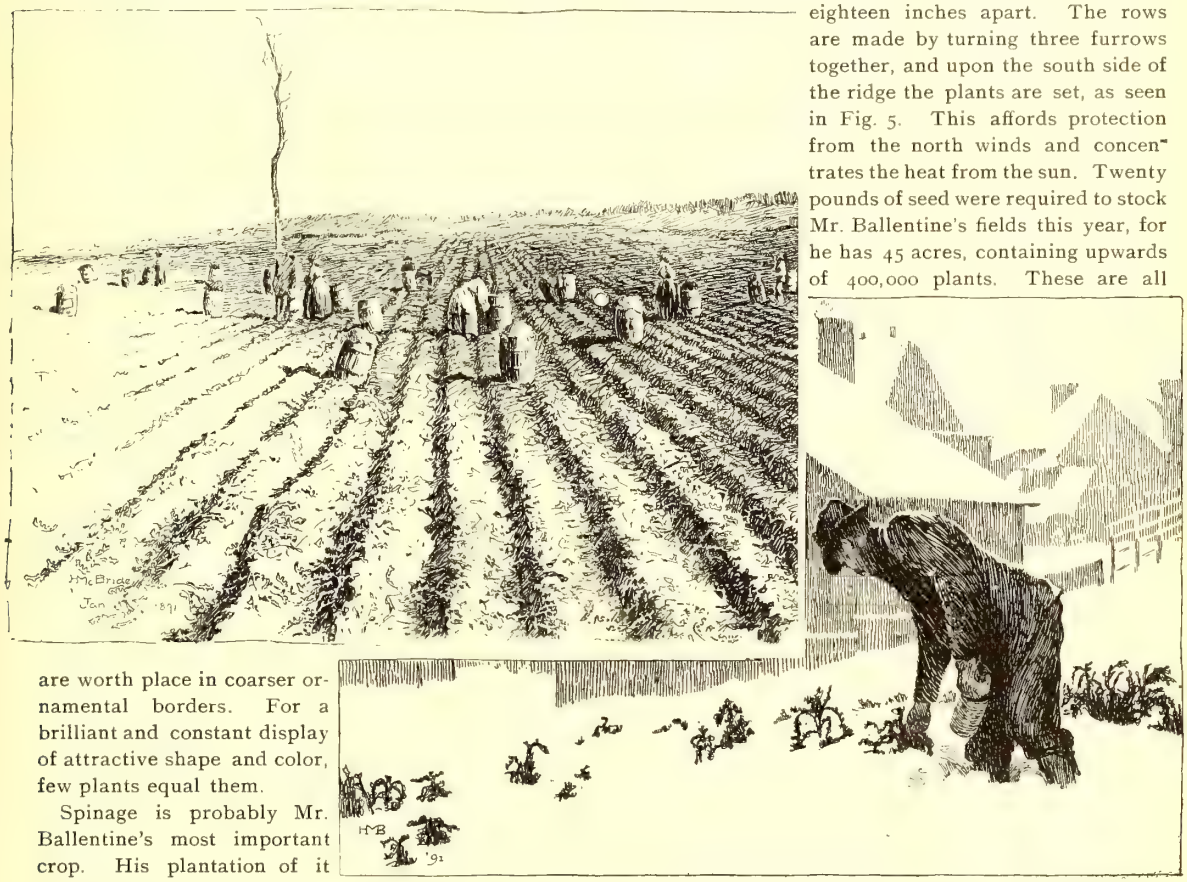


FIG. 4. MY OWN CHRISTMAS KALE HAD BEEN DUG FROM OUT THE SNOW, BUT THE NORFOLKERS PICKED IT FROM THE SOFT EARTH IN THE SUNNY FIELDS.

Spinage is probably Mr. Ballentine's most important crop. His plantation of it this year comprises 125 acres, the sowing of which required two and one-half tons of seed! From this area he expects to harvest 25,000 barrels. This is supposed to be the largest spinage crop ever grown by one person in this country. The harvesting was progressing in the closing days of the year (Fig. 3). These days were warm enough for comfort in the picking field, and I was assured that the weather at the time of my visit was entirely normal. A crust froze upon the soft ground during many of the nights, but the early sun warmed it and sent the negroes rollicking over the fields to do the harvest. Spinage pickers get ten cents a barrel, and from ten to twenty barrels may be considered an average day's work. This spinage was selling in New York for $3 to $3.50 a barrel, at which figure the trucker gets from $2 to $2.25 to pay for the growing. Mr. Ballentine grows the Savoy spinage entirely. It is sown in rows ten inches apart, four rows forming a "bed," which is set off from the adjacent bed by a space some two feet wide.

Cabbages are grown in various ways about Norfolk. Mr. Ballentine grows them entirely without the use of glass. The seeds are sown in beds in September, and the plants are set in the field about the middle of November. They stand in his fields three and a-half by eighteen inches apart. The rows are made by turning three furrows together, and upon the south side of the ridge the plants are set, as seen in Fig. 5. This affords protection from the north winds and concentrates the heat from the sun. Twenty pounds of seed were required to stock Mr. Ballentine's fields this year, for he has 45 acres, containing upwards of 400,000 plants. These are all Early Wakefield, and they are cut about the first of May.

There are 90 acres of strawberries upon this great farm this year, and 80 acres lie in one continuous and level field. Hoffman is grown almost exclusively upon this place. When cultivation ceases in August the grass springs up quickly, and during winter the dead and matted stems afford the most perfect mulch. All growers appear to agree that this mulch is invaluable, especially in protecting the plants from cold winds during bloom-

ing time. It gives earlier berries and it keeps them clear. Some growers use pine needles for mulch in addition to the grass. Strawberries are not uniformly profitable. Many times only the first pickings bring acceptable prices and the latter part of the crop may not

FIG. 5. A WINTER CABBAGE FIELD.

be picked. Seven and eight cents per quart "back" is considered a good return, by which is meant that this amount is returned to the grower after the expenses of packages, transportation and marketing are deducted. Two cents per quart is paid for the picking.

Of potatoes, Mr. Ballentine grows only Early Rose and Early Hebron (Early Beauty of Hebron).

The management of this great truck farm, as of any other large business, demands constant and close attention. The owner has now passed his allotted threescore years and ten, and yet he looks after the details of the business with the enthusiasm of one forty years his junior. Valuable property here and there, in the city as well as out, has passed into his hands. He tells me that his expenses on the truck farm for the year just closing were $30,000, and his income $50,000; and he values his farm of 500 acres at $150,000. And with all his getting he has got understanding of the true purpose and use of riches, and he has taken care that other generations shall have reason to hold his work in grateful remembrance.

Mr. Ballentine seems to regard his success as due to three factor—economy, diligence and manure. I need to speak only of the last. His first choice is stable manure. This he buys in Norfolk at from 50 cents to $1 per cart-load, and a cart-load is about 30 bushels. It is hauled from two to three miles. If the ground is not ready to receive the manure it is dumped in large piles and composted; and from these reservoirs the material is distributed as fast as the land is free. He prefers composted manure to the fresh, but the labor of rehandling it is considerable. He likes to apply forty loads to the acre and to use commercial fertilizer besides, but it cannot be had in sufficient quantity to go far at such rate. He has applied to spinage thirty loads of manure and 1,200 pounds of ground fish, composted together, to the acre, with profitable results. Guano has been a favorite fertilizer, and last year he used 250 tons. Aside from all this he uses freely the best concentrated fertilizers. The soil, as elsewhere about Norfolk, is a mellow sandy loam, and it responds quickly to every extra attention.

Nearly all the labor upon the farm is performed by negroes, both men and women being employed. A few month hands are sometimes employed, for from $15 to $18 per month, with household rations furnished. But commonly the hands work only by the day, for which they are paid from 60 to 75 cents and board themselves; and a day's work in the middle and southern states usually means from sun till sun. Buildings are an unimportant feature upon these farms, especially upon those which are owned by men of southern birth. Fig. 6 shows the main wagon sheds and store-houses upon Mr. Ballentine's farm. He also has a cooper-shop in which he makes all his barrels. He likes the patent ventilated barrels, and some of them are cheaper than the home-made ones, but they do not find favor in the New York market. This great truck farm is a broad and fenceless stretch of level lands, bounded upon the farther borders by tangles of underbrush and pretty forests of slender pines, and intersected here and there by narrow and ditch-bordered roads.

For ten miles along the Western Branch beyond Portsmouth, the land is all devoted to truck gardening. One of the leading growers in this section is Richard Cox, Sr., of whom I have already spoken. He still thinks that many of the New Jersey methods are profitable at Norfolk, and he has abundant reason, for his farm of 180 acres returned him $15,000 clear last season. This was about half of the total income; 1889 was a bad year, however, and many truckers lost heavily, Mr. Cox among the rest. Last year, 10,000 bushels of potatoes returned him $10,000. He began digging the last of May and continued until the first of July. Mr. Cox grows a variety of crops, although his main dependence is upon potatoes, strawberries, spinage and cabbages. He uses mild hot-beds in which to start cabbages, beets and tomatoes. His cabbages were growing in the hot-beds when I visited him, and they will be put into the field in February. The crop is surer if started under glass, for occasionally a hard winter will kill or seriously injure those standing afield. Peas are sown from the middle of December until March. The early sowings are sometimes destroyed by the cold. This was the

FIG. 6. THE BARN AND SHEDS.

case with those sown late in last December. The cold weather of Christmas time—when about a half inch of snow fell in Norfolk—caused the peas to rot in the ground. Sweet potatoes are somewhat grown, as are

also radishes, asparagus, lettuce and tomatoes. Lettuee was ready for picking in the open field by New Years in a few cases, but it ordinarily comes on from one to three

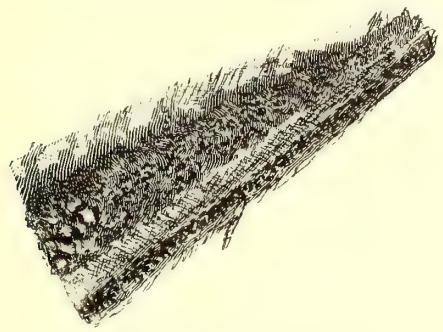


FIG. 7. THE SPINAGE NURSE.

months later. It is sown directly in the field in September, or the winter crop may be grown entirely under cold frames. Tomatoes are grown much less than formerly because of the competition of the southern states. Mr. Cox tells me that when he first went to Norfolk, the early tomatoes brought from $4 to $10 per bushel, and cucumbers sold for $40 and $50 per barrel. Cucumbers are yet very largely grown. Melons are an important crop. They are planted from the last of March to the first of May. Beans are much grown, the first crop being planted about the last of March. Mohawk and Speckled Valentine are the most popular kinds. There is profit in egg-plants, but the potato bugs attack them so greedily that they are not much grown. Asparagus culture appears to be profitable. Some grow a crop of kale between the rows in winter.

An interesting example of the extent to which these truckers avoid the cold winds is afforded in the manner in which some growers protect the young spinage. The early sown spinage attains sufficient size before the cold weather comes to pass the winter in safety. A few weeks after this is sown, a second crop is sown upon the south side of the row and about a foot from it (Fig. 7). The older row then protects the younger one. A large field of this spinage, double-cropped, was being cultivated when I visited Mr. Cox upon the last day of the year. For the same reason, radishes are sometimes sown upon the south side of rows of peas. Mr. Cox called my attention to an interesting rotation—little used, however—in which five different crops are grown and taken from the land between January and December. Peas are first planted. Upon the south side of the pea rows, radishes are sown. Cucumbers are later planted between the rows. When the peas and radishes are removed, corn is planted in their places; and at the last cultivation of corn, the cucumbers having been removed, turnips are sown broadcast. Corn is used to piece out the season in an interesting manner. It is planted all the way from May to August, whenever a field becomes vacant. The late corn is used mostly for field.

Unquestionably, trucking is profitable at Norfolk, but it has its uncertainties. The weather is the controlling factor. The winter crops are sometimes seriously injured by a sudden cold snap, so that there is an element of venture in the business. But there are few regions which are so peculiarly adapted to the profitable growing of vegetables as this. And the industry has but just begun.

*New York.* L. H. BAILEY.

# ONTARIO GROWERS IN COUNCIL.

IT WAS a large and enthusiastic gathering in the Hamilton City hall on December 16 to 18, 3890. No wonder either, for the association brags of having a *bona-fide* paid-up membership of 2,100. In the customary address, president A. M. Smith says the poor fruit crops of the past two seasons teach us that it is not safe to depend on one thing alone, urges increased planting for home use, desires improvement in the business methods of the Canadian express companies, and tells of Prof. Saunders' efforts to bring out hardier small fruits, especially raspberries, and that there is now a fair promise of the introduction of many new sorts greatly superior to many now largely grown.

Among new fruits, Secretary Woolverton's report mentions especially the Clark cherry, which has a fall-bearing habit, and the Williams strawberry, which is large and very productive.

The following officers were elected: president, J. A. Morton, of Wingham; vice-president, A. H. Pettit, of Grimsby; secretary, L. Woolverton, of Grimsby.

The scheme of government inspection of fruits, which A. H. Pettit advocates in his paper on "Our Fruit Markets," appears impracticable to the outsider, but the majority of members, among them the apple expert, A. McD. Allan, thinks it very desirable to establish a standard of quality, and have this standard guaranteed for each package by the official stamp (No. 1 or No. 2, as the case may be) of a government inspector. So the question was referred to a committee, and will be put before the Dominion government for legislative action. The disposition to look to the government and legal enactments for relief in every difficulty crops out very prominently in all the proceedings of the Ontario fruit growers, while in American societies this is rarely the case. The cause of this is obviously the greater weight and importance which the Canadian government attaches to the desires and needs of the horticultural professions. At least it so appears from the confident tone of the members in the discussions of such questions, and so it appeared from the

address of the Minister of Agriculture, whose promises the members, in the light of their past experience, take at their par value, not as mere honeyed words. It also so appears from the very substantial financial aid which the society receives from the government.

Spraying or jarring, which is the better remedy for curculio? This question came up for discussion. Mr. S. D. Willard of Geneva, New York, warned very emphatically against spraying stone fruits with arsenical poisons, for although effective against the curculio, it has caused him a loss of several thousand dollars through burning of the foliage, and consequent damage to crops and trees. The great majority of the Canadian growers, however were on the other side of the question, and many of them emphatically declare they would not attempt to raise plums, if they could not spray. But they all use Paris green, while Mr. Willard has only tried London purple on the stone fruits. He says the cost of jarring is only about 25 cents per tree for the season; and an orchard is soon gone over. He sprays his apple and pear trees with Paris green, and finds it a protection both against codlin and curculio. The Canadian growers use two ounces of Paris green to 40 gallons of water. When part of the mixture is used out of the barrel, more water is added, as the Paris green is all the time settling to the bottom, making the poisonous mixture gradually stronger until there is danger of scorching the foliage with it. If used in the proportions named, and with a proper addition of water afterwards, no injury to the foliage of plum trees has ever been observed.

SHALL OUR WILD FLOWERS PERISH?

This was the title of a paper read by the new president, J. A. Morton. He protests against the undue preference given to foreign flowers for public and private lawns and gardens, and against the neglect of the many beautiful natives, unappreciated just because they are "only Canadian wild flowers." The florists and seedsmen could create a taste and demand for our beautiful natives by advertising them in their lists and catalogues as persistently as they do the imported flowers. Among plants for the preservation of which Mr. Morton so eloquently pleads, are the following: *Viola palmata*, and its variety *V. cucullata*, also *V. pedata*; the blood-root, beautiful while it lasts; *Jeffersonia diphylla*, a compact bushy plant, of peculiarly shaped leafage; *Epigæa repens*, of most delicious fragrance, and one of the earliest flowers; several anemones, among them those known as hepaticas, also *Anemone dichotoma*; actæas, bearing clusters of red or white berries; marsh marigold, an object of delight to our children; meadow rues and rue anemones; Virgin's bower; rhomboid-leaved crowfoot; columbines (*Aquilegia Canadensis* and *A. formosa*); trilliums; *Clintonia borealis*, desiring a cool, shady nook; dog's-tooth violet. Among lilies, *Lilium Philadelphicum* and *L. Canadense*, *Zygadenus elegans* and *Z. uvalaria*. Among orchids the cypripediums, some of which are prettier than the exotic species; of gentians, the blazing star; monardas, *Asclepias tuberosa*; phloxes, spider flower (*Cleome integrifolia*); harebell and lobelias; several asters; flowering dogwood; highbush cranberry; great St. John's wort; water lilies, kalmias. In cultivating any of these, we should try to make the environments as nearly like the conditions of their former habitation as we can. But if the change is not too sudden or violent, it is wonderful under what varied circumstances and changed conditions these plants will exist and flourish.

THE NORTHERN ROSE GARDEN.

This subject was treated by James F. Webster. He advises to plant roses in beds by themselves, rather than scatteringly throughout the garden. Select well-drained, rather heavy soil. If soil is of a sandy nature, the beds may be mulched with two or three inches of rotted manure, allowing this to remain on throughout the season, and digging it under in the fall or following spring with further additions of well-rotted cow manure. Roses delight in a sheltered position exposed to the morning sun. In April or early May plant the hybrid perpetuals, moss roses and hybrid teas. Set two-year-old plants 30 inches apart; one-year-old plants 15 to 20 inches apart. The latter have to be replanted further apart two or three years later. October is the best time for replanting. Plants budded on Manetti stock should be set with point of union 2½ or 3 inches below the surface. Shoots from the stock to be removed whenever appearing. They can be told by their seven leaflets, while nearly all the hybrid perpetuals have but five. A mound of soil 8 or 10 inches high around the plant is a good winter protection for all roses requiring close pruning. Level again in spring. In pruning, leave only 6 or 8 inches of wood, measuring from the ground, and on weak growing varieties even less. Burn at once all the clippings, as a measure against increase of thrip. The few remaining thrips can be easily kept in check by timely applications of soapy water, with a few drops of carbolic acid to the pailful. Tobacco tea is perhaps as good a remedy as any. Regarding varieties, the perfect rose has not yet been found. It is not necessary, either, to look to the lists of novelties for those most desirable. Many of the best varieties of to-day have stood the test of a quarter of a century, and will remain favorites for years to come.

HARDY ORNAMENTAL TREES AND SHRUBS FOR THE LAWN.

Mr. Jas. Goldie, who read a paper on the above title, does not believe in planting Norway spruce and Austrian and Scotch pines on a small door-yard. Such tall growths have to be kept within bounds by cutting at the expense of their natural beauty. Several varieties of the common arbor-vitæ, also dwarf varieties of Norway spruce and other spruces and pines, and varieties of the lilac, are better fitted for such purposes than what are often planted. There is a great want in Canada of broad-leaved evergreens; the laurel, the bay, the holly, the rhododendron are not hardy enough for Canadian winters. Rhododendrons and hybrid azaleas do not succeed on limestone soil; the *Mahonia aquifolia*, the holly-leaved barberry, is our only shrub of the broad-leaved character, and is suited for a shady location. One of

the prettiest evergreens, both singly and in beds, is the common yew (*Taxus baccata*, var. *Canadensis*) or ground hemlock; good for shady places. One of the finest of all lawn trees is the Colorado blue spruce, and one of the hardiest also. *Picea concolor* is fine and hardy, but its early growth is sometimes cut off by late frosts. *Pinus cembra* resembles common pine, but is of more compact growth. *Pinus Mughus* and *P. pumila*, dwarf growths, are suitable for small grounds or rockeries. Red cedar (*Juniperus Virginiana*), when grown singly and branched to the ground, are very pretty; but for small beds or rock-work, nothing is better than *Juniperus squamata*. The common savin, *Juniperus sabina*, and its variety *Tamariscifolia*, are hardy and useful. Some of the retinisporas, ornamental small trees, are not quite hardy here. The umbrella pine of Japan stands the cold winters well. Many of the rarer ornamentals are propagated by grafting, but very few of them, especially among the coniferæ, ever thrive as well as seedlings do. Nothing is finer in the garden than a collection of lilacs when in bloom. Some of the birches make good lawn trees, the cut-leaved weeping birch being among the finest. Of magnolias, *M. Hallii* and *acuminata* prove hardy. Among the failures are mentioned the beech, maiden-hair tree (*Salisburia adiantifolia*), *Cornus Florida*, liquidambar or sweet gum, Japan maples and others. Canadian winters are too much for them. Prepare the ground well before planting; have it well trenched that the roots may go down deep, and the trees be enabled to endure the droughts of summer and the cold of winter. The more tender things should be well protected for several winters after planting. When the roots have become well established there is little danger of injury.

### COMMERCIAL FRUIT-GROWERS' OUTLOOK.

D. W. Beadle's paper contains rather more encouragement for the professional fruit-grower than for the average tree planter or the "speculator" in fruit-growing. Many of the trees planted, he says, will never affect the fruit market a bit simply because they will never bear a crop save that of bitter disappointment. Thousands of trees are planted on low, cold, wet and otherwise utterly unsuitable land. The man who wants to be a successful fruit-grower must have love and enthusiasm for his chosen calling. The very placing of *good* fruit on the market increases the demand wonderfully, and the fruit-eating qualities of our people are not yet fully developed. Altogether the outlook is not bad.

### FRUIT-GROWING OF 1889 AND 1890 IN WESTERN NEW YORK.

The following are some gleanings from Mr. S. D. Willard's report: A new apricot, named the "Harris," has become famous on the shores of Seneca Lake. It ripens about July 20, and has proved a fine thing and very profitable. The grape crop of 1890 was the largest ever grown in Western New York. Yellow Transparent apple is giving more general satisfaction than any other early apple. The Stump and McIntosh Red apples are recommended as good sorts for market. Sutton's Beauty comes out better than Baldwin, and is unsurpassed for beauty. Of peaches we must plant sorts that are especially hardy in fruit bud, such as Hill's Chili, Morris White, Red Cheek, Early Rivers, Horton's Rivers, Hyne's Surprise, Yellow St. John. Garfield or Brigdon promises to become a standard orchard sort. The most profitable pears are Bartlett, Dutchess and Kieffer, the latter excelling all others in an orchard for profit. The following are named as good plums for market, viz: Czar, Prince of Wales, Monarch, Archduke, Grandduke, among English varieties, and Field, Gueii, Hudson River, Purple Egg, Stanton and Middlebury among others. There is money in cherries, especially sour ones. Montmorency, English Morello and Louis Philippe are recommended among the sour class, and Gov. Wood, Rockport and Windsor among the sweet ones. Windsor is the best dark-colored cherry. Mr. Willard notices an increasing demand for cultivated blackberries, and recommends Snyder and Early Barnard.

### PROTECTION TO ORIGINATORS OF NEW FRUITS.

After some discussion the committee on legislation is instructed to wrestle with the problem of how best to secure to the originator of valuable new fruits, etc., some benefit from the results of his labors or luck. There is a prospect that the Canadian government will be induced to deal with the question, and the fruit growers on this side of the line will watch with considerable interest the effects of the laws that may be enacted in Canada.

### METHODS OF PROPAGATING FRUIT TREES.

In a paper on this subject, Mr. John Craig of the Experimental Farm at Ottawa gives some valuable data bearing upon the problem of whole roots *vs.* piece-root stocks. The advantage of whole-rooted trees, whether budded or grafted, lies in the production of a deeper, firmer and more symmetrical root system *at first* than usually produced by piece-roots. Consequently such trees make a more rapid growth the first two or three years. The advantage of piece-rooted trees are cheaper propagation and the possibility of deep setting. The piece-root seems to be almost indispensable where extra hardiness is desired. The piece-root serves merely as a temporary root for a cutting. The cion represents a variety of known hardiness while the seedling root is variable, and in the majority of cases probably not hardy enough to withstand very severe climates. Good trees for all purposes can be obtained by using only the first and second cuts from the root, and these cuts should not be less than 3½ inches long and the cion between 5 and 6 inches long. In a series of experiments made at the Experimental Farm seedling roots cut in three pieces were used for stocks. The trees, from grafting upon the first two cuts were about equally good, while the third cut (the root end) made an inferior tree.

For cherry stocks Mr. Craig has used Mahaleb and Mazzard with nearly equal success, but thinks the latter more satisfactory. Such stocks, planted one year and crown-grafted the spring following made a fine growth.

Myrabolan stock is tender; nor is the native plum of the east to be recommended for stocks for Canada. The western form of the native plum grows readily from pits, making plants large enough for budding in August of the first year, and winters well. It is good stock for plum, peach and apricot. Propagation by root cuttings is very easy with cherries, plums, and the stone fruits in general. Take up roots from near the surface in fall, cut into three-inch lengths and pack in boxes with alternate layers of moist sand and earth; store the boxes in a frost-proof cellar. In spring, when roots are well calloused, plant in nursery rows or thickly in beds, in a slanting position, with top end ¾ inch below the surface; keep surface clean and friable.

### PRUNING PLUM TREES.

In reply to the query, Should bearing plum trees be pruned; how and when? Mr. S. D. Willard announces himself as a convert to the pruning practice. Some varieties, he says, make large slender limbs, and often a growth of from four to six feet in one season. These are likely to set full and break; but if shortened in by removing one-third or more of the new growth, they will grow stronger, and bear better fruit. This pruning should be done on mild days during winter, never in spring; if done in spring after the sap starts great injury may result from the shock to the tree.

### CANADA WOOD ASHES.

Prof. C. C. James speaks in favor of wood ashes as an orchard fertilizer, and thinks the Canadian authorities should put an export tax on ashes heavy enough to prohibit exportation. Canada, he says, sends its most effective and cheapest fertilizer out of the country to enrich the fruit grower of the United States. A bushel of fresh wood ashes, analyzing 6 to 8 per cent. potash and 1½ to 2½ per cent. phosphoric acid is worth twenty to twenty-five cents, while Canadian people usually sell it for about ten cents a bushel. The following formula is recommended for a fruit fertilizer for one acre:

| | |
|---|---|
| 40 bushels of fresh ashes costing | $4.00 |
| 100 pounds bone " | 1.50 |
| 100 sulphate of ammonia " | 3.00 |
| Total | $8.50 |

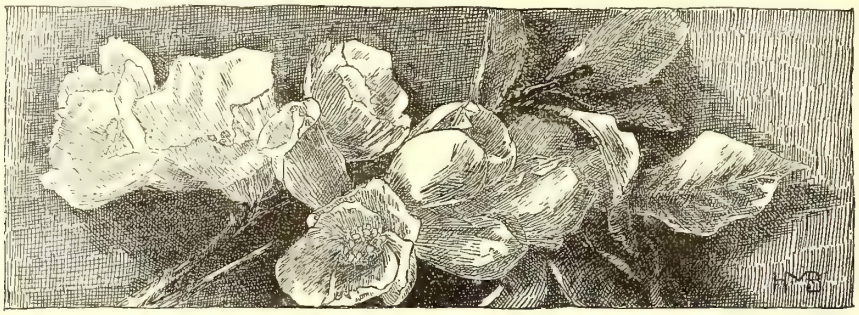
Manufacturers of fertilizers will charge not less than $12.50 for a general mixed fertilizer of same fertilizing value. Leached ashes have yet 2 to 2½ per cent. potash, and about 2 per cent. phosphoric acid. Soft wood ashes are worth four-fifths, pound for pound, of what hard wood ashes are. Nitrate of soda may be used in place of the sulphate of ammonia. The best returns from the use of ashes are observed on loose open soils. On clayey soils Prof. James advises to use coal ashes first.

### HARDY APPLES FOR THE NORTH AND FOR EXPORT.

G. C. Caston recommends the following varieties as being comparatively from scab, viz: Yellow Transparent (early summer); Oldenburg (early autumn); Alexander, Red Bietigheimer, Haas or Fall Queen, Wealthy, Pewaukee, Golden Russet, Scott's Winter, Baxter. Almost any variety can be grown, however, if top grafted on hardy stocks, such as native seedlings, Tetofsky, Talman Sweet, etc. King even does well in Canada if top grafted on hardy trees. Northern Spy is not profitable as a nursery tree, but all right if grafted on a hardy tree.

### VALUE OF APPLE ORCHARD.

The query, what is the value of an apple orchard ten years old, supposing the ground before planting to be worth $100 an acre, brought out an animated discussion, some successful growers contending such an orchard to be worth $1,000 an acre, while one or two less fortunate or less skillful ones estimated the value of an acre to be about $75, as it would cost about $25 to root out the trees! The great majority of the members took a middle ground. G. R.



# The Editor's Outlook.

*OUR HORTICULTURAL STATUS.*

FASHIONS and methods change in horticulture as elsewhere, but it does not necessarily follow that all change is for the better. We are fond of thinking that the conceits of other days showed a less appreciation of art, and a somewhat lower grade of intelligence than the enterprises of our own day. And it is certainly true, if nature is our inspiration, that the formalities of a century ago suffer in comparison with some modern exhibitions of taste. The balanced order, sheared plants and garden labyrinths, which the late Shirley Hibberd happily dubbed the archæology of horticulture, possess few elements of genuine taste or appreciation of nature. They show that people looked at externals, at mere form and proportion, not at real beauty.

We are all prepared to admit, no doubt, that a love of nature and an appreciation of natural objects in proportion as they respond to our better emotions, constitute the true measure of refinement in horticulture. Gardens of a century and more ago were grotesque, artificial, and their owners enjoyed them, as Walter Howe remarks, "because they set themselves off to advantage." Gardens were admired because of their externals. Fashions have changed, and what now is the dominant phase of horticulture in America? It may be assumed that the catalogues, which are created to supply a popular demand, accurately reflect the average taste; and these in connection with the current writings and the exhibitions may be taken as measures of our status. If these guides are reliable, then it is impossible to escape the conviction that blaze of color and monstrosities are now the dominant phases of our horticultural mind. The wonderful popularity of carpet-bedding is proof enough that this is a just conclusion, not to speak of the reflection of that form of gardening in the trade literature which we are asked to consult in making the purchases of the year.

It is impossible to suppose that a truly refined taste can enjoy the dazzling, monstrous and impossible colors and objects which are coming to our tables in dozens at this season. Now and then one comes in a tasteful, plain and modest suit, and it brings a sense of relief and repose akin to that which one feels when a tastefully dressed person enters an over-dressed company. Somehow, it seems to be impossible to come very near to a sweet love of nature so long as our eyes are filled with color alone. To be sure, these dazzling colors often exist in nature and sometimes in the greatest profusion, but they do not obscure all other beauty. Our catalogues make us feel that color and size are the sole attributes and property of flowers. Instead of leading us into the fields to find attractions in habits, and shapes of leaves, and beauty of form and texture in greens as well as in reds and yellows, they make us long for a hot-house where we may mass into one little space all the color of the country-side! A man does not love nature so long as he overlooks the textures and shades of green.

A friend tells us that the only catalogue which he has yet laid upon his table for further reference and study is one which has no colored pictures, either inside or out, and in which there are no Jack-and-the-bean-stalks, nor sky-lifting melons. And we are sure that this person loves a garden.

It appears, therefore, that the mass of our people have not yet gotten beyond externals in gardening. We have transferred grotesqueness from form to color. But we are not saying that these gaudy messengers are to be discouraged. It may be that their very gaudiness is a means of carrying information to thousands who may profit by it. We hope so!

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*WHAT IS HORTICULTURE?*

THE absurd classification of horticultural interests proposed for the World's Fair indicates that there is a very crude and indefinite notion abroad as to what constitutes horticulture. The classification proposed for "Department B," including "Viticulture, Horticulture, Floriculture," is as follows:

Viticulture—fourteen classes.
Horticulture—four classes, vegetables only.
Floriculture—twelve classes.
Arboriculture—three classes.
Pomology—four classes.
Appliances—six classes.

This confines horticulture to vegetable gardening. We are not aware that such a construction of the term has ever been made before, and we do not

understand what reasons there may be for such limitation. The author of the classification cannot have been a literalist, for horticulture etymologically means the cultivation of gardens, and if one class of plants more than another has been inseparably associated with gardens, it is the ornamentals, the flowers. And in Europe, where the term was first used, fruits are as much a part of gardens as are flowers or vegetables. But the meaning of the term has long since outgrown its etymology, and even the most casual reader of the literature of the day must have observed that horticulture comprises more than the circumscribed interests pertaining to that formal bit of ground which is commonly known as a garden.

The author of the classification has evidently framed a definition of his own in a field of which he is ignorant. It has served a purpose, however, for it has awakened wide discussion, and the outcome must be a general enlightenment upon the subject. The Michigan Horticultural Society has led in the agitation and in the endeavor to pursuade the World's Fair authorities to adopt a good classification. The arrangement adopted by the Michigan Society is this :

DEPARTMENT B—HORTICULTURE.

Group 21—Pomology.
Group 22—Floriculture.
Group 23—Truck and kitchen gardening.
Group 24—Arboriculture.
Group 25—Horticultural appliances.
Group 26—Miscellaneous.

This must accord with the views of all those who have given the subject adequate attention, and it is the constitution of horticulture which is practically understood by every agricultural college and experiment station in the land. This schedule is a sufficient definition of horticulture for purposes of exhibition. It is, of course, impossible to define horticulture precisely, as it is impossible to define agriculture or electrical engineering or physics. But the definition is not simplified by arbitrarily restricting it. We do not know how one can define vegetable gardening precisely.

The definition of horticulture, as of everything else, is determined entirely by usage, and no one, until the present remarkable instance, has restricted it to the vegetable garden. Viticulture is legitimately a part of pomology or fruit-culture, which is itself one of the coördinate divisions of horticulture. Arboriculture is an unfortunate term, as it is often used, and properly enough, to designate some legitimate branches of forestry; and it does not deal, as used in the present schedule, with trees alone, but with shrubs and even smaller plants. By arboriculture, the Michigan society evidently means to refer to the general labor of growing ornamental trees and shrubs and of caring for them and other plants in reference to landscape effects. It is difficult to find a term which shall cover this province, although other, and to our mind, better ones have been proposed.

But the schedule originally proposed has other faults. Under viticulture it classes the manufacture of wines, brandies and the like. It confounds horticulture and manufacture. Horticulture ends at the factory door. The manufacture of champagne is no more a part of horticulture—simply because it uses grapes—than the manufacture of glue is a part of agriculture, because it uses animal tissues. The schedule is further at fault in its unequal and untrue distribution of "classes." We fear that it would be difficult to show that grape interests rank in importance to all other fruit interests of the country as fourteen to four! Apples probably out-rank grapes. Or if the extra classes under viticulture are constructed for the purpose of including brandies and champagnes, then we appeal for one or two for apple-jack and peach brandy!

But horticulture is more than all this. A great science, having to do with the behavior of plants under culture, is awaiting exploration. These plants, and the methods by which they are modified, come very largely under the care of the horticulturist. This region of hybridization, influences upon plants of climate, soils and culture, the possibilities of selection, and kindred subjects, come logically under the province of botany. But botany does not claim it. Botanists, as a rule, are behind the spirit of the times. Few of them are working in the line of the modern generalizations, but are still chiefly concerned with characters and limits of species. The science still has too much of the old-time stiffness. Horticulture must enter this new and refreshing field, first opened by Knight and Darwin, and claim it for its own.

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*CONTROL OF PLANT DISEASES.*

AT A recent meeting of fruit growers in Delaware, it was urged that the destruction of yellows peach trees should not be made obligatory, because every man has a right to manage and control his own orchards. "If my neighbor is so unwise as to retain yellows trees, it is none of my business. I have no right to interfere." It would seem that the fallacy in this argument is so obvious that we need not point it out; and yet this attitude

is so general in some regions, particularly in the middle states, as to be a serious obstacle to any restrictive legislation. It is only when a plant disease is considered as a public nuisance or menace that our law makers can be prevailed upon to regard it as a subject worthy of legislation; and it is only upon this ground that the justice and constitutionality of restrictive laws can stand. One has a right to demand that the state protect him from plague and contagion, and no man has the right to harbor any agency or disease which will imperil his neighbor's interests. We must unite solidly and systematically or we cannot hope to control plant diseases. The interest of the individual must be subordinated to that of the community, and it will be but a short time until the interests of the two will be found to be identical. Legislation for the control of plant diseases must be the next demand of horticulturists, and the sooner we act, the greater must be the benefits.

In the mean time, the dispersion of knowledge on the subject among those interested is of vital importance, for the best law in the world is worth little or nothing without public sentiment to back its enforcement. If the state of the public mind in Michigan with regards to the yellows law is caused to exist in the other peach growing regions, the necessary laws will easily be obtained, and may as readily enforced.

Let every horticulturist, then, agitate the matter, and tell the Michigan story. The results, affecting so promptly and greatly the net income of the growers, are the most powerful argument for the introduction of like laws in other parts of the country.

* * *

*THE GEOGRAPHY OF SUCCESS.*

WE ARE apt to think that success in horticulture is determined by the region in which we live. Those of us whose lots are cast in the north are particularly fond of picturing to ourselves regions where palms and oranges grow in the fields and roses bloom throughout the twelve months in the hedge-rows. But we forget that neither the love of gardens nor pecuniary reward is measured by luxuriance of vegetation or general length of season. Each region has its own peculiar possibilities, in the development of which the grower can exhaust his ingenuity. Every person of large observation must have noticed that there are as many successful men in trying climates as in mild ones, and, in truth, there are often more, for the very difficulties intensify endeavor. Nor are there any regions in which the cultivator is free from difficulties. Everywhere there are uncertainties of markets and labor and weather, and everywhere there are fungi and insects. Fruit growing in Florida suffers more from frost than it does in New York. Success is oftener measured by the man than by the state in which he lives; and happiness, which is an important element of success, comes only when the man is in full sympathy with his surroundings. The man who wanders in search of a better country is apt to be a discontented man, and the discontented man is seldom a successful man, or in the way of really helping himself or others to better things in the world. Association and love of locality are too little appreciated by American, and every climate has its pleasures. We love to read of green fields and blooming trees when our northern hills are white with snow, but for ourselves, we will choose the conservatory or the forcing house while the storms rage without, rather than the orange groves and cocoanuts in sweeter climates; and who can love the spring-time and the autumn who has not felt the rigors of winter or sighed with the shortness of summer!

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*LITTLE KNOWN PLANTS.*

NOTHING shows more clearly the real advances horticulture is making in America than the interest, apparently deep and abiding, that has grown up in a decade or two in the more unusual forms of plant growth. Orchids, for example, have come to be known and admired the country over, and an exhibition of them is sure to attract great attention everywhere, and still greater curiosity as to their capabilities for popular use and culture. It is not visionary to predict that our window-gardening women will shortly exhibit some plant of this heretofore rare order in full vigor as their chief treasure.

Cactuses have changed front vastly in public estimation and use also. Their peculiarities are admired, and the "night-blooming serious" of our friend R. T. Choke, is not any longer the sole representative of the class.

A great field is yet open for exploits in developing little known forms, both native and foreign, and to this work THE AMERICAN GARDEN is most heartily devoted, in line with its general policy of doing everything for the true good of horticulture. Our exposition of the cactuses last year, and of orchids in this and succeeding issues indicate the desire in this direction. We bespeak the aid of all true horticulturists.


*** The American Garden *stands for simplicity, good taste and correctness in names of varieties. In general botanical nomenclature it follows Bentham and Hooker and Nicholson's Dictionary of Gardening. In the names of fruits, it adopts the catalogue of the American Pomological Society, and in vegetables the Horticulturists' revision in Annals of Horticulture. In florists' plants, it follows the determinations of the Nomenclature committee of the Society of American Florists. It opposes trinomial nomenclature, and therefore places a comma or the abbreviation* var. *between the specific and varietal names. It uses capital initials for all specific and varietal Latin names which are derived from proper nouns.*

*Our discussion of orchids will be continued in the March number. A number of attractive articles will be presented. Leading features will be an illustrated paper upon the native orchids of New England, Notes from Sander's establishment, St. Albans, England, Orchids in California, and cultural topics of interest to every lover of fine plants.*

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An Experiment Station for Alaska has been proposed.

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The London (England) *Fruit Trade Journal* has discontinued.

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The winter meeting of the Nebraska State Horticultural Society was held at Lincoln, January 13–15.

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The Citrus fair of Southern California will be held at Los Angeles, March 2d to 14th. The Northern Citrus fair opened at Marysville, December 29th.

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The old officers of the Michigan Horticultural Society, were re-elected: T. T. Lyon, president; Edwin C. Reid, Allegan, secretary; S. M. Pearsall, treasurer.

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Herbert J. Webber, formerly assistant in botany at the University of Nebraska, has been given an assistantship of botany in the Missouri Botanic Gardens.

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The Office of Experiment Stations, of the Department of Agriculture, proposes to publish in the *Experiment Station Record*, abstracts of foreign experiments in horticulture.

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Gray's Field, Forest and Garden Botany is to be revised by Professor C. R. Barnes, of the University of Wisconsin. It is expected that the revision will be completed by the close of the year.

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A frost about Tampa Bay, Florida, on the night of December 29th, killed the winter crops of tomatoes and egg-plants. The leaves of other tender plants were badly nipped. No serious damage was done to fruits.

A biological expedition to the West Indies and Yucatan is now out under the auspices of Dr. J. T. Rothrock of the University of Pennsylvania. A. S. Hitchcock goes with the party to collect for the Missouri Botanic Gardens.

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The Napa Valley, California, horticulturists have organized a Fruit Growers' Association with the following officers: President, W. C. Damon; vice-president, W. A. Fisher; secretary, M. M. McFatridge; treasurer, S. M. Tool.

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The officers for 1891 of the Berks county (Penna.) Agricultural and Horticultural Society are as follows: Wm. G. Moore, president; Cyrus T. Fox, secretary and librarian; Milford N. Ritter, treasurer. This is Mr. Fox's sixteenth term.

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Professor T. J. Burrill, of the University of Illinois, has started a movement to induce the Illinois Central Railroad to take means to preserve the native flora along its lines. The road has over 700 miles of right of way, extending the whole length of the State.

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An exploring expedition to the Death Valley, in Southwestern California, has been sent out from the Department of Agriculture, under the directorship of Dr. C. H. Merriam. The intense heat and dryness of this valley have given it its suggestive name.

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W. M. Munson, assistant horticulturist at Cornell, and who is familiar to our readers from his writings upon the forcing of vegetables, takes the professorship of horticulture in the Agricultural College of Maine. He enters upon his duties there this month.

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The Hartford county (Conn.) Horticultural Society issues an attractive report and catalogue of exhibitions. Aside from schedules, it contains much unusually good matter concerning horticultural practice. The society's exhibition of spring flowering bulbs will be held about March 19th.

A MAMMOTH new fruit market is being erected in London, having a frontage on Charter House street of 370 feet, and on Farringdon road of 184 feet. It covers 54,000 square feet, and is built of iron and glass. It is to cost some $75,000. It will attract much of the interest from historic Covent Garden.

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AT A MEETING of the Dutch Horticultural Society, (Holland) November 12th, first-class certificates were awarded for *Lilium Neilgherrense*, *Watsonia iridifolia* var. *O'Brieni*, *Nerine pudica* and *Disa grandiflora*. An honorable mention was given for *Cattleya gigas*, and "thanksgivings" were returned for a collection of tydæa and one of autumn crocus, *Hessea crispa*, *Nerine hybrida* "Novelty," *Physalis Peruviana* and *Picea pungens* var. *glauca*.

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THE NORTHWESTERN Cider and Vinegar Makers' Association met at St. Louis, December 16 and 17. Measures were taken looking towards the adjustment of freight rates, and the enactment of laws by the states to prevent adulteration of vinegar. The members concurred in stating that the best apple crop this year was in Missouri and the borders of adjoining states. The association will probably make a large exhibit at the World's Fair. The association will meet at Springfield, Illinois, next year. The new officers are as follows: G. W. Hilliard, Brighton, Ill., president; S. C. Hasoler, Louisiana, Mo., First vice-president; L. R. Bryant, Princeton, Ill., secretary and treasurer.

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CHICAGO HORTICULTURISTS.—The Executive Committee of the Horticultural Society of Chicago held a special meeting on December 27, President George Schneider in the chair. Ways and means were fully discussed for advancing the influence of the society and extending its membership. It was moved and carried that the first formal meeting of the society shall be at the Palmer House on January 10, at 3 p. m. It is intended at this meeting to discuss the importance of, and formulate a plan for giving a mid-Lent orchid and rose show. These exhibitions are as yet strangers to Chicago, though popular in Eastern cities, and the society will introduce them to the citizens here. We think this and other shows intended to be placed later will prove as successful as the chrysanthemum shows that have been received with such increasing yearly satisfaction.

The officers of the society are: President, George Schneider; first vice-president, William H. Chadwick; second vice-president, F. C. Vierling; third vice-president, E. G. Uihlein; treasurer, A. L. Chetlain; secretary, J. D. Raynolds; assistant secretary, G. L. Grant. —*Prairie Farmer.*

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SOUTHERN ILLINOIS HORTICULTURAL SOCIETY.—The Ohio and Mississippi Valley Horticultural Society has disbanded for the purpose of organizing the Southern Illinois Horticultural Society. The reasons for this change are thus set forth by the *Prairie Farmer:*

"The organization of a southern Illinois society is contemplated by the state law. The law sets aside $4,000 each year from the state treasury for the benefit of the state society, and it designates that there shall be three societies in the state, the northern, central and southern, the state society to be composed of delegates from these three. Forty-one counties in southern Illinois are set aside by the law for the southern society, which ought to produce a very strong organization. The Ohio and Mississippi organization being an inter-state affair and not under the Illinois law, could have no share in the money set aside by law for the benefit of horticulture in this state, and therein lies the chief cause of the re-organization mentioned. When the state society shall have duly recognized the declaration to establish the southern Illinois society, it is proposed to at once complete the organization by electing officers."

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NEW BRITAIN (CONN.) HORTICULTURAL SOCIETY.—The doings of this society for the year 1890, according to the secretary's report as published in the New Britain *Herald*, are as follows: The year now drawing to a close has been a successful one for the Horticultural Society. The meetings have been well attended, and the influence of the interest in the cultivation of flowers, fruit and shrubbery, and the consequent addition to the beauty and attractiveness of our city well marked. Fourteen meetings have been held during the year, and three public flower shows given—one devoted to pansies, May 14, 15 and 16; a summer flower show, August 26 and 27, and a fall or chrysanthemum show November 12 and 13.

The pansy show resulted in a pecuniary loss to the society, while the others cleared small sums over expenses. All of these public exhibitions have been very satisfactory both to the public and to the society. Early in the year a programme for the meetings was arranged; this has been closely adhered to, providing an instructive and timely topic for each meeting. The following papers and addresses were given: February 4, C. O. Case, "Grafting, Budding and Pruning." March 4, Miss C. A. Shepard, "Our Native Shrubs and Plants." April 7, John Gerard, "Pansies." May 6, E. M. Hulbert, "Spring Blooming Bulbs." June 17, R. A. Moore, "Roses," on which occasion a beautiful private exhibition of roses was given, rivaling the public exhibitions of some societies. July 8, C. E. Steele, "Strawberries." October 7, J. B. Smith, "Fruit Culture." December 2, Mrs. James Shepard, "Window Gardening." During the year twenty-two names have been added to the list of membership.

By the death of Jacob Ritz, which occurred on the 24th of August, the society has lost an active and enthusiastic member, and a very successful rosarian. One member has resigned. The roll now contains ninety-five names, eighty-two of whom are in good standing.

# FOREIGN NOTES.

THERE IS a strong and growing demand for gooseberry plants in England.

A GERMAN pomological association has been organized. Its object is to organize the fruit industries.

DRESDEN ranks as the first horticultural city of Germany. It is second on the continent only to Ghent.

TO KEEP MOLES away from newly planted trees, mix finely broken glass with the earth when planting.—*Der Praktische Ratgeber.*

SPINOVITIS DAVIDII has fruited abundantly in Normandy, even though the season has been so unfavorable to grapes. The fruit ripened in September.

MRS. ALPHEUS HARDY.—This chrysanthemum was shown both at Ghent and at Antwerp lately, and although the plants were in bad condition, the flowers were very successful as a curiosity. The plant seems to have done badly both in this country and on the continent.—*The Gardeners' Chronicle.*

OBITUARY.—Pierre Tschihatcheff died recently at Florence. He was a distinguished naturalist, and translated Griesbach's Geography of Plants, adding many valuable notes. Another important work is his Natural History of Asia Minor.

J. Triana, a celebrated botanist, died recently, aged 62 years. He wrote a memoir on the Guttiferæ and a monograph of the Melastomaceæ.

A NEW AND BEAUTIFUL PALM, PHŒNIX RŒBELENI.—This dwarf palm is a native of Loas States, Siam, and is said to grow in profusion along the rocky banks of the river Mekong. The stems are said never to grow more than two feet in height, but although of pigmy growth, the plant is of extreme gracefulness, rich green in color, and spreading out like the beautiful *P. rupicola*. It forms a splendid plant, its naturally tufted habit, freedom, vigor and lightness ensuring it favor with all who delight in palms.—*The Garden.*

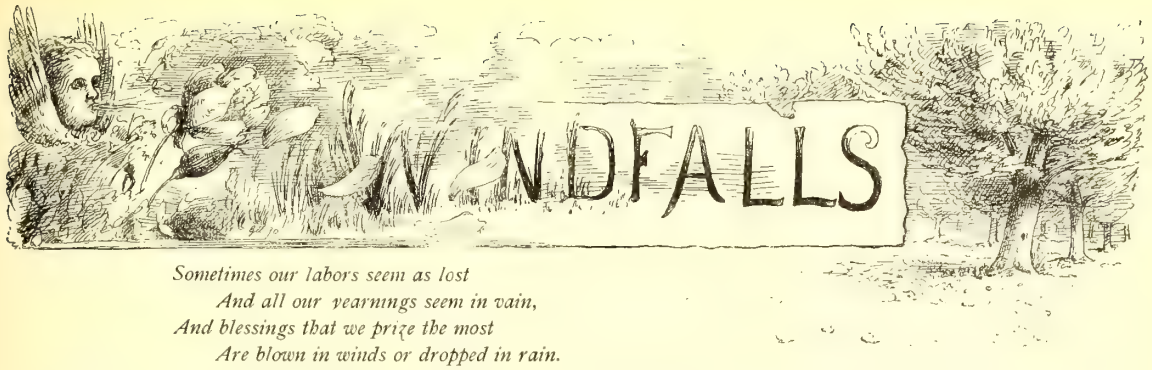
NEW CHRYSANTHEMUMS.—*Aida.*—The heads of this new Japanese variety are large, pale yellow and tinted with a bronzy orange; sometimes, however, they are of a soft yellow, and but slightly tinted with the bronze. The tip of the florets is slightly concave, after the style of Criterion with which the bloom entirely agrees in form. *Mr. A. H. Neve.*—The blooms from the crown buds, at least of this Japanese form, are of good average size, and of a pale blush hue or fading to a silvery white. The florets are of a spreading habit, or the outer ones are drooping, revolute at the sides, and more or less twisted and slightly interlaced as they get old.—*The Gardening World.*

COCOANUT BUTTER.—The *Kew Bulletin* for October gives an account of a new industry, namely, making butter from cocoanuts. Dr. Schlinck, of Ludwigshafen on the Rhine, discovered the process about five years ago, and for three years the butter has been steadily manufactured. Paris and Amsterdam will also soon have factories. The present supply is about 50 cwt. per day, but it does not equal the demand. It is claimed that this new butter is much healthier than that ordinarily sold, as it contains no injurious acids. It is composed of 60 per cent. to 70 per cent. fat, and 23 per cent. to 25 per cent. organic matter, of which about 10 per cent. is albumen.

ANNULAR INCISION OF THE GRAPE.—The question of the effects of annular incision or girdling of the grape, which has been so long discussed, seems now to be settled. A series of carefully made experiments gives the following results. The falling of the grapes is prevented. The fertility of the vine is increased, and also the size of the grapes and of the clusters. There is a larger amount of juice yielded. This is richer in saccharine matter and makes a wine of superior quality. The period of ripening is shortened, making the grapes mature at the same time as those of the class which ranks next in earliness. The vines bear fruit much earlier, and especially those whose vigor renders them even barren. There are increased facilities for selecting cuttings and stocks. From what has been said it appears that making annular incisions is an operation of great importance, and one which should be more generally practiced.—*Revue Horticole.*

A NEW TYPE OF CALCEOLARIA has arisen and is represented by the two following varieties. The Vesuvius is of dwarf habit, branched and very compact. It is about twelve inches in height. The leaves are very numerous, sessile, soft, strongly nerved, oval, and somewhat acute at the summit. The peduncles are short and numerous; inflorescence full. The flowers are borne close together and are large and of good form; the color is a very deep crimson of such striking splendor that the eye is irresistably attracted. This color is so intense during the first fews days after the flower has opened, that the markings are not visible, although they may plainly be seen on older flowers. The second variety is the calceolaria hybrid, deep red, (*hybride rouge foncé.*) Its general appearance is much like the preceding, but it differs very much in the color of the flowers. These are deep blood-red, lightly tinged with carmine, an entirely new color.—*E. A. Carrière, in Revue Horticole*

CYPRIPEDIUM INSIGNE still "holds the field" as one of the most useful decorative orchids for this season of the year [holidays]. If this old lady's slipper, in some of its best varieties, were to appear now on the boards, there would be sensational prices gotten for it.—*Northern Gardener.*




*Sometimes our labors seem as lost*
*And all our yearnings seem in vain,*
*And blessings that we prize the most*
*Are blown in winds or dropped in rain.*

**Origin of the New American Mulberry.**—Many inquiries have been made by us concerning the origin of the New American Mulberry, which was figured and described in this magazine last October (page 577), but no information has been obtained. Ellwanger & Barry have also made inquiries in Connecticut, whence they obtained their stock many years ago of N. H. Lindley, Bridgeport. The following reply to their inquiry, from C. M. Minor, of Bridgeport, Conn., has been placed in our hands :

"Mr. Lindley died four years ago and his partner has since died, and probably no one knows more about the mulberry than myself. I began selling stock for Mr. Lindley in 1854, and I think that the small original tree had then begun to bear. I do not know how he came by it. We sold a large number of the trees and they proved to be great bearers and hardier than the Downing. About 1862 the original tree passed out of his possession, and it has since been cut down. But Mr. Lindley retained the stock, as he and all others who knew the variety considered it very valuable."

**The Wilson Strawberry.**—I have grown strawberries for nearly ten years and have tested nearly every variety. The Wilson has never paid expenses with me; but I have grown it every year, hoping that I could make it profitable. Our soil is gravelly loam, well drained and sloping to the south. The Wilson has done well with some of my neighbors on soil similar to ours. In 1886 a Mr. Ingersoll picked 200 36-quart crates from one acre. Since then, however, with the same treatment he has not been able to secure a crop that would pay expenses. In the town of Scriba, near Oswego City, C. H. Stone last year secured $1,050 worth of fruit from 1½ acres of Wilsons.

Previous to planting to strawberries the ground is cultivated two years in corn and kept free from weeds. The ground is heavily manured the first year of planting to corn; and by the time the berries are set, this manure is thoroughly incorporated with the soil. The plants are set about the 1st of May, in rows five feet apart. They are hoed as often as is necessary to keep the soil loose and free from weeds. The cultivator is run through once a week, till growth stops in the fall. Soon after being set, ashes, or superphosphate, are scattered around the plants, about a handfull to the hill, and the application is repeated every month throughout the season. Care is given not to get any on the foliage. All blossoms and runners are cut off to give greater stockiness to the plants. About the 1st of August the runners are allowed to grow and form a matted row about three feet wide. This will leave a path two feet wide between each row for the convenience of pickers. On the approach of winter the whole surface is covered with straw deep enough to hide the plants. In the spring as soon as growth commences, this straw is carefully raked into the paths and left there till after the picking is over. After one crop is secured, the plants are turned under and the ground sowed to buckwheat or flat turnips.

If a New York or Philadelphia commission merchant is asked to name the best strawberry, he will almost invariably answer Wilson, for the reason that dealers prefer it, and because many have lost money by planting newer varieties. The Wilson is still the leading berry in Oswego county, so far as acreage is concerned. The Crescent crowds it closely.

With right treatment, which means liberal manuring and careful cultivation, I think the Wilson may still be made to pay, as it furnishes pollen for other varieties. In fact I know of no other early variety that will surpass it for this purpose, perhaps excepting Pearl. I will admit that taking plants from old and diseased plantations, and also careless culture, have done much to hasten the result. That the Wilson has actually deteriorated may be proved by consulting anyone who grew them years ago and who also grows them now. I can remember how they used to grow in my grandmother's garden fifteen years ago. A little spot about a rod square produced enough berries for several families For the past few years the Wilson has rusted badly around here, some patches producing nothing, while Crescents close by bore a full crop. Many are discouraged, and there is a great demand for something to take its place. The Bubach has been shipped to N. Y. two seasons, and has proved a success so far, selling at four cents per quart above Wilson and Crescent.—Lawrence J. Farmer, *Oswego Co., N. Y.*

**Soil vs. Keeping Qualities of Fruits.**—Have different soils any effect upon the keeping quality of grapes or other fruits? This question brought out the follow-

ing opinions before the last meeting of the Michigan Horticultural Society :

S. H. Comings : It makes all the difference in the world with cranberries. In New Jersey it has been noted that they rotted quickly when from the soil of one side of a ditch, but kept long when from the different soil of the other side.

Wm. V. Green : Grapes from heavy, strong soil keep better than those from light soil, and it is the same way with apples.

R. Morrill : It is generally understood that all fruits on clay soil keep better than the same grown on light soil. They "stand up" better in marketing. But they are not necessarily of better quality.

J. N. Stearns : Their quality is much better when grown on sandy soil.

E. H. Scott : This is only because, with the later fruits, our usually short seasons prevent them from fully ripening upon clay.

Mr. Stearns : Grapes on sandy soil are a finer quality —more sugary—when not highly fertilized with stable manure than when they are so fertilized.

A. C. Gliden remarked upon the superior quality of the grapes grown at Lawton, where they are upon warm, sandy soil of high lands.

Professor L. R. Taft : There is a difference, too, in quality of grapes grown upon the same general kind of soil. Addition of potash to any soil will double the amount of sugar in grapes.

S. M. Pearsall : Perhaps the slower growth of fruits on heavy soil gives them their superior keeping qualities.

L. B. Rice : Western New York apples are celebrated as long keepers, and the best of them are grown on sandy or gravelly soil.

**Henderson Apple.**—This apple was exhibited at the recent fruit growers' meeting in Ontario, and although a fair sample as to quality and appearance, was not of the best shape, as it was nearly the last one of the season. It is highly colored, medium in size, and a winter apple which under good conditions would keep well until February. The ground color is a rich cream, beautifully splashed with scarlet, while the side towards the sun shows a blush of the deepest shade of crimson. In appearance it is much more showy than the Baldwin, and seems to be solid enough to make a good shipper. The tree is yet young but promises to be a free yielder, and should it continue in its good promises it will be largely propagated and win a large field for itself. As to quality, without exaggeration it may be said to merit a place among our finest winter dessert fruits. The flesh is snow-white, tender, juicy, with a delicate aromatic flavor.—*Prairie Farmer.*

**The Arkansas, or Arkansas Black Apple.**—From all the information I have been able to obtain, I am satisfied this fruit originated in Washington county, Arkansas. John Crawford, in a letter to me, states that the original tree is still living on his place and bearing; that the tree was planted from seeds forty-seven years ago, and from that tree this lot was produced. I am aware Tennessee claims the honor of having originated that fruit, but that fact, for the reasons stated above, I do not admit. It may be possible the variety was produced from the same parentage in both sections, so nearly alike as to make it difficult to distinguish them. The parentage of the Arkansas is apparently the Winesap. I exhibited this apple at New Orleans under the above name, which I still retain. It is a very strong grower; productive.—*E. F. Babcock, in Prairie Farmer.*

**Prunes in France and in California.**—Prunes are said to have been introduced into France by the Crusaders, and to have been first cultivated by the inmates of a convent near Clairac. The plum tree is profitably cultivated in several of the departments, and grows well in any situation that is favorable to grapes. The fruit when ripe is covered with a "flower," which adds much to its value. It is usually gathered, after the night-damps have dried away, by shaking lightly from the tree, and only such as falls readily is taken. It is then put in a building, where it matures completely. Prunes are subjected to three or four cookings before they are ready for the market—two for the evaporation of the contained water, and the others for drying and giving a peculiar brilliancy to the product. In Provence the freshly gathered fruit is plunged into pots of boiling water, where it remains till the water again comes to the boiling-point. It is then shaken in baskets till cool, and dried in the sun on trays. At Digne the fruits are peeled with the nails and strung on sticks in such a way as not to touch, and then are stuck into straw frames and exposed to the sun till the prunes easily detach themselves from the stick. The pit is then removed, and the fruit is placed upon trays exposed to the sun. In some other districts the prunes are dried in immense ovens. The first cooking of the fruit should be at a temperature not exceeding 50°, the second 70° C., while the third may be performed at 80° or 90°, or occasionally 100° C. A well-cooked prune is dark purple, has a solid and brilliant surface, is malleable and elastic to the touch, with the kernel well done and intact in the shell. When these conditions are not fulfilled, the kernel ferments, and the prune becomes moldy and worthless. Bordeaux is the principal center of the prune industry, and has a trade that is increasing.—*Popular Science Monthly.*

The California method of drying prunes produces a lighter colored fruit than that dried by the French method, but gives a more highly flavored product. The natural color is better preserved. Both systems are used in this state; a prune which cannot be distinguished from the French article can be made. The steam-heat process and cooked-fruit flavor does not seem, to the best growers, desirable, nor demanded by the public. W. H. Aiken, of Wrights, one of the best prune-growers of the state, says that the fruit should be ripe enough to fall easily. Dip into boiling mixture of one pound lye to ten gallons of water, and so scald and crack the skins. Dip in cold water and put on trays in the sun. When dry but not hard, put in covered bins to "sweat." Dip

for two minutes in boiling water ; dry, and pack for market. He adds, "The California sun-dried prune is delicious when stewed, while the French, being already cooked, tastes well before stewing, but is more insipid afterwards." Prunes are usually graded by a machine before they are dried. The fine finishing, or "gloss" varies with different growers. Some expose to steam, some, as Mr. Aiken, dip in hot water. Some use hot sugar-syrup, some dip in boiled prune-juice. The most prevalent practice, however, is to use hot water, with pure glycerine, one pound to twenty gallons, for a "gloss."

In the California methods, the saving of labor is manifest. The yield of prunes per acre is said to be larger here than in France, and the crop is handled, on the whole, more cheaply.—CHAS. H. SHINN.

**Kawachi and Oonshiu Oranges.**—I send you a sample fruit of the Kawachi and Oonshiu oranges. The Kawachi is probably the largest mandarin in cultivation. The fruit measures nearly a foot in circumference. [See Fig. 1, which is exactly natural size.—*Ed.*] I find the Kawachi here in central Louisiana to be fully as hardy as the Oonshiu or Satsuma (Fig. 2), having stood the last March blizzard without much injury, except to cut off the first blooms. They bloomed again, and this sample may be called the second crop, and the fruit is not ripe yet. I believe with a longer season, that is, no late frosts, it will grow still larger. The tree is a little more vigorous in growth than the Oonshiu. I have it worked on the *Citrus trifoliata* and expect to plant largely of this variety in orchard.—J. L. NORMAND, *La.*

**Satsuma and Otaheite.**—What is the difference between the Satsuma and Otaheite oranges ?—*Enquirer.*

*Answer by E. N. Reasoner.*—The dwarf stock "Otaheite" is probably the "*Citrus Aurantium Sinense pumilum*

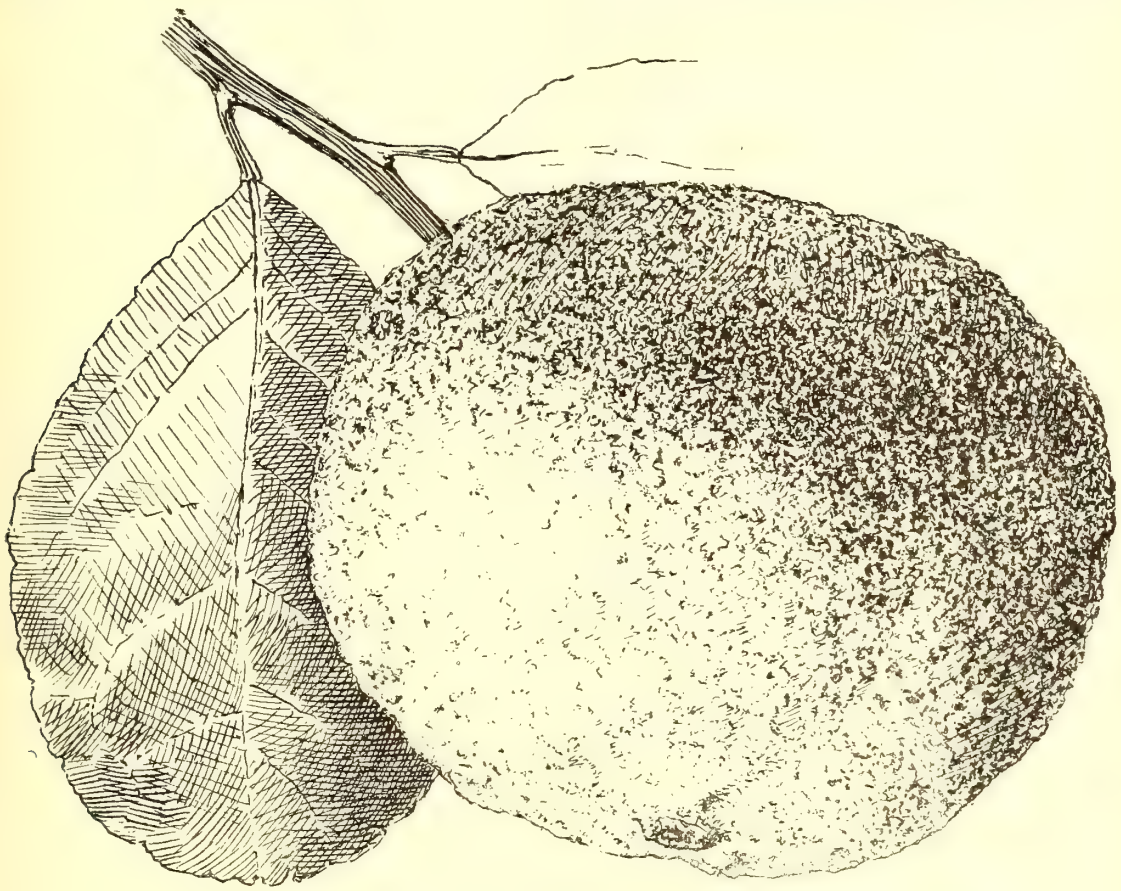


FIG 1. KAWACHI MANDARIN ORANGE, NATURAL SIZE.

*fructu dulci*," of Gallesio. The leaves resemble the common lemon in growth and shape ; also color of blooms which are pinkish. The fruit is small, slightly flattened, rough, red in color, and usually so sweet as to be nearly tasteless ; some trees, however, have been noticed with sour fruit like the lemon. The tree scarcely attains a height of five feet (and is really only a shrub), but is bushy, and the irregular, loose branches extend out at right angles for four or five feet on each side. This being a prolific bearer of handsome fruit is a decided ornament for a shrubbery. The Satsuma orange is a variety of the sweet "Mandarin" orange,—*Citrus Au-*

*rantium, Nobilis.* This is a dwarf orange having an ultimate growth of about ten feet in height with a diameter of twelve or fourteen feet. The leaves are dark green, and noticeably ribbed. Stems are *absolutely thornless*, while Otaheite has thorns equal to a lemon. The fruit is flattened, dark orange in color, seedless, and each section parts readily from the rest of the fruit. The rind being so readily detached, like the Mandarin or Tangierine, gives this class the title of "Kid-Glove" orange The fruit ripens very early—during September and October here in Florida—and is pleasantly sweet. This is undoubtedly the most hardy, as regards withstanding cold, of any of the edible citrus (oranges).

**Fruit Failures.**—It is estimated that the extent of damage done to the fruit trees and vines in the United States by insects and fungous disease each year will reach four hundred million dollars; in which event it is time some method was devised to avoid this heavy loss, which is most felt by the growers in years of scarcity. The scarcer the fruit is the more we have to contend with insects. This is no doubt accountable for the very short supply this year to a very great extent. —*Wm. Stahl's Catalogue, Quincy, Ill.*

**New Raspberry, the Kansas.**—A few years ago I planted seeds of Souhegan and Shaffer, and the birds planted seeds which grew more than those I set out. From these came one plant, which from its first appearance showed such vigor in size and abundance of leaves that I saved it. It has in the few years past been a marvel to every one who has witnessed its growth, its healthy foliage, and its large and delicious berries. Its leaves have never been injured by rust and remain on the bushes until frost removes them. It has stood the last four winters without injury; the tips at times grow in the fall two or three feet, but none are ever injured here. In spring each bud on bearing wood brings out its cluster of fruit, which ripens with the Souhegan, but is as much larger than Gregg as the latter is larger that Souhegan. It is named the "Kansas" because of the place of its origin.—*A. H. Griesa, in Orange Judd Farmer.*

**Fruit Tree Planting in the Willamette Valley,** Oregon, has become a "craze." A conservative estimate for total plant in the eight Willamette Valley counties is 250,000 trees for orchard fruits; while the planting of berries and other small fruits is almost beyond estimate for the purpose of these few notes. This unprecedented planting is due to a sudden outburst of latent horticultural energy. A few wide-awake men made a venture a few years since in the direction of fruit culture; they cultivated. To-day our people are going wild, apparently, over the results of said venture. Prices have been exceptionally good this year. Markets are growing rapidly. In the item of cherries alone we had call for more than twice as much as we could put upon the market. Some astonishing figures are given from actual experience this season, and good authorities claim they will afford a fair basis for calculation for several years to come. From different growers, more or less special, and in good locations, we take the following figures: strawberries, $700 per acre; cherries, $450; raspberries and blackberries, $500 to $600; currants and gooseberries, $250 to $300; peas, $500; plums and prunes, $350 to $400; apples, $200 to $250; peaches $500 to $700. Of course these figures are from one-third to one-half higher than the average grower would get; but even then an ample margin is left. In the case of prunes, $250 to $400 has this year been an average price for large growers, and some of our best producers have made even more. Remember these results are given from land rated considerable under equally good land in the east; land can be had for $50 and $70 per acre that will with our modern western culture give the above returns, and these without a "liberal" application of commercial or concentrated fertilizers. Yet, while the enormous plantings of this year are truly the result of a "craze," there can be no doubt that it will be in the end a most profitable venture for those who can and will give it their earnest attention. Many will fall by the wayside undoubtedly, for there are persons entering this horticultural field who are as unfitted for its work as an Hottentot is for an American pulpit. No fault of the climate and soil will enter into these failures (to be ?). They will only the better enforce upon our growers the necessity of cultivation, a matter entirely neglected in the past by the general grower, and the fact that eternal vigilance is the price of competence and success in fruit culture. These two points well learned by our fruit culturists—and the more progressive ones already appreciate their importance—and our horticultural prospects will be bright indeed. Even now the clouds have rolled away, and a brighter future dawns upon us. A few years hence and Willamette Valley fruit will be no uncommon article in the fruit marts of the world.—Prof. E. R. Lake.

**Ignotum Tomato in California Again.**—The Ignotum is very fine here. It is solid and a very good shipper. It is a very strong grower. I noticed when setting the plants that the roots of it were a third longer than those of any other kind. I think it is the best tomato yet.—Jas. M. Kirk, *Auburn, Cal.*

**New Method of Culture for the Potato.**—Take a number of boxes about four inches deep and of any convenient size, and fill them to a depth of about two inches with well rotted stable manure. In this place the cut potatoes, eyes up. The distance between each piece should be from one to two inches. Then fill up the boxes with the same kind of material already used, and place them under a glass frame, as in a hot bed. In this manner the plants profit by all the heat of the bed, and they are still in no danger of burning. Although when in this stage of growth potatoes can endure a relatively high temperature, nevertheless air should be given when the thermometer registers 85° F. or more, and the weather permits it. When the young sprouts have reached a height of two or three inches

they are separately lifted with a ball of earth and planted in a prepared bed under glass. If the latter is not convenient, and the season is sufficiently advanced, the young plants may be covered with straw mats supported on frames. The mats should be removed on all bright warm days to give air and light. In transplanting, care must be taken not to bury the plants deep enough to cover any of the larger leaves. All further treatment consists mainly in giving sufficient air and water. Forcing potatoes in the open air is also an easy matter. Many people do not have frames or sashes for hot beds, but all can easily obtain a pile of fresh stable manure. When this has been provided, choose a warm part of it and make a hole deep enough to reach a relatively warm spot. The size of the hole must be in proportion to the number of boxes used in forcing. These boxes are prepared in the same manner as above described ; but if good rotted manure is wanting, a light, rich soil may be used instead. When the boxes have been placed in position, they will require rather careful watering. Before the tubers have sprouted there is little danger, but when the young shoots appear they must be carefully protected from frost, etc. A good way to do this is to make a trellis and upon it to lay straw mats or some similar material. Whenever the weather permits, the covering should be removed to give air and direct sunlight. A warm and sheltered part of the garden should be selected when transplanting.—*Adapted from Bonneau, in Revue Horticole.*

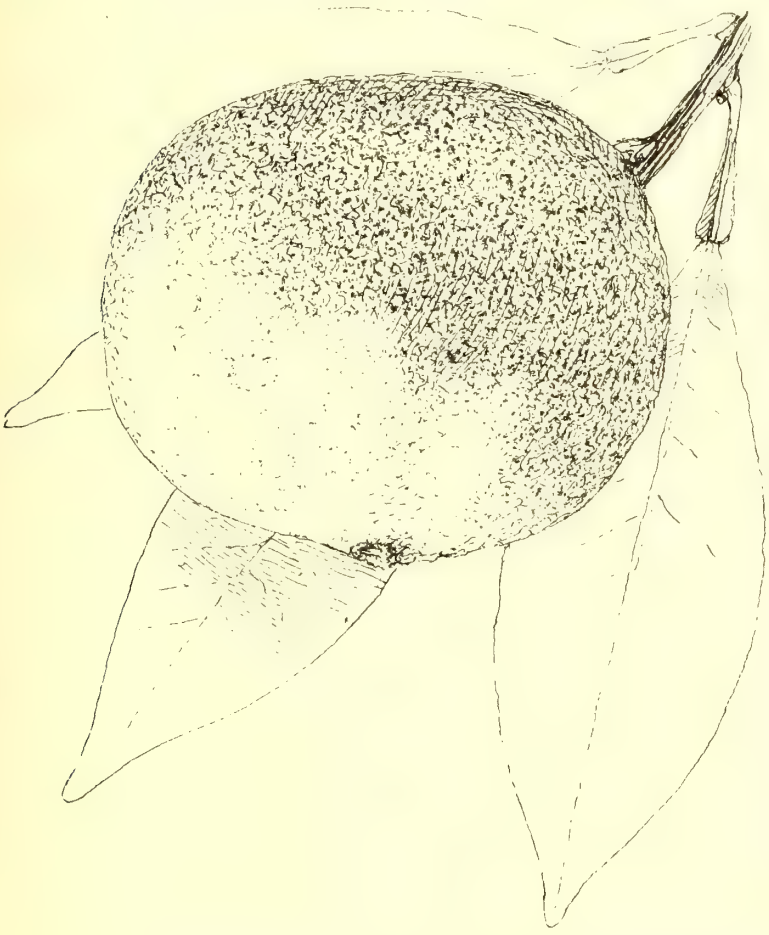


FIG. 2. OONSHIU MANDARIN.—NEARLY NATURAL SIZE. (See p. 119.)

**Old Virginia Cream Tomatoes.**—The tomato has not been cultivated and tamed long enough to entirely banish a certain wild and rank flavor, which clings to the fruit in a greater or less degree according to soil and climate. That peculiarity is removed or modified by broiling, baking, or frying at high temperature, so as no longer to affect the most delicate taste. To most persons, however, the wild, raw flavor is "gamy" and agreeable, and when preserved in cooking, constitute a much valued quality. "Old Virginia cream tomatoes" are the best, perhaps, of this kind. They are prepared as follows: Select firm, smooth, and rather small tomatoes, fresh from the vine. Dip them one by one in water kept boiling, and remove the skins without breaking the fruit; as in all cases, cutting out the hard core at the stem end. Place them close together, with the cut sides up, in a skillet or pan, in which has been spread about half an ounce of butter. Set this on the stove, and keep at a heat just below the "frying point." A higher degree of heat will scorch the butter, cause the tomatoes to stick to the iron, the juices to escape, and the entire dish to be spoiled. Into the cut places at the stem end of each tomato press a teaspoonful of fine dry bread crumbs, containing a little salt, pepper, and butter. Then over all sprinkle salt and pepper. Continue to cook slowly until the tomatoes show signs of breaking, which will occur in ten or fifteen minutes. Then pour in (for a dozen small tomatoes) half a pint of rich, fresh cream (*milk* will not do), and begin immediately to remove the tomatoes, carefully, with a tablespoon, to the vegetable dish in which you intend to serve this delectable preparation.

By the time they are all thus taken up from the pan the cream will have simmered a little, becoming slightly thickened and changed in color. Pour this over the contents of the dish. Half a teaspoonful of finely chopped parsley is sometimes added to the gravy, giving it a refreshing flavor.

The bright-red tomatoes, half submerged in rich

cream gravy, furnish a delightful accompaniment to baked fowl or meats, and add greatly to both the appearance and substance of a family dinner.

Considerable care and patience are required to produce this beautiful dish in perfection, and the fruit must be of the best quality; then the results will be most agreeable.—*Selected*

**Cory Corn.**—O. L. Barler, writing of Cory corn, (Dec. p. 754) says: "This item may save western planters some dollars." Who are western planters? I live near Indian Territory, several hundred miles west of the Missouri line, and yet I can raise Cory corn very successfully, so far as earing and filling are concerned. The worms are our greatest pest; it is almost impossible to get a perfect ear of early corn. Again, he wishes to know whether the hygroscopic capacity of our soil has anything to do with the lessening of our crops. If he were speaking about this part of Kansas I should say *no*. I think the need of the flowers of this section is more thorough pollination; else why such an abundance of flowers and so little fruit? This is especially true of beans, peas, tomatoes, and some fruits. I think I am safe in saying that we do not get one-tenth the fruit that the same amount of blossoms east or north of us would produce, and I know that pollen-bearing insects are scarce.—THOMAS BASSLER, *Sumner Co., Kan.*

**Mimicry of Insects.**—In Henry Drummond's book, "Tropical Africa," he tells us in one chapter what cunning rogues the insects are in taking different forms of natural objects so as to deceive their enemies. Once he picked off from his arm what he thought was a wisp of straw, and to his astonishment the thing had legs underneath, and could use them with great readiness in getting out of sight. Another time he was lying on a rock under a tree. The branches were a favorite resting place for the birds, and he used to study their habits for hours. The rock was covered with the bird droppings, and one day he saw one move. He couldn't believe his eyes, watched for a long time, and was assured that what he thought was a bird dropping was alive. He picked it up, and sure enough, he found tiny legs underneath, that could serve the creature well enough when it wanted to get out of the way. He found insects that could imitate twigs, sticks, and the smaller branches of shrubs. Some of them represented the bark of a tree, and even the mould spots were exactly reproduced. Insects have many enemies in tropical Africa, and to save themselves from being exterminated they resort to these most interesting deceptions.—SISTER GRACIOUS.

**Common Souvenirs.**—A very dainty gift may be made by filling a tiny basket with partly burst milk weed pods with the rough pod and stem gilded. The contrast of white and gold furnished by the down and gilding is extremely delicate. A number of other common things can with a little ingenuity be transformed into pretty ornaments; a few stalks of gilded wheat, oats and rye tied with white ribbon form a pretty wall decoration, while nothing could be prettier than a photograph frame covered with white plush and embellished with gilded oats.—FLORA.

**Destruction of Thrips on Orchids.**—We recommend the following for the destruction of thrips, red spider, and other insects that are injurious to orchids.

| | |
|---|---|
| Water | 2 qts. |
| Tobacco | 8 oz. |
| Soap | 2 oz. |
| Flour of sulphur | 3.5 oz. |

Mix, and boil several minutes, then add six quarts of water. When cold, apply with a syringe. It is claimed that the mixture will not injure the foliage.—*Le Journal des Orchidées.*

**Pleasant Surprises.**—A persevering plant lover is sure to learn patience if nothing else. Some ferns require eighteen months to germinate; cactus plants are cases in point. A friend of mine cared for one three years, and looked for buds in vain. One summer, before she went away, she threw it out in an obscure corner of the fence, and was gone four months. On going there late in the fall, she thought of her plant, and went to find it, expecting to see a dead stalk, but, lo! and behold, it was all in bud! A little forgetting, and allowing it to care for itself, was a good thing. An amaryllis on my shelf has been three years making up its mind to blossom, and just when patience is just exhausted, a bud shows. One pleasant surprise is to find the glass hyacinth vase, that has been neglected all summer with its one forlorn bulb in the top, filled with roots, and to see how soon the sun brings out the flowers, on bringing the glass to the window. In fact there are pleasant surprises all the time to a plant lover. Another is to hang a bunch of geraniums in the cellar to the rafters, top down. On going to them in February you may find the poor things trying to send out feeble sprouts, and looking appealingly for more moisture and light.—SISTER GRACIOUS.

**Fertilizing a Young Orchard.**—When I set out my orchard the land was in clover. The piece had been cropped for a number of years until the fertility was considerably impaired, and a year or two before I purchased the lot the owner had seeded it to clover to help build it up. I plowed the clover under, and desiring to manure the land made this my vegetable patch for the first three years. The first year I used commercial fertilizers, and planted potatoes, sunflowers, cucumbers, melons, and such crops as are usually grown in a truck patch, using the fertilizer in the hill. I did this because I did not have enough manure to apply broadcast. The next winter I manured liberally, and in the spring planted potatoes, sweet corn, sunflowers, beets, parsnips, and carrots in long rows one way between the rows of trees, and about eight feet from them. Between the trees, in rows running parallel to the others, I planted cucumbers, melons, squashes, and pumpkins. In cultivating the other crops the work of keeping the vines clean was very much reduced, but some hoeing was of course necessary. But all the ground was occupied, which was better than if the vines had not been

planted. This spring I shall need to clover again, as I have been able to apply a good dressing of stable manure broadcast over the orchard.—N. J. SHEPHERD, *Missouri.*

**Remedies for Overproduction.**—We hear many complaints from growers of peas, tomatoes, table corn, etc., of low prices caused by overproduction, but we think a change in the practice of planting too much at one time, and in growing varieties of better quality, would increase the consumption and insure better prices. Growers in Camden county commence planting peas in February, and each one plants all he can, as early as possible. Although the planting of the early crop extends over two or three weeks, that planted first does not grow much until the weather is warmer, and the whole crop comes on the market in one week. And, as the consumers can not eat them as rapidly as they are picked, the market is overstocked and the price suddenly falls. If the planting of the same quantity can be extended over a period three or four times as long, so as to give the consumers more time to eat them, it would to some extent remedy the loss. But a still better remedy is to improve the quality, and this applies to all vegetables and fruits as well. The practice of market gardeners to plant for early and heavy yields is so general that seedsmen designate their different varieties as for the home garden, or table, and for market gardens, or shipping, meaning that certain varieties are tender and delicious, and others come early, are good croppers, or will stand 'knocking about in shipping. And by this practice the great body of consumers never get the more delicious, tender, and healthful food. But, if by chance they get a taste of the better varieties, they will have them, and pay a fair price. Of course we gardeners teach what we have learned from history, both sacred and profane, that the very highest physical, mental and moral development is only attained by feeding on vegetables and fruits; but to sustain our position we must furnish such varieties, and under such conditions, as to be readily digested and assimilated. We cannot expect to sleep calmly after eating of a ferocious, bellowing bull, or to slumber peacefully after eating hard stale peas; or to meet our friends without grunting after eating of a fat hog; or to look sweet to those we meet after a dinner of tough vegetables and sour fruits. We are like what we feed upon, and whether we are flesh-eating savages, morose and sullen, with sour faces, or peaceful, cheerful and moral men and women, will largely depend on what quality of vegetables and fruits are grown. And whether we gardeners get a fair compensation for our labor will largely depend on what practice we pursue.—R. BINGHAM, *Camden Co., N. J.*

**Letter from Central Southern Iowa.**—Midway upon the line which separates Iowa from Missouri, the land rises to more than six hundred feet above Burlington or Council Bluffs. This has a marked influence upon the natural vegetation and upon the cultivated products of the soil. At Burlington there are plenty of pecan trees, thrifty, large, and fruit bearing. Here I have tried in vain to raise one. Along the Des Moines and Skunk rivers, as well as in the woods of the smaller streams, are found the sugar maple, the Kentucky coffee tree, the red-bud, the butternut, and below Burlington, the sassafras. Not one of these are native to this divide. A difference is also noticeable in the indigenous fauna. Here there are millions of pocket-gophers; along the eastern river counties they are comparatively scarce. We have here and there in the river banks the beaver; there none are found. In the spring or fall we see but few waterfowl flying overhead, they seeming to prefer following the troughs of the larger streams. There is, however, an abundance of wild fruits, such as strawberries, cherries, crab-apples and plums. Hickorynuts and walnuts abound along the water courses, and are of large size and excellent quality, and hazelnut bushes cover thousands of acres where the woods abut upon the prairie. Among flowers native with us on the prairie are the wild rose, the perennial fragrant phlox, the compass plant or rosinweed, the common and dog-toothed violets, which in spring cover all our poor points in a delightful manner. But on warm days let no one be careless while gathering bouquets of johnny jump-ups, for these same poor points are the favorite haunts of rattlesnakes, which as yet are far from being exterminated. Last harvest as many as fifteen were killed within a quarter of a mile of where I am now writing. However, they are not nearly so numerous as they were a few years ago, for which we cannot be too thankful. I will say, however, that having lived here since I was a boy—and that was before there were many settlements—I have never known of but one person killed by snake bite, and that death was the result of carelessness. Upon this watershed of the state the small fruits of the temperate zones flourish wonderfully. The gooseberry grows wild by the side of every old stump in the woods. In the gardens the cultivated sorts thrive equally well, and, so far as my observation and experience go, they are free from mildew. The currant is at home with us, and the chewinks and brown thrushes think there are no hunting-grounds equal to our raspberry patches. I have never known an entire failure of the cherry crop, and as a rule the trees bear abundantly every season. The place to study our ornithology is in the cherry trees during the season of ripe fruit. Scarcely two rods from my kitchen porch is a row of these trees, and I have often watched my visitors. To my positive knowledge there are a score of species which delight in sour cherries. We cannot raise a sweet cherry here, nor any of the varieties called sub-acid, such as the Wood. But for Early Richmond, English Morello and the Kent varieties we cannot be surpassed. I never interrupted the birds but once, and have been ashamed of that ever since. I have discovered a better plan than to kill them. Plant a row of mulberry trees, and use our native sorts, for no other kinds are worth cultivating with us. To them add a number of service bushes.

These fruits ripen with the cherries, and so long as one remains, the feathered choir will let the cherries alone. The mulberry and service-berry are natives of the state; the former is found in our creek bottoms, the latter further east.—EDWARD B. HEATON.

### Calypso.

A RARE ORCHID OF THE NORTH.

Calypso, goddess of an ancient time,
(I learn it not from any Grecian rhyme,
But still the story I can vouch is true).
Beneath a pine-tree lost her dainty shoe.

No workmanship of mortal can compare
With what's exhibited in beauty there,
And looking at the treasure 'neath the tree,
The goddess's self I almost hope to see.

The tints of purple and the texture fine;
The curves of beauty shown in every line;
The fringes exquisite, of golden hue,
Perfect the wonders of the fairy shoe.

The goddess surely must have been in haste,
Like Daphne fleeing when Apollo chased,
And losing here her slipper by the way,
Intends to find it on another day.

And will she come to seek it here, or no?
The day is lengthening, but I cannot go
Until I see her bring the absent mate
Of this rare beauty, though the time is late.

I watch, but still no classic form I see,
Nought but the slipper 'neath the forest tree.
And so, for fear of some purloining elf,
The precious relic I secure myself.

—WM. WHITMAN BAILEY.

**Chrysanthemum Propagating.**—So simple and easy is chrysanthemum propagating that the plant may be started in many ways, nearly all ways good. The commercial florist will continue to strike cuttings in sand with more or less bottom-heat and afterwards pot them in small pots, where they remain until sold. In my visits among the chrysanthemum growers I observe other ways of starting them.

The stock plant should be in full vigor, healthy, strong growing at the time of taking off the cutting or slip. Weak, spindling shoots never make good plants. The cuttings may be made from the sprouts started up around an old plant or from tops of the plant itself, any time they can be had in good growing condition. A slip or side shoot two inches long, broken down and pulled away from the trunk near the ground of an old plant, makes a first-class starter, and strong growing sprouts dug up with a few roots, or even without roots, will make very strong growing plants.

I preferably start all, be they cuttings, sprouts, slips or shoots, by planting them direct in good garden soil in two and one-half inch pots set in a cool part of the house, watering but lightly; they will all grow, and as they commence growing set the pots apart to allow the air to circulate about them, and when they get six to eight inches high stop them or cut back, using the cuttings for more plants; then in ten days afterwards side branches will show starting. Now is the time to move the plant up into four inch pots, which should be done carefully, not disturbing the roots and planting no deeper than before. At first place the pots close together, moving apart as they grow, and to give air about the plants and pots, watering as needed. Another cut back or stopping, and afterwards move into larger pots as needed, and according to the strength of the plant. Such may be a general treatment to be made, more or less according to time of starting and what is intended to make of the plant. Early flowering plants should be started in March, or before.

It is often said the best time to start them is in February. Last year my best pot-plant, L. Canning, coming into bloom November 15, was started in May of top cuttings from plants started in December. My best largest blooms, Mrs. F. Thomson, November 20, from plants started in March, once cut back. My best largest plants, W. H. Singerly, November 1, were started in November the year before, three times cut back. Some Snowball, now in bloom December 20, were started in August, no stopping or cut back. In practice, I start more or less plants every month in the year.—JOHN LANE, *Chicago*.

**The Pæony.**—Pæonies have never been more beautiful than last year, having had plenty of water during their season of bloom, which they like, and but little sunshine, which they dislike. Our attention was attracted to them for their own sakes, but we intended to let them pass without comment, and should but for casually taking up a book by Alphonse Karr and reading his remarks on common flowers, among which is included the pæony. He says:

"Here is a pæony, a sort of gigantic rose, of the most beautiful red There are no amateurs of the pæony unless it be the tree-pæony, because that is perhaps less beautiful, more difficult to cultivate, but more scarce. The ordinary pæony, red, rose-colored or white, is held in no esteem.

"But it is so common! Thanks, O Lord, for all that thou hast created common! thanks for the blue heavens, the sun, the stars, murmuring waters and the shade of embowering oaks; thanks for the corn-flowers of the fields and the gilly-flowers of the walls; thanks for the songs of the linnets and the hymns of the nightingale; thanks for the perfumes of the air and the sighing of the winds among the trees; thanks for the magnificent clouds gilded by the sun at its setting and rising; thanks for love, the most common sentiment of all; thanks for all the beautiful things thy stupendous bounty has made common.

"The pæony was formerly, however, much celebrated; it drove away tempests, broke enchantments, defeated witchcraft, and now and then cured epilepsy. Its name, *pæonia*, came from Pæon, a celebrated physician, who employed it to cure Pluto, when wounded by Hercules. The root of the pæony, therefore, was not taken lightly; it was at a certain hour of the night, and during a certain phase of the moon; and still further, it was necessary to take care not to be observed by the

woodpecker whilst digging; whoever was observed by the woodpecker while so engaged became blind.

"The pæony is no longer anything but a beautiful and splendid flower, despised by amateurs, and seldom seen but in poor gardens."—LINNÆUS.

**Clematis Jackmanni.**—I mail you to-day photograph of Jackman's clematis, five years old from cutting. Plantsmen's catalogues instruct us to cut back each year one-half of last season's growth. I have tried the experiment of cutting this specimen to the ground late each fall, and am highly pleased with the result. On May 30 there were ten vines from ten to twelve feet high, and a month later the photograph was taken. The new growth is much more handsome and interesting when thus treated, and the flowers come at same time as when old wood is left to grow. Coccinea and crispa do equally as well with this treatment, I having had growths of twenty feet a season, and very full of blossoms. I am certain all who give this method a trial will be pleased.

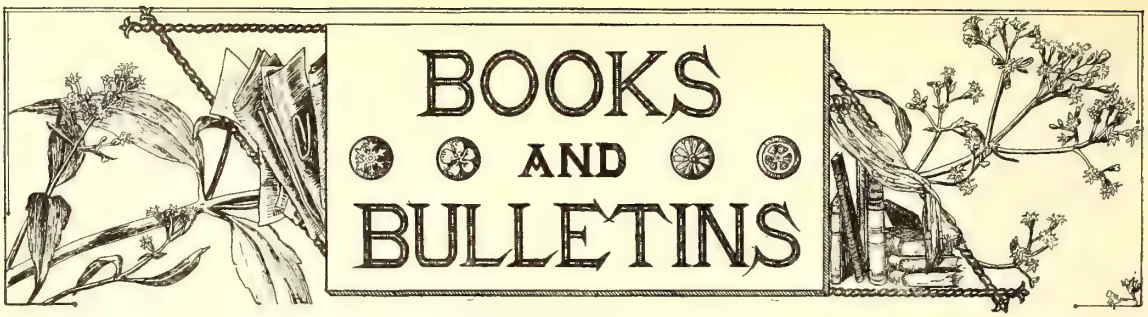
These varieties are gross feeders, and soil should be rich. I give a liberal covering of well-rotted manure each winter, to serve the double purpose of protecting and enriching—EMORY P. ROBINSON, *Ohio*.

**To have Beautiful Fuchsias and other Plants.**—Get slips of those you wish to raise as near the first of the year as possible. Put them into rich earth, and water frequently with warm water. As soon as good roots show, put them into pots two inches in diameter, and set them in sawdust or a box of earth, burying the pots to the brim. When they have grown an inch or two high, tie them to slender sticks, as they grow faster and better if supported. Keep them continually moist with warm water. Examine them frequently, if they show rapid growth, to see if the roots have reached the outside of the earth; as soon as they do this, give them a larger pot, and so on till it is time to set them out of doors. Then as they increase in size, give them liquid twice or three times a week, using horse-manure. To prepare it, fill a bucket two-thirds full. Pour boiling water over it, and cover; when cool, stir it up a little in the water, then let it settle. Use one-fourth liquid manure to three-fourths water. This mixture benefits most rapidly growing plants, and answers well for fuchsias, geraniums, amaryllis, gloxinias, cactus, etc. Pansies set in beds, if watered twice a week, will keep up their size, and in some instances have increased it. The manure thus treated will last two months (with repeated scaldings), and afterwards can be used to enrich the earth for pot plants.

A GOOD CLEMATIS JACKMANNI.

Fuchsias are much benefited by being watered overhead once a day in a moderate temperature, and twice a day in extremely hot weather. In summer they should be put in the shade, but not under a tree. Sun in the morning or evening does not hurt them; but mid-day sun in summer is too scorching. There are several winter-blooming varieties that do well in the house. These must not be allowed to bloom in summer. Fuchsias treated as directed above become a mass of bloom and continue their blossoms during the warm season.—EXPERIENCE.

**Convolvulus minor kermesinus violaceus pumilus striatus grandiflorus flore pleno.**—This is a good thing.—R. T. CHOKE.




AGENDA VERMOREL VITICOLE ET AGRICOLE, 1891. This pocket volume is a combined diary and reference book. The first 157 pages are devoted to rules, tables, lists and recipes. Especial attention is given to viticultural topics, and much general agricultural matter is given, as veterinary prescriptions, compositions of milk, butter and cheese, and laws relating to rural economy. It is one of the most attractive pocket-companions which we have seen. It can be had from the office of *Progrès Agricole et Viticole* at Villefranche for 2½ francs.

**A French. Pocket Volume.**

SEVENTH ANNUAL REPORT WISCONSIN EXPERIMENT STATION, 1890. Most of the horticultural matter contained in this volume has already been brought before the readers of THE AMERICAN GARDEN. Professor Goff reports a trial of potatoes in which the following varieties were the most productive of the named kinds in 122 entries: Rose (Late Beauty of Hebron), Mullaly, Alexander, Red Jacket (Seneca Red Jacket), White Hebron (White Beauty of Hebron) and Wisconsin Beauty. These varieties, in order of quality, stand as follows: Alexander, White Hebron, Late Hebron, Duplex, Monarch, Wisconsin Beauty, Red Jacket, Rose Beauty and Mullaly. Various methods of cutting were tried with another confirmation of the old result that the heaviest seeding gives the heaviest yield.

**Potatoes in Wisconsin.**

A test of strawberries showed the Gipsy to be very early and the Gandy, Welch and Carmichael very late. For market, the following are particularly good: Warfield No. 2, Haverland, Jessie, Wilson, Sharpless, Burt, Eureka, Gipsy, Gandy, Welch, Downing, Cumberland, Lady Rusk, Bubach, Cloud, Carmichael. For home use, these appear to be best: Jessie, Haverland, Gipsy, Sharpless, Warfield No. 2, Eureka, Wilson, Gandy, Burt, Downing, Welch, Cumberland, Bubach, Cloud, Lady Rusk, Carmichael.

**Strawberries in Wisconsin.**

BULLETIN NO. 23, CORNELL EXPERIMENT STATION. *Insects Injurious to Fruits. J. H. Comstock and M. V. Slingerland. Pp. 24. Illustrated.* The pear leaf blister, which is caused by a minute mite, is figured and discussed. The mites occasion blackish swellings or galls upon the leaf, and they have been so abundant in New York this year as to cause serious injury to pear foliage. The mites live in the blisters or galls, and here the young are born. The young soon escape and make galls for themselves, upon the same or another leaf. When the leaves begin to dry up in the fall, the mites leave the blisters and secrete themselves in the bud-scales, where they pass the winter. No remedy is known except to burn the twigs in winter.

**Pear Leaf Blister.**

A stag-beetle or "pinch-bug" (*Dorcas parallelus*) is described as attacking the roots of pear trees. The grubs, which are probably several years in maturing, bore into the large roots. This is the first record that this species attacks fruit trees. There is no remedy except to dig out the grubs.

**Stag-beetle in Pear trees.**

The apple tree bucculatrix is a minute moth, only one-seventh inch in length. The larvæ feed upon the leaves, mine in them, and do much damage when abundant. The cocoons are conspicuous in fall and winter. They are white slender bodies about a fourth of an inch long which lie parallel to each other in patches along the under sides of the twigs. These twigs can be cut off and burned during winter, or the pupæ can be destroyed by a spray of strong kerosene emulsion in two or three parts of water. When the larvæ are feeding upon the surface of the leaf, Paris green or London purple will destroy them.

**Apple Bucculatrix.**

Two cherry insects are described. Both of them work upon the leaves, both of wild and cultivated cherries, and they fasten the leaves together or cover them with a web. The cherry-tree tortrix works in a web which encloses a young shoot. The scallop shell-moth (*Hydria undulata*) fastens together the leaves upon the ends of the branches. Both pests are readily kept in check by burning the nests. The shell-moth is single brooded in this latitude, so that its destruction is easy.

**Cherry-tree Pests.**

Closely allied to the cherry tortrix is the currant leaf-roller, an insect which has been imported from Europe, and concerning which no observations have been made in this country. It appears to be thoroughly established in some places in the country, and it will probably be heard from in the future. The larva is a small green worm fastening together the terminal leaves of currant bushes into an irregular wad. It can be kept in check by destroying these leaf-nests.

**Currant Leaf-roller.**

The blackberry and raspberry cane-borer (*Oberia bimaculata*) is described and figured. The grub bores in the cane and kills it. The first indication of injury may be the dying of the whole cane, which becomes apparent about picking time; but sometimes the top of the cane

wilts from the injuries inflicted by the beetle when she lays her eggs. The remedy is to cut out the canes and burn them, and if the work is thoroughly done the insect can be kept in check. The snowy tree-cricket is discussed. The female makes a long and ragged-edged wound in the cane when she deposits her eggs, and the cane is weak the next year, or it may fail entirely to put forth leaves. Cut out the canes and burn them.

**Raspberry and Blackberry Pests.**

Bulletin No. 11, Iowa Experiment Station. This bulletin is devoted to several diverse discussions, only three of which, relating to insects, need be mentioned here. Mr. Gillette describes the potato-stalk weevil, and believes "that a half million of dollars would fall far short of making good the loss that it has occasioned the state this year," and yet it has never been reported from Iowa before. The beetle is a very small ash-grey weevil. "The female beetle deposits one egg in a place in a slit made in the stalk of the potato, a little above the surface of the ground. The grub soon hatches and tunnels its way down deep into the root. It then works its way back again, and when fully grown changes to the pupa state and then to the mature beetle in the stalk just below the surface of the ground. This tunneling of the root and stalk weakens the vines very seriously, the leaves begin to turn brown as if sun-burnt, and soon, especially if the weather be warm and dry, the whole top dies down. The potatoes, in consequence, are small in size and few in number.

**Another Potato Pest.**

"The only remedy at present known is to pull the vines as soon as they are found wilting and dying and burn them. If the tops are left until time to dig the potatoes many of the beetles will have matured and escaped, and these will live over winter and lay eggs to produce another brood the next year. On examining potato tops as late as October 8, I found many pupæ and beetles were still in the roots, so that even late pulling and burning will destroy many of the weevils. When the weevils are found in the vines the latter should always be burned when pulled, and the earlier they are pulled the better."

Mr. Gillette has observed the ovipositing of the apple curculio, and he describes it in detail. This insect is now injurious in many parts of the country, yet no longer ago than 1871 it had been recorded as feeding only on wild crabs and haws. It has now learned to appreciate a good apple. In central Iowa the beetle lays its eggs all the way from the first of June till late in July. "Where orchards are regularly treated with the arsenites for the destruction of the codlin moth, it is quite probable that this insect will also be kept in check, otherwise jarring the trees and collecting the beetles on a large sheet, or gathering and destroying infested fruit, will be the most practical remedies. If hogs or sheep are allowed to run in the orchard, they will pick up all wind-falls and do much to keep this insect, and the codlin moth as well, in check."

**Apple Curculio.**

A borer (*Hyperplatus aspersus*) which is known as attacking the cottonwood is found to injure currant canes in Iowa. The American currant-borer (*Psenocerus supernotatus*) was found with it. The remedy for all currant borers is to cut out the attacked canes in winter or spring and burn them.

**A new Currant Pest.**

Bulletin No. 5, Vol. III. Tennessee Experiment Station. *Fruit Trees at the Experiment Station. By R. L. Watts. Pp. 20.* This bulletin contains an appeal to the farmers of Tennessee to engage in fruit growing. The climate and location of the state render it admirably adapted to fruit raising, and the plateaus furnish varied conditions for many kinds of fruits. Lists, with brief descriptions, of the fruits now growing upon the station grounds are given, and some provisional lists of such sorts as have been successfully grown in the state are announced. In apples, it is difficult to draw any conclusions as to the varieties best adapted to all sections of this state. Those that succeed in the mountainous districts may frequently fail in middle and west Tennessee. A certain variety may not be adapted to all localities, even in the same section; the Baldwin, for example, succeeds admirably in the Cumberland plateau, but is an undesirable sort in this locality. The following varieties of our list have been grown successfully in various localities of East Tennessee: Winesap, Yellow Bellflower, Rhode Island Greening, Rome Beauty, Northern Spy, Newtown Pippin, Early Strawberry, Carolina Red June, Ben Davis and Baldwin. Among pears, the following have been grown successfully in Eastern Tennessee: Bartlett, Flemish Beauty, Seckel, Angouleme, Anjou and Le Conte. The greatest difficulty in peach culture here, as elsewhere in the south, is the danger from late spring frosts. The grub or borer is also troublesome. In the eastern part of the state the following peaches have done well: Alexander, Early Rivers, Foster, Old Mixon Free, Crawford's Early and Late. Of cherries, Black Tartarian, Napoleon, Early Richard [Richmond?] and Governor Wood have done well in the state. The Wild Goose appears to be the best plum for Tennessee. Good advice is given concerning the harvesting and marketing of fruits.

**Fruit-Growing for Tennessee.**

Bulletin No. 20, Alabama Experiment Station. *Small Fruits, Melons and Vegetables. By J. S. Newman and James Clayton. Pp. 18.* According to the classification of this bulletin, the melon is neither fruit nor vegetable; it is simply a melon. The following remarks upon tests of watermelons may be considered as conclusions of two season's tests: "Comparison of varieties discovers many old acquaintances under new names. The Sugar Loaf melon has been growing in Georgia and Alabama for nearly half a century, and has continuously sustained a high character for productiveness and excellent quality. It came to us from a seedsman three years ago as Jordan's Gray Monarch. Last year it was extensively advertised under the attract-

**Watermelons in Alabama.**

ive name of Seminole, which was not only identical, in every respect, with the old Sugar-loaf, but produced the same sport—a melon of the same form, but of darker gray. In 1888 the Kolb Gem came to us as New Round Excelsior. The same year almost a fac-simile of the Rattlesnake came under the name of Mammoth Ironclad. This year the old Rattlesnake comes as The Wild. For shipping, no other variety compares with the Kolb Gem. For home use, there are several varieties superior to it, being of finer flavor and having more tender flesh. Among those are the Cuba, Sugar-loaf, Florida Favorite and Pride of Georgia. The Cuba is known in Georgia under the local names of Tinker, Simpson and Kirkpatrick. It is the sweetest melon grown, but is too small for market. The Georgia Rattlesnake possesses fine qualities when fully developed, but has a tendency to grow in irregular shapes. The Sugar-loaf is probably the most prolific variety yet tested. Watermelons cross so readily that a patch of thoroughbreds is rarely seen on our farms. Crawford and Pearson are local names for an old variety, known in Florida as Florida Favorite, known in Burke County, Georgia, thirty years ago as the Lawson, and supposed to be the parent of the Georgia Rattlesnake."

"The cantaloupe to succeed in this latitude must be well covered with rough nettings to prevent sun-scalding. The Persian or Casaba, so highly prized at the north, fails here on account of scalding under our suns. A melon with yellow flesh rarely ranks higher than good. Those varieties which rank best usually have deep green flesh. The Delmonico is the best yellow-fleshed variety yet tested. The Washington Market, grown here for the first time this year, is a very superior variety. After previously comparing all the varieties advertised in the principal seed catalogues, all except a few of the best old varieties have been discarded.

**Musk-Melons in Alabama.**

The earliest strawberries yet found by the Alabama Station are the Early Canada and Parry. "Both have improved in quality and productiveness since their introduction to these grounds, five years since." Among more recent sorts, Belmont, Bubach, Haverland, Gandy, Hoffman and Eureka are very promising. "The Henderson still leads the list in its quality, and its vines are becoming more vigorous and prolific as it becomes acclimated. Wilson, Agriculturist and Sharpless still hold their places as standards."

**Alabama Strawberries.**

"Out of more than thirty varieties of raspberries tested during the last five years, the Turner is the most hardy and reliable. It fruits abundantly and continues long in bearing. The only objection fonud, so far, is its profuse multiplication of plants. The canes are self-supporting when pruned back to two feet in length. It stands the sun of our summers in open-field culture, and has never been injured by freezing.

**Raspberries for Alabama.**

"The black-cap varieties sun-scald midway the canes where they bend over. Another objection to this type is that they fail to propagate under clean culture during dry seasons."

Tabulated results of trials with beans, tomatoes and onions are made, but no summaries are given. In tomatoes, Golden Queen, Beauty and Favorite are called "standard," and Ignotum is said to be "a very superior variety." Of onions, Danvers is called "standard." Giant White Italian (*White Tripoli*) and Mammoth Silverskin are "superior." Pompeii (*Mammoth Pompeii*), Red Garganus (*Mammoth Red Garganus*), Red Pompeii (*Mammoth Red Pompeii*) and Red Rocca are "large and fine." Nocera (*Early* or *Small White Nocera*) and Garden Queen are "early and desirable." White Queen (*Early White Queen*) is "very early and fine." Adriatic Barletta and White Maggiojola are "extra early and desirable."

**Vegetables in Alabama.**

Bulletin No. 105, Connecticut Experiment Station. This pithy bulletin contains, with other matter, a two-page article on potato scab by Dr. Roland Thaxter. Potato scab is one of the most mysterious of our plant diseases, and numerous agencies have been held to account for it. Entomologists appear, latterly, to have thrown it over to the botanists. Mr. Bolly, of Indiana, has lately published experiments which go to show that the scab is caused by a bacterium. Dr. Thaxter is sure, however, that the scab which he has studied has a different origin, and he has found the organism which causes it. This organism is an exceedingly obscure filamentous fungus, which, although it fruits abundantly, "cannot be referred to any described form, and answers to no generic description as far as has been ascertained." Dr. Thaxter has produced the scab by inoculation "with certainty," and "under rigid experimental conditions." "This fact, together with the invariable association of the fungus with the disease in nature (as far as observed by the writer), after it has once been recognized and sought for, may be considered practically indubitable evidence of the connection between the two as cause and effect." It is possible that Thaxter and Bolly have studied two different things, for it would not be strange if there were two or more kinds of scab. Both are confident that they have discovered the cause of potato scab.

**Thaxter on Potato Scab.**

L. H. B.

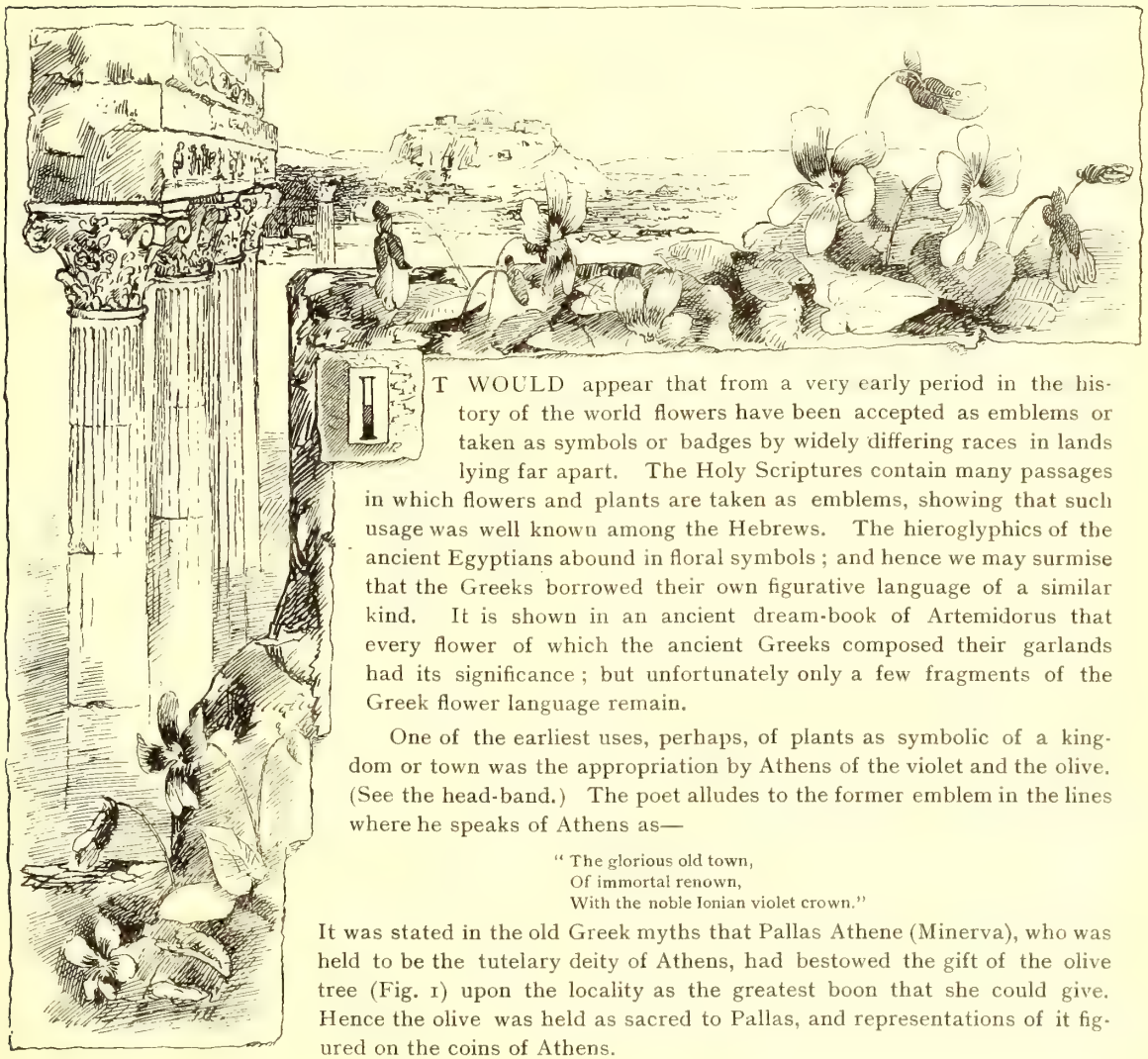
AKEBIA LOBATA.—A promising Japanese Fruit (See page 140.)

# The American Garden.

*Vol. XII.* *MARCH, 1891.* *No. 3.*

## THE SYMBOLISM OF FLOWERS

IN HISTORY, ROMANCE AND SONG.



IT WOULD appear that from a very early period in the history of the world flowers have been accepted as emblems or taken as symbols or badges by widely differing races in lands lying far apart. The Holy Scriptures contain many passages in which flowers and plants are taken as emblems, showing that such usage was well known among the Hebrews. The hieroglyphics of the ancient Egyptians abound in floral symbols; and hence we may surmise that the Greeks borrowed their own figurative language of a similar kind. It is shown in an ancient dream-book of Artemidorus that every flower of which the ancient Greeks composed their garlands had its significance; but unfortunately only a few fragments of the Greek flower language remain.

One of the earliest uses, perhaps, of plants as symbolic of a kingdom or town was the appropriation by Athens of the violet and the olive. (See the head-band.) The poet alludes to the former emblem in the lines where he speaks of Athens as—

> "The glorious old town,
> Of immortal renown,
> With the noble Ionian violet crown."

It was stated in the old Greek myths that Pallas Athene (Minerva), who was held to be the tutelary deity of Athens, had bestowed the gift of the olive tree (Fig. 1) upon the locality as the greatest boon that she could give. Hence the olive was held as sacred to Pallas, and representations of it figured on the coins of Athens.

Perhaps the very earliest flower which we find employed as the symbol of a nation or country was the Egyptian lotus (*Nelumbium speciosum*, Fig. 3).

FIG. 1. THE OLIVE

This magnificent aquatic flower was dedicated to Isis, the great female deity of the ancient Egyptian Pantheon; and it is evident that the Pharaohs and their people of the Nile valley held the lotus to be a national emblem, for their sculptors and decorators were never weary of producing representations of the grand and massive blossoms, either alone or in combination with the papyrus plant, which is also shown in the accompanying figure.

Passing the dark ages, we come to the age of chivalry, where we find the floral language surviving in the cognizances or badges of great leaders, high families, and the memory of heroes and beautiful women. Of these many are alluded to in old books on heraldry. We have only space to allude to a few national or family badges.

Geoffrey of Anjou, when on a crusade, placed a sprig of the broom (*Planta genista*, Fig. 2) in his helmet as a token of his lowliness and Christian humility. His descendants adopted the badge, and thus came the family name of the Plantagenets, or wearers of the broom plant.

The appropriation of different flowers as the symbol of kingdoms or countries or the badges of a party, a clan or a regiment, appears to have originated very early during the middle ages, and probably sprung out of the fantasies of chivalric heraldry. France appears to have been one of the first of European nations to adopt a national flower as a badge, in her flag bearing the "fleur-de-lis" (Fig. 2) which, however, is evidently not a lily at all, but a conventional representation of an iris. It is clear, moreover, that the use of this flower as the emblem of France cannot be of very great antiquity, for the most ancient war banner of the French was the "Oriflamme," which was a red flag with rays or points, doubtless intended to represent the sun, and having its origin probably in a similar idea with the "Sunbarol" flags of ancient Erin. But doubtless the fleur-de-lis figured later on in many a well-fought field, and made a war-cry of chivalry—

> "Now by the lips of those you love, fair gentlemen of France,
> Charge for the golden lilies now—upon them with the lance!"

The four emblems of the United Kingdom, *i. e.* the rose for England, the thistle for Scotland, the shamrock for Ireland and the leek for Wales (Fig. 8, page 134), all appear to be entitled to claim a respectable antiquity, although it is not possible, perhaps, to assign an exact date to the assumption of either of them. The splendor and fragrance of the blossom of the rose might well commend that flower to the good graces of that bold and haughty nation which has taken the lion as its emblem in animal nature; but the special monarch who first introduced this emblem we do not know. In later times a rose-bloom of rather peculiar character was the favorite badge of the royal house of Tudor. There was very good reason for this, apart altogether from the rose's claim to be the emblem of England hundreds of years before Henry Tudor, Earl of Richmond, landed at Milford Haven, and wrested the crown of this kingdom from Richard III.

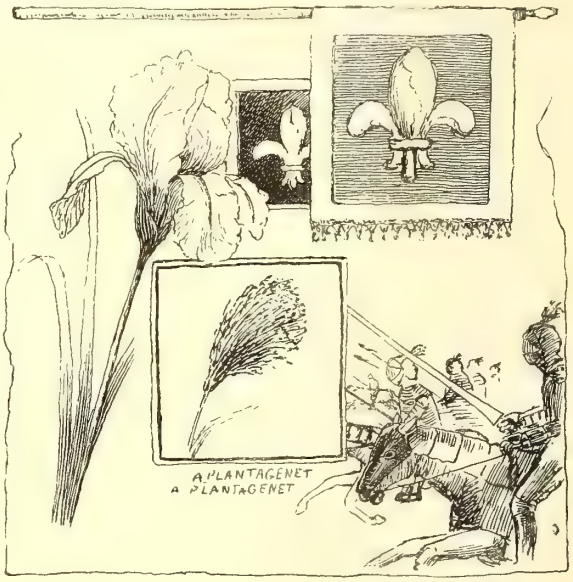



FIG. 2. FLEUR-DE-LIS AND PLANTAGENET.

It was many years before the battle of Bosworth Field that Richard Plantagenet, the representative of the house of York, and the Earl of Somerset, as representative of Lancaster, had their historic quar-

rel in the Temple gardens, and there adopted the red and white rose as their respective badges. Shakespeare well depicts the episode in his fine historical dream of Henry VI :

*Plan.*—Let him that is a true-born gentleman,
And stands upon the honor of his birth,
If he suppose that I have pleaded truth,
From off this briar pluck a white rose with me.
*Som.*—Let him that is no coward, nor no flatterer,
But dare maintain the party of the truth,
Pluck a red rose from off this thorn with me.
*War.*—I love no colors ; and without all color
Of base insinuating flattery,
I pluck this white rose with Plantagenet,
*Suff.*—I pluck this red rose, with young Somerset,
And say withal, I think he held the right.

mond to the Princess Elizabeth, daughter and heiress of Edward IV, and known popularly as the "White Rose of York."

The thistle appears to have been adopted as the symbol of "Caledonia stern and wild," at a very early period of the middle ages. The following is the traditional account of the cause of its having been selected : "At a remote date the Danish 'vikings,' or sea rovers, were in the habit of making descents upon the coast of North Britain—as, indeed they appear to have done everywhere else—and ravaging far and wide. One dark night a party of them were marching to assail the encampment of

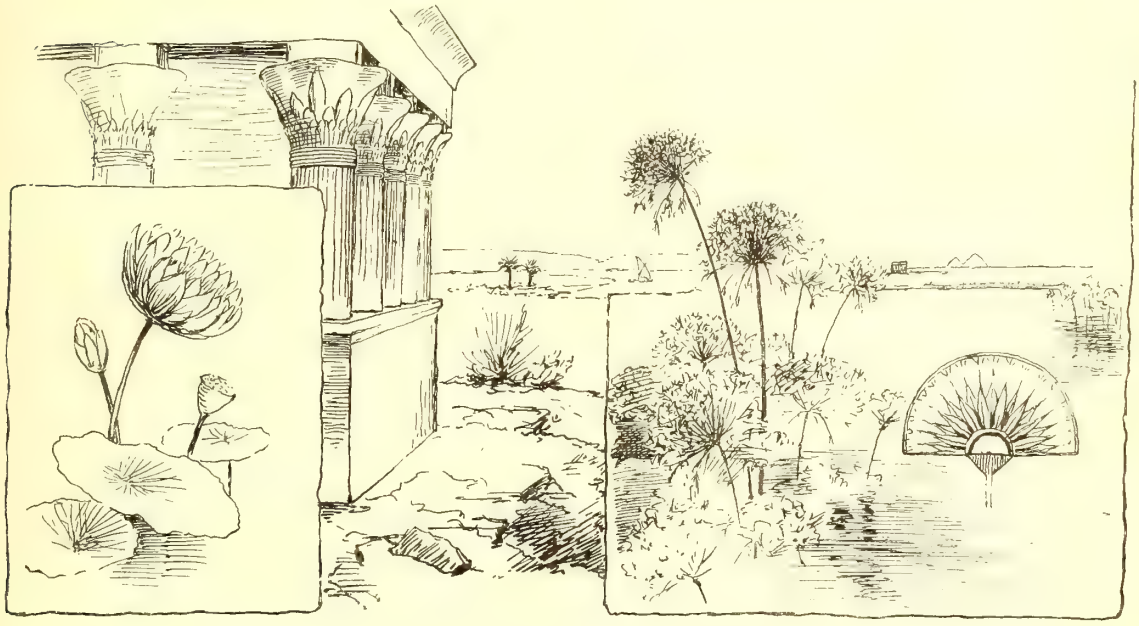


FIG. 3. LOTUS AND PAPYRUS. LOTUS CAPITALS AND PAPYRUS EMBLEM.

And so the quarrel is well initiated, and the company declare their partisanship. Well might Warwick exclaim before the party dissolves :

"And here I prophesy—This brawl to-day,
Grown to this faction, in the Temple garden,
Shall send, between the red roses and the white,
A thousand souls to death and deadly night."

The prediction was amply fulfilled, for the sanguinary war of the roses not only deluged England with gore, but well nigh exterminated the territorial aristocracy of the land. It is easy then to understand why the "Tudor Rose" should have been a favorite emblem of Henry VII. It signified the union of the red roses and the white, with the concomitant blessing of peace to devastated England. This union of the red and white roses was brought about by the marriage of the whilom Earl of Rich-

a band of patriotic Scots who were in arms to defend their native land. The invaders marched swiftly and silently and had nearly reached the spot where the devoted Scots were slumbering, when one of the bare-footed Danes trod heavily on a large and especially spiny member of the thistle family. The northern pirate could have endured death in battle with the stern silent stoicism of a red Indian, but he could not stand the prickling tickling of this ferocious plant, and set up a howl of agony. Hereupon the Scots awoke, sprung to arms, exterminated the Danes, and in gratitude to the thistle made it the national emblem of the 'Land o' Lakes.'" Some Latin scholar of subsequent days added the very appropriate motto of "*Nemo impune lacessit*," ("nobody injures me unscathed") which, as every-

body knows, has always been abundantly proved by the national history. Scotsmen have ever been

FIG. 4. CACTUS AND CHRYSANTHEMUM.

proud of the thistle, and feel toward the humble plant the sentiment so well expressed by Robert Burns when recalling the rural avocations in which his youth was passed—

"The rough burr thistle, spreading wide
Amang the bearded bere,*
I turned the weedin-heuk aside,
An' spared the symbol dear.
Nae nation, nae station my envy then could raise,
A Scot still, but† blot still—I kenned nae higher praise."

It is a moot point amongst botanists and antiquaries, which is the true Scotch thistle. Certainly the so-called blessed thistle (*Carduus marianus*) with its flat dark green leaves, ornamented by the meandering white veins which ancient superstition averred were caused by some drops of milk from the bosom of the Madonna falling upon them, is the prettiest;

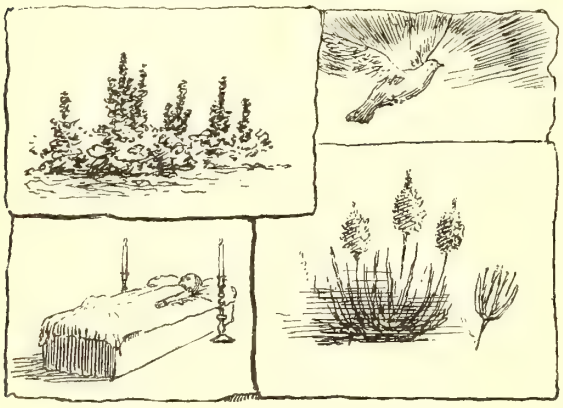


FIG. 5. AMARANTH AND ASPHODEL.

but it is not sufficiently prickly to have been the one that lamed the Dane, and *Carduus heterophyllus* is more generally held to be the veritable plant, and as such is planted in the grounds of the Royal Caledonia Asylum on the Caledonia road, London.

Concerning the matter, Mr. Sowerby, our greatest botanical authority, writes of *Onopordon Acanthium*, which he denominates the "Scotch thistle:"

"This thistle is also called the cotton thistle, from its downy appearance. * * * This species is the national emblem of Scotland, and is one of the stiffest and horniest of its race. It is the badge of the Stuarts."

But elsewhere he observes of the *Carduus heterophyllus*, or melancholy thistle:

"This thistle is the *cluas an fheidh* of the Highlander, which is said by some to have been the original badge of the house of Stuart, instead of the cotton thistle."

Now the cotton thistle (*Onorpordon Acanthium*) is not a true thistle at all, is very rarely found wild there, and is a doubtful native, while the stemless thistle (*Carduus acaulis*) is fairly common, and from its prostrate habit is very likely to have been trodden on by the Danish rover in his nocturnal attack on the unsuspecting Caledonians.

FIG. 6. PRIMROSE.

The origin of the adoption of the shamrock as the emblem of Ireland is conditionally placed in the century when St. Patrick, the great apostle of Erin, was preaching to the Celts and laying the foundation for that wide and early spread of Christianity in the "Green Isle" which caused it to claim the proud distinction of being "the Island of the Saints." It is said that St. Patrick, in order to illustrate from nature the theological doctrine of the trinity to his pagan hearers, bent down, and plucking a piece of a shamrock at his feet, held up its tripartite leaf as a symbol of the Almighty three in one. Whether the anecdote be true or false, it is at least a pretty one, and one of those to which the well-known Italian phrase, "*Non e vero e ben trovato*" ("If it is not true it is cleverly imagined"), emphatically applies.

Which plant is the veritable shamrock is a matter of even fiercer controversy than the identity of the true Scotch thistle. Sowerby, who has written

* "Bere," barley. † "But," without.

of it, decides for the common wood-sorrel (*Oxalis Acetosella*), and we think he is right. It is certain, from the poet Spenser and others, that the Irish of the lower classes, as far down as the reign of Elizabeth, considered shamrocks as suitable for food. Now the wood-sorrel has a pleasant sub-acid flavor and would make an excellent salad; whereas clovers or trefoils, which many assert are the true shamrock, would be very indifferent eating. Moreover, on every recurring St. Patrick's day every true Hibernian desires to have a "shamrock so green" in his button-hole, and large quantities of the wood-sorrel are sent to Covent Garden market from Ireland annually, ready for "St. Patrick's day in the morning," when every son and daughter of Erin is proud to "mount" the national emblem.

Concerning the controversy as to which plant is the shamrock, Mr. Sowerby observes very truly:

"The great feast of St. Patrick, the tutelar saint of Ireland, is in the early spring when clover certainly would not be in perfection, but when the tiny wood-sorrel would be in all its beauty. This circumstance inclines us to think that in this little plant we have the one honored by St. Patrick when he drew from the triple leaflet the illustration he sought to give his simple hearers of the great doctrine of the Trinity, or triune nature of God."

It is by no means certain, however, that the wood-sorrel is the original shamrock. Many other plants have been taken for it. "Cybele Hibernica," published in 1866, says that the creeping or white clover is "the plant still worn as shamrock on St. Patrick's Day, though *Medicago lupulina* is also sold in Dublin as the shamrock." Threkeld, the earliest writer upon Irish wild plants, says that a white form of *Trifolium pratense*—by which he probably meant the white clover—is the plant "worn by the people in their hats on St. Patrick's Day." Other species of clover have been supposed to be the shamrock, and even the water-cress has been urged as the plant gathered by the saint, but as this plant has not a three-parted leaf it has received little favor among other claimants. Still others assert that the story of the representation of the Trinity by the use of a tri-parted leaf is entirely fictitious and of modern origin. But as a matter of present fact, the clover appears to be regarded as the shamrock. On St. Patrick's Day, the "old women," writes Dyer, "with plenteous supplies of trefoil, may be heard in every direction crying 'buy my shamrock, green shamrocks,' while little children have 'Patrick's crosses' pinned to their sleeves."

The leek, appropriated to Cambria, does not appear so poetic or striking an emblem as either of the three preceding, and its origin is enveloped in obscurity. That it is of fairly long standing as the national emblem of Wales may, however, be inferred by Shakespeare making Fluellin, the Welshman, wear it in his cap on St. Daniel's day to provoke the ire of the pretendedly pugnacious Pistol.

In Japan the beautiful chrysanthemum is highly esteemed as a symbolic flower, and in Mexico the cactus is patriotically held to be the emblem of the land of the Aztecs. (Fig. 4.)

Coming to modern times and individual cases, it is well known that the great Napoleon selected the violet as his characteristic and favorite flower. Springing up in obscurity and retaining its perfume

FIG. 7. PASSION FLOWER, LILY, STAR OF BETHLEHEM.

in death, it may indeed be fairly considered a wonderful emblem of him who rose from the Corsican valley to the throne of France, and whose name has been a spell of power long after he drew his last breath on the lonely rock in mid-Atlantic. A more recent consecration of a simple blossom to a memory is seen in the popular wearing of the primrose flower (Fig. 6) on each anniversary of the death of Lord Beaconsfield.

In older days, most of the Highland clans adopted some vegetable emblem, a sprig of which they wore in their bonnets, which enabled them to recognize each other in battle. Sir Walter Scott was, of course, aware of this, and in the "Lady of the Lake" he makes the pine the badge or emblem of

Roderick Dhu, the truculent lover of Ellen Douglas and the chief of the Clan Macalpine. The Highland boatmen therefore hail Roderick with this barcarolle—

"Hail to the chief who in triumph advances!
Honor'd and blest be the evergreen pine!
Long may the tree, in his banner that glances,
Flourish, the shelter and grace of our line!
Heaven send it happy dew, earth lend it sap anew,
Gaily to bourgeon and broadly to grow,
While ev'ry Highland glen sends back our shout agen,
Roderigh Vich Alpine dhu, ho! ieroe!

"Ours is no sapling, chance sown by the fountain,
Blooming at Beltane, in winter to fade;
When the whirlwind has stripped every leaf on the mountain,
The more shall Clan Alpine exult in her shade.
Moored in the rifted rock, proof to the tempest's shock,
Firmer he roots him the ruder it blow,
Menteith and Breadalbane, then, echo his praise agen:
Roderigh Vich Alpine dhu, ho! ieroe!"

Some flowers have been and are held symbolical of those higher interests which belong to the religious sentiment. We have alluded to this in relation to the shamrock in our observations on national emblems. In this category we must reckon the passion flower (Fig. 7). It is considered a symbol of Christianity, and received the name of passion flower because the eyes of the enthusiastic Spaniard who first greeted it amongst the floral treasures of the New World imagined that they saw in its curiously shaped style and stamens nature's representation of the tools of torture employed during the consummation of the passion of our crucified Redeemer—the hammer, the nails.

The ordinary white garden lily (*Lilium candidum*) was anciently considered as dedicated to the Virgin Mary, and hence as an emblem of virginity, purity and innocence. In all, or very nearly all ancient paintings of the "Annunciation," we find the blossomy panicle of this delicate and stately flower somewhere introduced—either in the hand of Mary, in that of the Angel Gabriel, or perhaps growing in a pot in the foreground (Fig. 7). Doubtless it was this idea of the white lily being emblematic of innocence which gave the key-note to Bryant in his lines entitled "The Child and the Lily:"

"Innocent child and snow-white flower!
Well are ye paired in your opening hour,
Thus should the pure and the lovely meet,
Stainless with stainless, and sweet with sweet."

It may be said here that in the French "Language des Fleurs" the Star of Bethlehem (*Ornithogalum umbellatum*, Fig. 7) of our gardens is also allotted to innocence.

In this connection we may mention the amaranth and asphodel (Fig. 5) from their fancied connection with another world. This idea appears to go back even to the ancient classic times of Greece and Rome. The amaranth (*Amarantus melancholicus*) and its kin supply several of our favorite garden flowers—as the Prince's feather and the cockscomb. It has always been held to symbolize "happy immortality," and our great Puritan poet speaks of it as the "immortal amaranth." The asphodel, on the other hand, is considered as expressive of the sad and lugubrious side of the eternal life, and is emblematic of "regrets beyond the tomb."

*London.* JOHN BLACK.

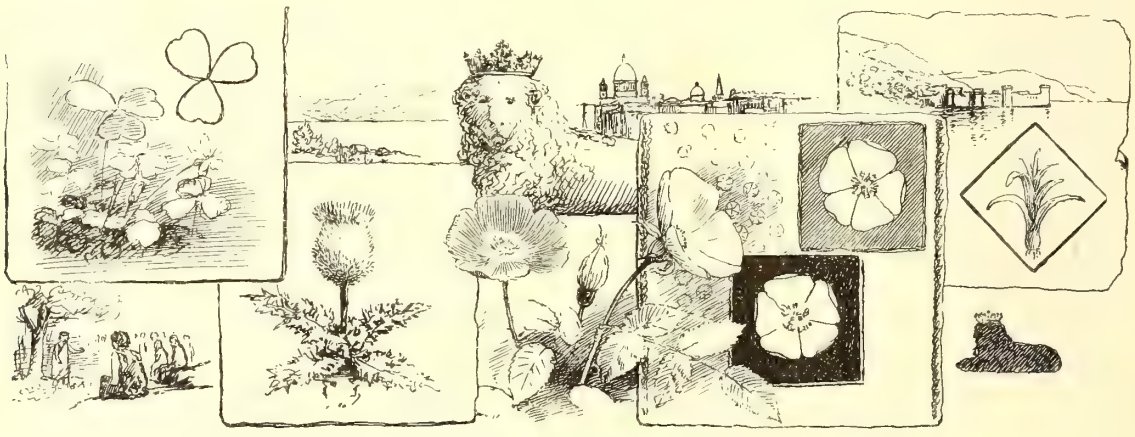
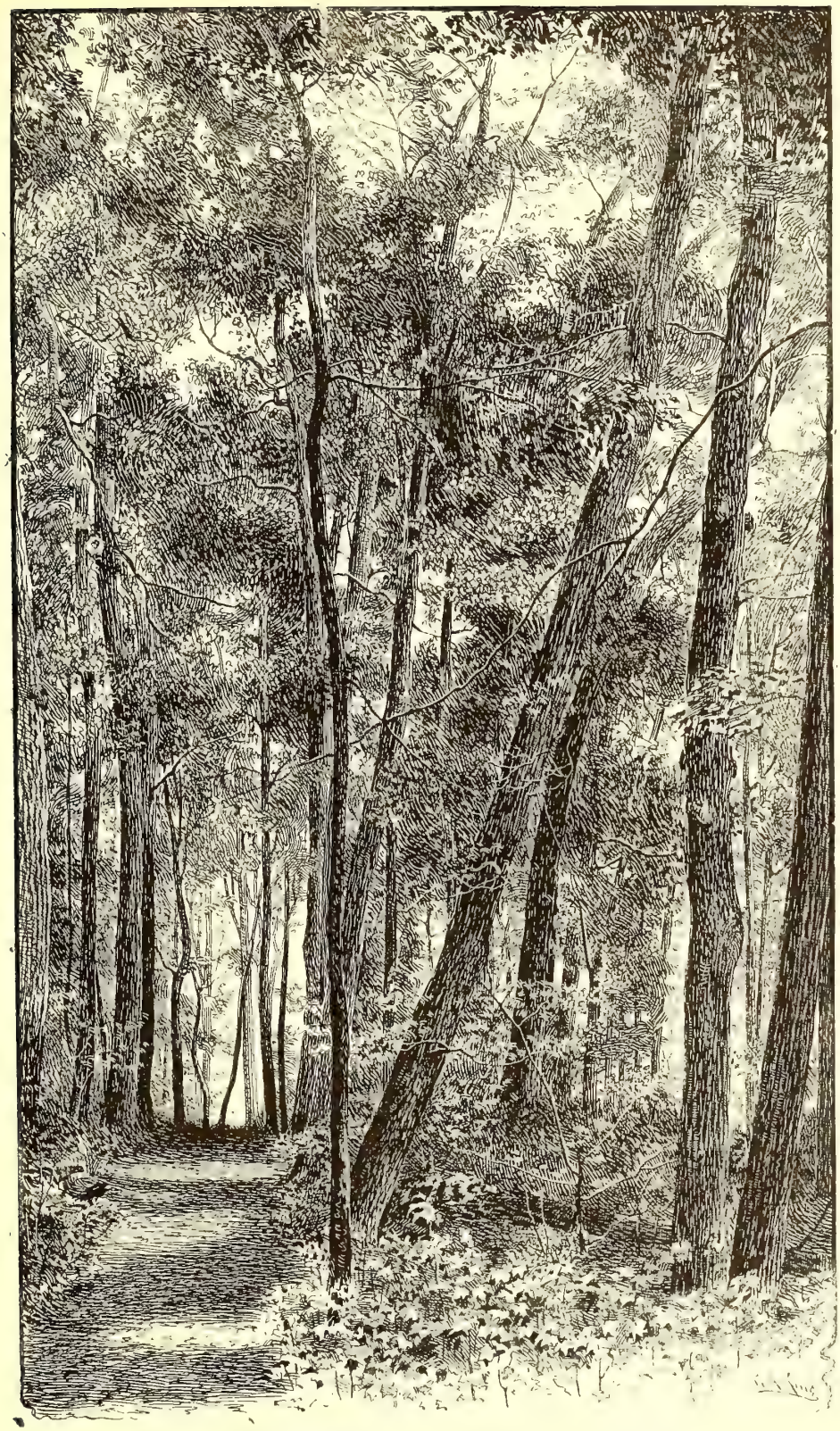


FIG. 8. SYMBOLS OF GREAT BRITAIN.—ROSE, THISTLE, SHAMROCK, LEEK.



A Glimpse Beneath the Maples. (*See page* 143.)

# THE ECONOMIC PLANTS OF JAPAN—III.

## FRUIT-BEARING VINES.

IN JAPAN, as elsewhere, the grape is queen among fruit-bearing vines. Though in a land where they are several indigenous and formidable rival vines, the grape has more than held its own among these eastern people. It clothes the arbor, shades the dwelling and entwines itself in the affection of its cultivators there as here, and nothing borne of a vine can surpass the luscious fruit with which they are rewarded. Grape culture in Japan is, perhaps, not quite so general as with us; it is localized and confined somewhat closely to certain sections of the country where soil and climate are especially adapted to this crop; but this is not due to any special lack of appreciation of the fruit. It is rather due to the fact that being vegetarians almost exclusively the people do not crave fruit to the extent that we do, and the kaki, which is universal, and which has, from time immemorial, been *the* fruit of the country, fills their needs so well that it would be a waste of effort to grow largely of other things. The grape is, however, known and grown over the length and breadth of Japan. But, like the pear, it is the leading and favorite crop of certain localities only, while it is elsewhere found but sparingly.

It is generally conceded by the intelligent Japanese best informed on this subject that their cultivated grapes are not natives of Japan. They have been introduced (at any rate they are never found wild), but just whence and when is unknown. They belong to the same species as the European grape (*Vitis vinifera*), and have all the characteristics in appearance and taste peculiar to that class. In quality the fruit is certainly far superior to any of our native varieties. I make in this respect no exception—not even for the varieties belonging to the æstivalis group. Well ripened specimens compare favorably with the best European varieties—the Chasselas, Muscat of Alexandria, Black Hamburg and others. It is true, that like their other fruits, they are too often picked and marketed before they are ripe, and consequently never develop their delicious qualities, but when well-grown and fully ripe I know of no better grapes. The habit of gathering and selling immature fruits is doubtless the reason that foreign travelers often fail to appreciate the grapes. J. J. Rein must have been victimized in this manner when he concluded that "these grapes are thick-skinned, not so sweet as ours, and have a bitter, strange after-taste." I have, in all cases of well-ripened fruit, found the skin thin, the pulp sweet and melting, and the seeds few and small. I found that a large proportion of the berries had but one seed; about fifty per cent. had but two seeds; some contained three seeds, and only very few had four seeds, in one berry.

So far as I have been able to ascertain, the Japanese have but two main varieties, called *Aka-budo* and *Midori-budo*, meaning respectively red and green grapes. But there are several unnamed sub-varieties that belong to these two grapes. They differ somewhat in color, and the berries vary also in form, some being round, others more oval. They are also often named from the district or locality where they are grown. Thus, Tokio is supplied with grapes chiefly from Koshiu, a mountain region in central Japan lying west and south of the capital, and the grapes which come from this district, which are the two kinds above described with their sub-varieties, are invariably spoken of as Koshiu-budo (Koshiu grapes). The growers there have attained such skill in cultivating the vines and in handling the fruit that they produce a better article than other growers, and their fruit sells for better prices, varying with the supply from five to ten cents a pound. A good illustration of the Red Koshiu grape is given in Fig. 1. It is a typical bunch in appearance, though perhaps slightly above the average size; but it is not by any means an extra large bunch. The illustration explains all but the color, which is a clear brownish-red when ripe.

The origin of the Koshiu grape dates back so far that it is lost in myth. The following version of its origin has been obtained from a Japanese book treating on the grape. In Koshiu there was a village called Kami-iwasaki (its present name is Iwaye), in which there lived a man named Kageyu Amamiya, who is said to have found this grape in the following wise: "On the 27th of March, in the year 1186 of the Christian era, there was an annual celebration at the temple of that village, situate in a place called Shira-no-hira, a small plain in the Iriaye mountains. As Kageyu Amamiya walked toward the temple to worship on this feast day he found on the highway a peculiar grape vine, quite different from those growing wild in the neighborhood, especially in its branches, bark and leaves. He thought that it must be a new variety, and prompted by a religious impulse, he concluded that it was a gift from the god of the temple, and decided to try to cultivate it.

"His neighbors did not believe his statement that it was a gift from the god, but he adhered to his original idea. In four years from the time he planted the vine he was

rewarded with thirty clusters of reddish-purple, sweet grapes from the plant he had found. The variety was unknown both to himself and to his neighbors. It was of most excellent quality, and they decided that it should be propagated and cultivated with care.

"In the year 1197 he had propagated it so that he had thirteen plants in bearing, and he then presented to the governor general, Yoritomo, who became the first shogun, a hundred clusters of these grapes, which greatly pleased the recipient. The Shiro-no-hira Plain, where the grape had been found, was hereafter called Tonaye-shiro (meaning a bed for raising young vines). It appears that the descendants of Kageyu Amamiya continued to cultivate the grape which their father had found, and one of them, Orioenosho Amamiya by name, frequently presented grapes to the then famous general, S. Takeda, who was governor of the district, and on one occasion he in turn presented his own sword to the vineyardist, with a note thanking him for the gift, dated the 3d of October, 1549. (This note and sword are still preserved by the descendants of the family.)

"In 1601, Iyeyasu Tokugawa, the first shogun of the house of Tokugawa, caused an investigation to be made in regard to the cultivation of grapes in Koshiu, and there was then found to be one hundred and sixty-four vines in bearing of this variety. It now spread to other places also, and in 1716, when this subject was again investigated by the government, there were one hundred and fifty-four tan planted to grapes in the village of Iwaye, and fifty tan in the village of Katsunuma, a total equaling about fifty-one acres." (One tan is nearly one-fourth acre.) The latter portion of this story, in regard to the government investigations and also the presents of grapes to General Takeda, and his acknowledgment thereof by giving his sword and a letter in return, are matters of history and record and cannot well be doubted. Nor, indeed, can it be doubted that the family of Amamiya were among the first to cultivate this variety. The only vulnerable portion of the story is that which relates to its miraculous appearance, which will in all likelihood remain a myth forever.

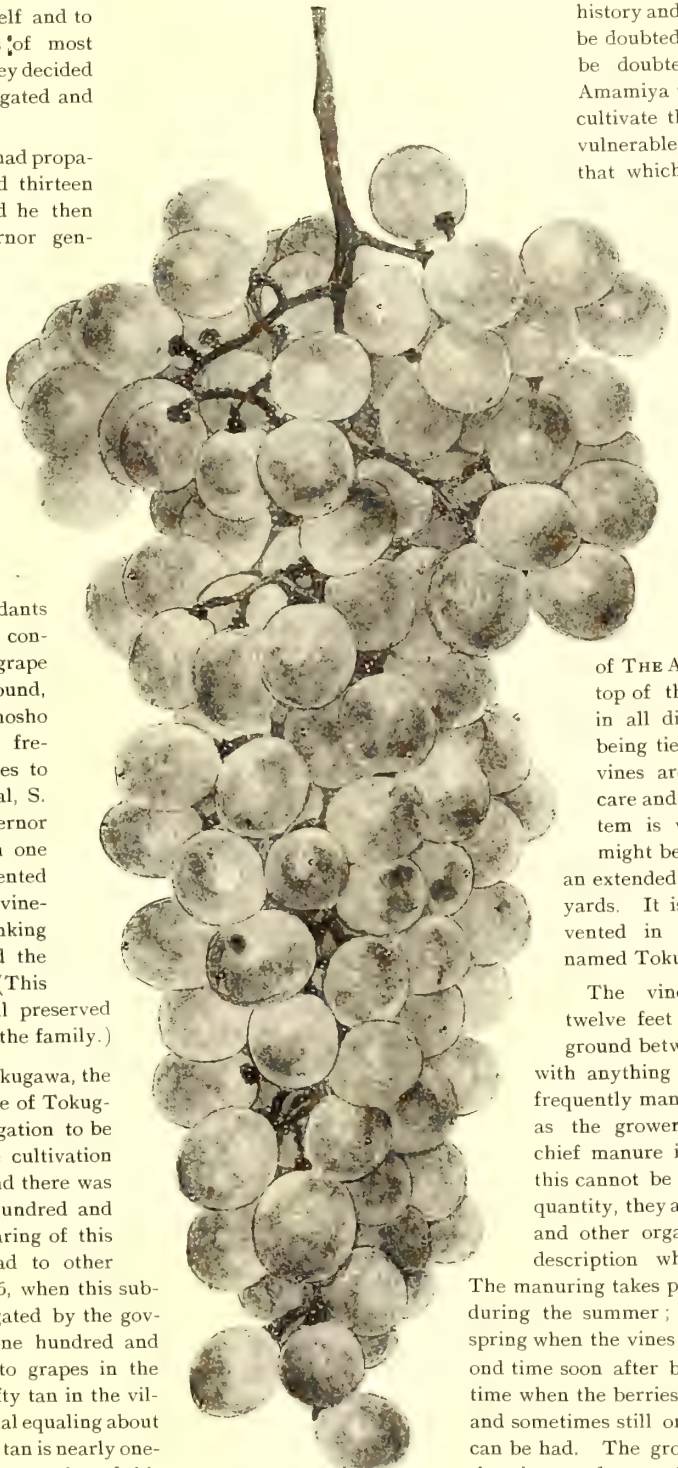


FIG. 1. RED KOSHIU GRAPE. TWO-THIRDS ACTUAL SIZE.

### CULTURE.

The grape vines in Japan are invariably trained on a horizontal trellis, varying in height from five to six feet from the ground, and built of bamboo poles in the same manner as the pear trellises described in the January number of THE AMERICAN GARDEN. On top of this the vines are spread in all directions, the branches being tied to the trellis. The vines are always pruned with care and much skill. The system is very successful, and it might be worth while to give it an extended trial in American vineyards. It is said to have been invented in 1615, by a physician named Tokumoto Kaye.

The vines are planted about twelve feet apart each way. The ground between them is not planted with anything else, but the vines are frequently manured with such material as the growers can obtain. Their chief manure is night soil, but when this cannot be obtained in the desired quantity, they also use rice bran, leaves and other organic material of every description which can be collected. The manuring takes place three or four times during the summer; the first time early in spring when the vines start to grow, the second time soon after blooming, and the third time when the berries are about half grown, and sometimes still once more if the manure can be had. The ground is loosened around the vines and a small circle opened with a hoe, into which the manure is poured and the earth again replaced. The vines thrive well

under this treatment, many of them being thirty to forty years old, and they bear large quantities of fruit. They appear not to suffer from the many diseases that attack the fruit in America. Mildew and rot are rare.

The grapes are gathered when they begin to color, packed in baskets, and sent off to the city markets, chiefly to Tokio, where they sell on the average for between five and ten cents per pound. The clusters of the Koshiu grape are large, often ten inches to a foot in length, and correspondingly heavy. The berries on vigorous vines are medium to large, varying somewhat in shape from round to slightly oblong on different vines, and when fully ripe they are of a beautiful brownish-red color.

The *Minori-budo*, or green variety, is comparatively rare; the red one being by far the most common. There is, however, scarcely any difference between them as regards quality and flavor; both are very sweet, thin-skinned and the pulp melting.

If these grapes will thrive in the United States as they do in Japan, a point which has yet to be settled by experience, it will be an invaluable boon to American viticulturists.

Many of the American varieties have been introduced into Japan, but they are not cultivated except occasionally here and there near the open ports. I have seen many of our common varieties in Tokio, among them the Concord, Hartford Prolific, Lydia, Martha, Agawam, etc. Some European varieties may also be found, chiefly French, but these too are rare. None of them can, in fact, compete with the native variety, the Koshiu-budo; nor are the vines so healthy. In one vineyard in Tokio, which fell under my observation, I found that the introduced vines were killed by phylloxera one after another, while the native vines in the same vineyard did not at all suffer from the attacks of this insect.

The genus vitis is represented in Japan by several wild species. Only one of them, however, has any economic value, and that is undoubtedly identical with the common fox grape of this country, *Vitis Labrusca*, L. (*V. Thunbergii*, S. & Z.; Jap., *Yawa-budo*, *Gaulbu*.) It has, at least, all the characteristics of our species. It is very abundant in the woods and underbrush in the mountains, particularly at elevations of between 2,000 and 4,000 feet. I have seen it literally covering the bushes and trees in some places over large areas, especially along the mountain streams. One such place that I call to mind is at Usui Toge (South Pass) mountains, in the provinces of Shinshiu and Joshiu, near the famous active volcano Asama-Yama, where in the summer of 1887 the wild grapes were exceedingly abundant. And during the following summer (1888) I found them equally abundant in the low mountains in Fukushima Prefecture, north of the city of Wakamatsu, a town that is almost world-renowned for its lacquer work and trade in the lacquer industry. Nor were the vines confined to small patches here and there. They were scattered quite generally over the mountains. I had good opportunity to observe this in 1888, when in company with an American tourist and a guide, we spent a month in rambling over some hundreds of miles of this region. If the Japanese have attempted to improve this species by culture, as has been so largely and successfully done in this country, I have failed to learn of the fact. Certainly all the grapes of the labrusca class which they have are well known American varieties, and their culture is very limited.

The people who live in regions where these wild grapes are abundant gather them when they begin to turn dark, and along with their many vegetables and their rice use them as an article of food. They apparently know nothing of the art of converting them into jelly and preserves.

There is one other species of the grape with edible fruit which may be found on the plains along the streams and in the lowlands. I do not know what it is; possibly it has not been described. It is a very small, slender vine, only three to six feet tall and often trailing through the grass, and the vines apparently die back nearly or quite to the ground every year. It has small, very compact clusters of black grapes, scarcely as large as peas, and these nearly all seed. They have no pulp, but they yield a pleasant vinous juice that is very refreshing, though also slightly astringent. Their food value is but small, but they are nevertheless often gathered and eaten, particularly by children, who relish them much.

They have a way of preserving their grapes for use along during the winter which deserves to be mentioned. They use for that purpose a very large earthenware jar, which is a common household utensil and is used also to hold water and for various other purposes. Some of these jars are three and a-half to four feet high, about two feet wide above and tapering to a narrow bottom. They are glazed on the inside and can thus be made perfectly air-tight when closed above. Now, they fasten sticks crosswise in these jars and suspend the clusters of grapes from them, one tier above another till the jar is full. It is then closely sealed with oiled paper, a wooden lid is put on and the jar is buried in the ground in a standing position. This insures uniformity both in the moisture of the air about the grapes and in the temperature. The Koshiu grape is said to keep all winter when put away in this manner and left undisturbed. I cannot vouch for this statement, but it is certain that I have bought the Red Koshiu grape in Tokio as late as the beginning of February. Might it not be worth while for somebody to try this or a similar method of keeping grapes here? I venture the opinion that its success is due mainly to the uniformly cool temperature which is insured by burying them in the ground.

STAUNTONIA HEXAPHYLLA, Decaisne (*Rajania hexaphylla*, Thunb.) Japanese *Mube*, *Tokiwa-akebi*. (Figs. 2 and 3.)

This remarkably beautiful vine is, I believe, as yet unknown in America, and when it shall become generally known here it cannot fail to be appreciated by everybody and will be an acquisition of great value. The accompanying illustrations (Figs. 2 and 3, pages 139 and 141), drawn from life, natural size, give a good idea of the leaf, the flower and the fruit. It is a woody vine which climbs by twining. It grows with much vigor, branches and spreads considerably, and attains a height of some forty feet or more. It is indigenous to the lower mountains of

FIG. 2. MUBE, OR STAUNTONIA HEXAPHYLLA. NATURAL SIZE. (See page 138.)

southern and central Japan, and reaches as far north as Yawagata prefecture, two hundred miles north of Tokio, according to the statement of an official in the agricultural department of that prefecture. How far north it can be grown without protection in America can only be ascertained by experiment; possibly it may not be hardy north of Mason and Dixon's line. In Tokio it is perfectly hardy growing, luxuriantly and yielding much fruit. The handsomest specimen I have seen is a vine in the botanical gardens of the Tokio university. It trails over and around an arbor in wild luxuriance, producing a dense mass of foliage through which the rays of the sun cannot pierce. It is an evergreen, the foliage remaining of the same dark shining hue both summer and winter. The leaves are alternate, palmate, with long petioles; leaflets five or six, the former number predominating; oval in outline, margin entire; smooth, shining dark green above and a little lighter below. The young foliage and bark of the young shoots are of a light green color. It blooms in May, forming loose clusters of monœcious flowers, often both staminate and pistillate flowers in the same cluster. The flowers consist of a perianth of three sepals and three petals, creamy colored on the outside, and shaded more or less with pink on the inner side, thick and fleshy, valvate in the bud, both sets alike in all respects except that the sepals are broader than the petals; anthers six, adnate, yellow, filaments united into one. (See illustration of a twig with leaves and a cluster of male flowers in Fig. 2, page 139.) The pistillate flowers are larger than the staminate ones; pistils usually two or three, rarely four. The illustration of a female flower (Fig. 3) shows an instance of a flower having four parts in each set—a somewhat rare occurrence, three being the rule. The fruit (Fig. 3) is oblong, cylindrical, four inches long and two inches in diameter, nearly covered with scarlet in large patches and splashes. The rind is a white, fleshy substance, not pleasant in taste, with a granular inner coating; but the pulp which it encloses is very pleasant. It has a sweetish taste, is jelly-like in consistence and greenish-yellow in color, containing numerous purplish, oblong seeds as large as small navy beans. It does not ripen in Tokio until the beginning of November, with the advent of the first frost. It is readily propagated by seeds.

AKEBIA QUINATA, Decaisne (*Rajania quinata*, Thunberg). Japanese, *Akebi*. (Fig. 5, p. 145, and Fig. 7, p. 151.)

I have frequently seen this species about Tokio and elsewhere in Japan, in thickets, along water courses and on the lower slopes of the mountains. It is a slender deciduous vine which climbs over bushes and up the trunks of small trees by twining the stem about the support. As shown in the illustration, (Fig. 7, page 151), which represents the end of a growing shoot, natural size. The leaves are palmately five-foliate, leaflets oval or ovate, blunt or even slightly notched at the apex, and with smooth margins. The leaflets are not large, only a couple of inches long at most and usually less. The foliage has a charming effect when peeping out from among rougher leaves, or silhouetted against the gray trunk of a tree. It is not a tall climber, reaching to the height of fifteen to twenty feet, and spreading out considerably over bushes and undergrowth. Old vines produce a handsome berry-like fruit, dark purple in color or almost black when fully ripe.

In the latitude of Tokio it blooms in the latter part of April. Fig. 5 shows a twig with a cluster of blooms containing both staminate and pistillate flowers. The flowers are purple in color and have a sweet, heavy odor. Like the tauntonia, it is monœcious; but the staminate and pistillate flowers are often produced in the same cluster. In shape they are alike, but the pistillate ones are larger than the others; petals three, boat-shaped; pistils six to nine; anthers six. Usually only two or three pistils in a flower develop into fruits, the rest falling off at an early stage. The fruit is of variable size, but usually three to four inches long and two inches in diameter. It ripens in the latter part of October or beginning of November, and when fully ripe it cracks open along the dorsal suture, exposing the pulp and seeds to view. The pulp is a homogeneous yellowish-green mass containing some forty to fifty black oblong seeds. It has a pleasant, sweetish, though somewhat insipid taste, resembling very much the fruit of the stauntonia.

In America, the akebia will probably be esteemed more as an ornamental plant than for its fruit. It deserves a place in every garden where the winters are not so severe as to retard and stunt its growth. Being a rather slow grower it cannot, however, be depended on to yield much shade as an arbor plant except in favorable situations. It will grow under the shade of trees, perhaps more satisfactorily than most other vines.

The vine has an economic use which is of no small importance in those parts of Japan where it grows in abundance. It is used for wicker-work, and nothing can surpass it for this purpose. The vines are slender, pliable, strong, of an almost uniform thickness throughout, and in deft fingers they lend themselves readily to very graceful work. In the city of Yawagata, the capital of Yawagata prefecture, I found it quite extensively employed for the making of baskets, trays and other articles in infinite variety, and even for sun hats. The plant was abundant in the surrounding mountains, and was no small source of income to the basket-makers of that place. The articles made from it are stronger and more durable than willow-ware. The vines are long and thin and do not have to be split before they can be used. This class of wicker-work brings a higher price in Tokio than willow-ware, and doubtless the same would be the case here could it be bought at all. It might be a paying investment to start a plantation for the purpose of producing choice material for basket-makers. It would be superior to willow in many points, especially for trimmings and fancy work. The producer would probably find the next species (*A. lobata*) more profitable on account of its being a much more vigorous grower.

AKEBIA LOBATA, Decaisne. (*Rajania trifolia*, Sieb.). Jap., *Mitsuba-Akebi*. The Japanese name "Mitsuba" means three-leaved, and is hence descriptive of the leading characteristic of this species. As may be seen in the frontispiece, which shows a twig with some clusters of

leaves slightly reduced in size, the leaves have but three leaflets. I believe this species is practically unknown in this country; yet it has some points that render it more desirable for arbors and ornament than *Akebia quinata*. First, it is very hardy. Its home is in the mountains of northern Japan, and it would doubtless be hardy anywhere in the United States. Secondly, it is a much more rapid and vigorous grower than the former species. I found some very fine vines of this kind in the lower mountains in the northern part of Iwati prefecture, which is well up toward the northern point of the main island. One vine, especially, attracted attention by its size and load of fruit. It grew in a spot of rich soil, mostly leaf mold, by the side of a spring, in the edge of a wood, where it rambled over a thick growth of tall bushes and small trees within an area of a square rod.

The vine is slender, voluble, deciduous; foliage abundant, light green, and mostly in clusters on the old wood; petioles long, leaflets three, raised on rather long stalks, jointed both at base and at point of radiation, and in the autumn the leaflets drop some time before the petioles. The flower and fruit are like those of the preceding species, and the description there given answers also here. A good illustration of the fruit is given in the frontispiece, but owing to the perspective the right hand fruits appear smaller than they are. The general introduction of this vine would be a great acquisition to American horticulture. For wicker-work it would be as good as *A. quinata*, though the vines are a little heavier, but the Japanese use them in the same manner as described above. Neither of these two species is cultivated, but the fruit of the wild vines is regularly gathered, mostly by women and children, and marketed in the towns. It ripens in October.

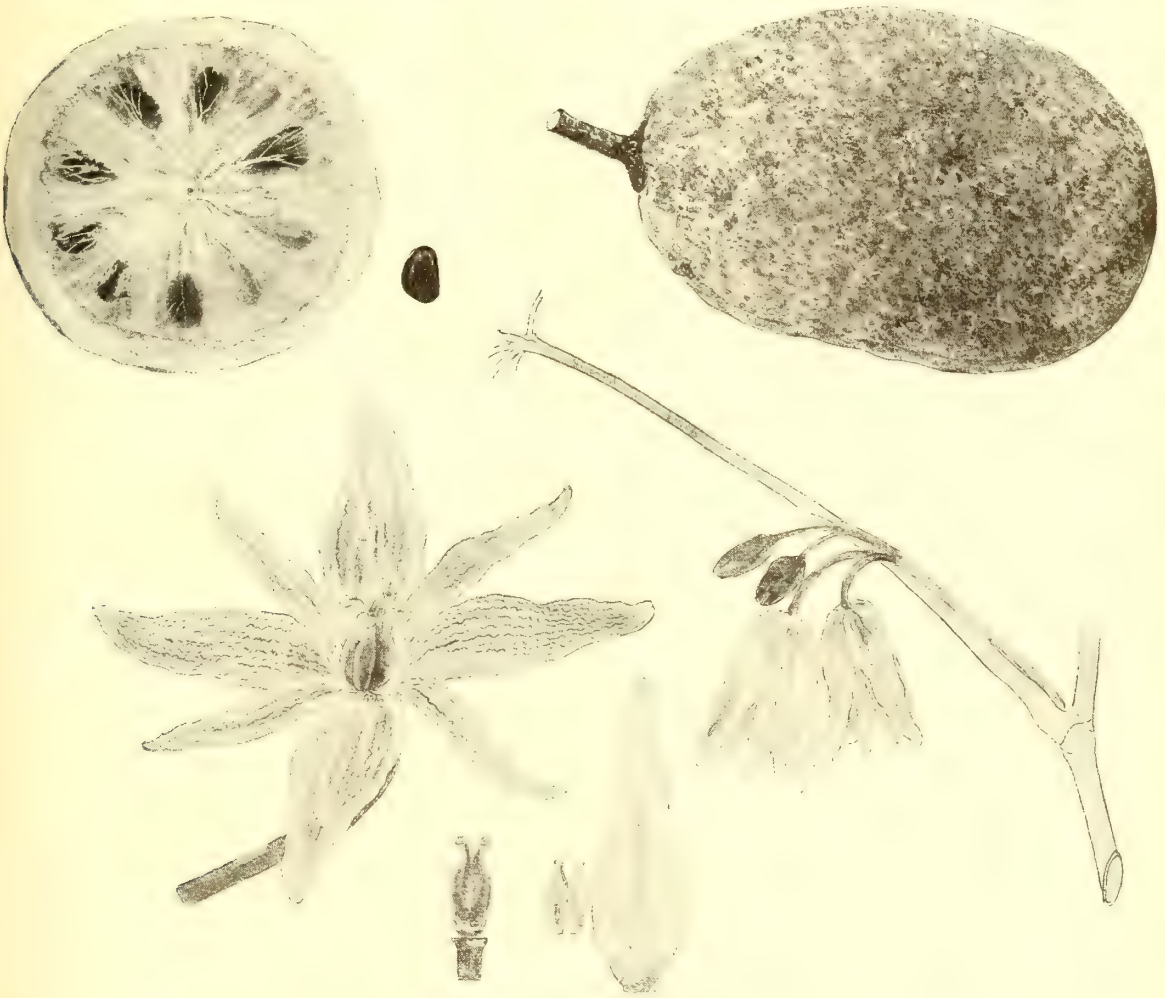


FIG. 3. MUBE, OR STAUNTONIA HEXAPHYLLA. FLOWERS NATURAL SIZE. (See page 138.)

The family Ternstrœmiaceæ contributes three useful vines, all of the genus actinidia. They are found in the northern mountains generally and especially in Yezo, the northern island of the empire. They are deciduous vines which climb by twining, with alternate, ovate, serrate leaves about as large as good sized cherry leaves which they much resemble, except that they are not smooth like the latter. The upper surface is dark green, the lower surface light green, with prominent veins, and beset with

short rough hairs. The flowers are white, and much resemble tea blossoms in size and appearance. All three produce edible berries. So far these three are alike, but beyond this they must be described separately.

ACTINIDIA VOLUBILIS, Planch. (*Trochostigma volubilis*, Sieb. and Zucc.). Jap., *Shira-kuchi-dzuru, Saru-momo.* The last name means "monkey peach." This is the tallest of the three species. It attains a height of from sixty to seventy feet, and old vines often measure two feet in circumference. These vines are said to be exceedingly tough, and for this reason are often used by mountaineers as cables in constructing a sort of suspension bridge across chasms in the mountains. The flow of sap in these vines in the spring is said to be so strong that woodsmen often tap the vines to quench their thirst when out of the reach of water, the sap being sweet and pleasant to the taste. I confess that I give these statements from hearsay, but neither seems at all improbable. There is one fact, however, that I can testify to from experience, and that is that the fruit is very delicious. I am indebted to Professor Haight, of Sapporo, where the vines are quite abundant, for several clusters of the fruit. A cluster of this fruit is represented natural size in Fig. 4, which will convey a good idea of the size and shape of the berries. The berries are green when ripe, with many brownish dots, and on the whole somewhat resemble large-sized green gooseberries. They ripen just before or soon after the first frost. The flesh is also green, soft and jelly-like throughout, and contains numerous small brown seeds. When fully ripe it has a delicate sub-acid taste, and an aroma which reminds one of the guava. As is the case with other fruits, the Japanese have the unpleasant habit of gathering the berries green and drying them over a hot fire. Thus treated they are sour and unpalatable, in fact very like what unripe gooseberries might be when roasted; but if allowed to ripen they have but few rivals. However, when they are dried as above they can be kept like raisins or other dry fruit for an indefinite length of time. There is one drawback to the general introduction of this vine with a view to cultivate it for its fruit, and that is that the species is diœcious. The staminate and pistillate flowers grow on different plants, and it would, of course, be necessary to grow both kinds in close proximity to each other to produce fruit. But whether fruit can be had or not it commends itself for culture as an ornamental vine. Its aspect is pleasing, it is very hardy, a rapid grower, and, in short, it possesses all the qualifications which render it suitable for places where tall-growing vines are desired.

ACTINIDIA ARGUTA, Planch. (*Trochostigma arguta*, Sieb. and Zucc.). Jap., *Saru-nashi*, "monkey pear." It differs from the above in that it does not grow so tall or require so much space to ramble over, and hence it can be employed to cover arbors or verandas very successfully. And what is more, it will bear severe pruning well. I have, in fact, seen it grown with excellent success and bear fruit *as a bush*, the tall, slender young shoots which ran skyward each summer, being cut back before spring to four or five feet above ground. This would so curb their ambition that the side shoots which they sent forth the following summer were only short branches two and three feet long, which were in turn duly shortened. This process persisted in, the plant would form an upright bush with but occasionally a few tall shoots from the roots or from near the base of the stems. There were several bushes of this kind in the botanical gardens at the Imperial College of Agriculture.

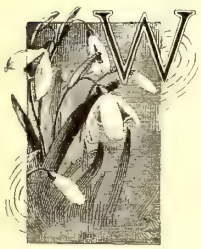
It has another point to recommend it. The flowers are perfect, and each plant will thus produce fruit by itself. The fruit is so nearly like that already described that it is difficult to point out the differences.

ACTINIDIA POLYGAMA, Planch. (*Trochostigma polygama*, Sieb. and Zucc.). Jap., *Matatabi.* Like the two preceding ones, this vine is a native of the north and perfectly hardy anywhere in America. It has already been introduced here and is known at least to nurserymen and amateurs in horticultural matters. I have been informed by a former colleague of mine, Dr. H. Mayr, who has traveled much in the Hokaido (the northern island) that there the foliage of this vine turns to a brilliant red in late summer, brightening its surroundings and becoming an object of great beauty. If it would do the same here it would be a strong recommendation in its favor. I have seen one vine on the nursery grounds of the J. T. Lovett Company, Little Silver, New Jersey, and the only one of any size I have seen in this country, but there the foliage does not turn to the brilliant hue characteristic of its home habits. While many of the flowers are staminate, a large number on each vine are usually perfect, so that flowering vines generally bear some fruit. A twig with leaf and flowers and a fruit are illustrated nearly natural size in Fig. 6, page 147. The fruit is neither so large nor so good as are the fruits of the two preceding species, and it will also be noticed that it differs from them in shape, being somewhat club-shaped. A flower somewhat enlarged is also shown. The vine has the peculiar property of attracting cats, like valerian.

*Kansas Agricultural College.* C. C. GEORGESON.

FIG. 4. ACTINIDIA VOLUBILIS. NATURAL SIZE. (See page 142.)

## A GLIMPSE BENEATH THE MAPLES.



WHOEVER may have enjoyed the privilege of a walk in the forests of Northern Michigan, if possessed of an appreciative soul for the beautiful in Nature, has had a pleasant experience. There are millions of acres covered with a dense growth of hardwood timber, against which until recently the ax of the woodman has but slightly prevailed. But the lack of supply farther south and the growing demand for the lumber for making furniture, are now causing this paradise of the hard maple, the beech, the birch and rock elm to be despoiled. In no part of all this forested area does the sugar maple develop to more stately proportions than along the shores of Crystal Lake, in Benzie county. It is not uncommon to find trees of this species measuring ten to twelve feet in circumference, with trunks as straight as a plumb line and fully sixty feet without a branch.

During a recent sojourn there I thought to preserve a few of the woodland gems so far as my camera would do it for the future pleasure of those of our household and visiting friends. It has occurred to me that the nature-loving friends who read THE AMERICAN GARDEN might also like to see one of these pictures. Of course, the delicate detail of the photograph cannot be preserved, but

the main features of the forest scene will at least be shown. (See page 135.)

My brother and I were out surveying, and I said, "Stop there in the path," and lo! the morning sun painted the scene in black and white. Beyond is the opening to the sky, beneath which the crystal waters lie, although but feebly hinted at by the shining through the trees. All around stand the majestic maples from whose gorged and punctured sides in springtime flows the sap that to my notion makes the most delicious of all sweets. One has but to stop and listen for the rich note of the hermit thrush, or perchance the drumming grouse, or it may be the weird laugh of the loon borne in from the waves upon which he merrily rides. And everywhere the stillness and freshness of the great forest overawe one, even as completely as in the wilds of the tropics. These northern forests, in the Great Lake country, are majestic.

*Washington.* H. E. Van Deman.

# PROFITS IN GRAPE-GROWING.

HOW A VETERAN VINEYARDIST SECURES IT YEAR BY YEAR.

THE SUMMER management of hardy grape vines includes planting, pruning, training and trellising, cultivation, picking packing and marketing, together with several items of occasional work, as fertilizing, destroying injurious insects, warding off fungous diseases, etc., which may be classed under the head of general care. Thirty, forty and fifty years ago, when the Isabella, Catawba and Clinton were our main varieties, the grape business was uncertain, failures frequent and the acreage small. The introduction of the Concord grape, the invention of the Climax basket, the ability to ship to distant markets in full car lots at low rates and with quick time, have changed all this and to-day grapes are our leading, most reliable and by far most remunerative farm crop. With this enlarged planting has been developed new and improved methods of culture. How to grow in large areas with the most economical outlay of labor and money, the largest quantity and best quality of grapes, is what most concerns the producers of this Lake Shore section of New York.

Will the business be overdone? is the universal question. We believe the answer to that question hinges on the one point of quality. We shall not fail for want of consumers. Sixty-five millions of people make a tolerably large market. We shall not fail because of the black-rot or other fungous diseases. Thanks to the skill of modern science, a remedy is at hand for these.

Our great danger lies in low quality. There is no city in the Union where Crawford peaches will not sell more readily at one dollar per basket than common stock at fifty cents. A few years ago in the city of Jamestown there was a glut in the strawberry market, caused by excessive shipments from the lake shore. Stocks accumulated, prices went down, the stores retailing at four to six cents per basket. Right in the midst of this overstock a local grower brought in his berries—large, handsome Wilsons and James Vicks. That man could not fill his orders at eight cents to ten cents—about twice what he could buy berries for in the same market. Quality did it. The externals of good quality are easily named. When a nine pound basket of Chautauqua Concords reaches St. Louis, Minneapolis or Denver, it should be of full weight, of which one and one-fourth pounds are the weight of the basket and seven and three-fourth pounds the fruit. The basket should be dry, clean and of neat appearance. The covers, preferably of white basswood, should be of sound timber, free from holes, knots or decayed spots. The grapes, neither too green, nor too ripe, should be free from crushed, mouldy or imperfect berries, and the clusters have just enough stems to serve as handles. Plainly stenciled on the cover should be the name of the grower, and the brand or trade-mark of the shipping association. Accompanying each basket should be a guarantee in about these words: "These grapes are warranted of No. 1 quality. If not found as represented the consumer will please report to the dealer from whom bought."

So much for the externals—the "outside of the cup and platter." The real quality, however, lies beneath the surface. The best grapes have the clusters full, compact, handsome, highly colored, the berries large, plump, rich and meaty to the taste, with a fresh, sprightly, vinous flavor. Soil, climate and cultivation unite to secure this perfect result. Fine quality is secured in the vineyard or it is never secured. Failure there is failure all the way through.

The grape vine is the child of the sun. The wild vine climbs to the top of the tallest tree that it may bathe its foliage in the upper sunlight and air. The French have this proverb, "The leaf loves the sun, the fruit the shade." Abundant light, air and cultivation; in that trio you have the secret of health and vigor for the vine and the highest quality for the fruit. The baneful effects of weeds are two-fold—diminution of quantity and deterioration of quality. Nature,

patient, long-suffering and generous as she is, in the vineyard, draws the line at Canada thistles, and like many another worthy matron, when she puts her foot down that settles it. If you on your part insist on having the weeds and thistles up even with the top wire of the trellis, she on her part will just as stubbornly insist on giving you none but second quality fruit.

Perhaps no part of the work in the vineyard has so much to do with quality as pruning. Insufficient pruning means overproduction, and overproduction means poor quality. But why prune at all? Let us illustrate. If on a given highway you have a team which can haul three tons and your load is ten tons, the only thing to do to take off part of the load. It is precisely so in the vineyard. At the close of the season one acre of good Concord vineyard, in round numbers, will have 150,000 buds on the new wood. The capacity of the soil will, we will say, mature five tons. This requires 25,000 buds, or one-sixth of the whole. So you see our vineyard is loaded up with buds enough for thirty tons. It will only carry five. Hence we must unload 25 tons, or in other words prune away five-sixths of the bearing wood. Now, suppose we only prune off four-sixths, or two-thirds, leaving one-third or enough for ten tons. What will be the result? The land has strength for only five tons. It is loaded double its capacity, and the result is a lot of second quality and refuse grapes. This is no theory, but the facts of nature, as unchangeable as the law of gravitation. The amount of bearing wood left in pruning varies with different varieties. With Concord, leave five canes of nine buds each. Delaware, leave three, and Catawba only two. Prune and train to secure the fullest and most even distribution of foliage and fruit. Because it more perfectly enables

FIG. 5. AKEBI (*Akebia quinata*). NATURAL SIZE. (See page 140.)

you to do this, a three wire trellis is better than two, and a four wire better than three.

The first thing to do for the harvest is to be ready. Have your baskets all on hand and good help engaged before the first cluster ripens. So small a matter as not having baskets when needed cost this county the past season a good many thousand dollars. Picking and packing grapes is the most healthful and delightful out-door and in-door work known to this latitude. Invalids forget their ailments, the weak become strong, the lean grow fat. Indeed, what can be nicer than putting up the purple bloomed Concords, the transparently beautiful Niagaras, the golden Pocklingtons, the Wyoming Red, Brighton, Delaware and Catawba, blushing with their light or dark shades of red? Women are the best help in the grape harvest. Their gentle touch just suits the need in handling a fruit exceedingly susceptible to injury.

Would there were no need of speaking of honesty and conscientious work in the packing room! The man who chuckles at the idea that he has palmed off a lot of seven and one-half pound baskets at nine pound weight and price, is not only dishonest, but actually a dangerous member of the grape-growing community. In building up a local reputation we all stand or fall together; the trickery of one strikes a blow at the good name of all. We have here an industry of too great financial importance to permit the slightest swerving from straightforward, honest methods.

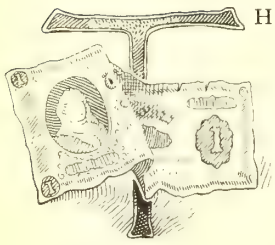
What shall we do with our refuse grapes? Don't have any refuse grapes. Just make the discovery before you go one step further that it don't pay to raise grapes for vinegar. How do refuse grapes come? From two sources, both inexcusable and both easily remedied. The first is from overproduction and calls for closer pruning. The second is from bringing into the vineyard the manners and roughness of the coal yard, or from careless handling when first picked. Of course, in the last half of the season there will daily accumulate some cracked berries, say about one pound in one hundred. But if in twenty tons you have over 200 pounds of cracked or refuse grapes, or one-half of one per cent., you are not up with the practice of the best vineyardists.

The great bulk of the grapes must necessarily be sold through the medium of a shipping association. There are already four in the county, shipping seventy cars and upwards each. In the large markets the consumption increases quite as fast as the increase of production here. "The rich," said a western city dealer, "buy one basket for three meals, the middle classes buy one basket for two meals, and poor people buy two baskets for one meal!" A St. Louis dealer quotes as a new experience that many families must have a basket every morning for breakfast. "When nine pound baskets," said he, "can be sold for twenty-five cents to thirty cents the demand is practically unlimited." It is estimated that in the seven westernmost counties of New York state, composing the eighth judicial district, with comparatively small increase in population, the consumption of grapes from 1890 to 1880 has increased ten-fold.

*Chautauqua Co., N. Y.* S. S. CRISSEY.

# THE FRUIT EXCHANGES.

SKETCHES AND OPINIONS OF REPRESENTATIVE ORGANIZATIONS.



THE FRUIT exchange is an important organization. It has solved many of the vexed questions of transportation, packing and marketing. Its objects are to instruct growers in the packing and handling of fruit, to adjust transportation charges and commissions, and to discover the best markets for certain fruits. Some of the exchanges have handled these great questions with skill, and it is not strange that some have failed. The successes prove that the enterprise is capable of good results, while the failures only show that we have not yet arrived at the best methods of organization for all cases. The exchange must meet the particular wants of the community for which it stands, and it must seek in every way to allay and overcome prejudices. In some cases, the local horticultural society can look after the business of shipping and selling by simply advising its members, while in others a definite exchange organization must be formed; or it may be necessary to organize a stock company under the laws of the state. But in whatever form it may appear, the question of fruit exchanges is an all-important one, and the following statements, gathered from many reliable sources, must contribute to its solution.

## NEW JERSEY EXPERIENCES.

THE NEW JERSEY FRUIT EXCHANGE has been one of the most successful in the country. It was organized in the fall of 1886. This organization started by issuing one hundred shares of stock at a par value of twenty-five dollars per share. An exchange building was put up at Flemington, our county seat, where we have excellent railroad facilities, and opened for the sale of fruit on the 31st day of August, 1887, and while many doubted, others were confident of success. Buyers were present from New Haven, Hartford, Albany,

New York, Boston, Baltimore, Wyoming and other points. About fifty thousand baskets of fruit were sold on the exchange, at prices better than were realized on other markets, the exchange charging for their services one cent per basket on fruit sold. Each buyer is compelled to deposit funds for the payment of fruit with the secretary, so that when sales are made the grower takes his money home with him and is not compelled to wait and find out which he is to have—the price his fruit sold for on commission, or whether he is only to have the commission!

FIG. 7. ACTINIDIA POLYGAMA. NEARLY FULL SIZE. (See page 142.)

After operating the Exchange during the season of 1887 it was found that it was more desirable to have more growers interested, in order that the Exchange could regulate prices, freight rates, etc. A meeting of the stockholders was called and the number of shares increased to four hundred, and the par value decreased to ten dollars per share; this was done in part to effect a stronger organization, knowing that in "unity there is strength." It cost the producer fifteen cents per basket to land his fruit on the commission stands in New York; this was thought to be excessive, and the railroad companies were frequently importuned to reduce the rate, but with no effect until they began to realize that growers were backed by their organization, and through the untiring efforts of the officers of the Exchange a reduction of two cents per basket was procured. The Exchange has also bought the baskets themselves at a reduced rate.

The headquarters of this organization is at Fleming-

ton, in Hunterdon county. Here, on the fourth day of January in each year, thirteen directors are elected. It is an incorporated organization, and the treasurer is placed under $25,000 bonds. The rules of the exchange concerning inspection and grading of fruit are as follows:

"It shall be the duty of the inspector to carefully inspect all fruit presented to him for inspection, and place such fruit in such grade as his judgment may designate; every inspection thus made shall be recorded in a book of record provided him for that purpose. The fruit thus inspected shall be the inspection of the New Jersey Fruit Exchange, and all inspection thus made shall be final. The inspector shall be provided with a clerk and assistants to handle the fruit for him whenever the amount of labor to be performed shall demand such assistance. The inspector shall have the authority to empty as many baskets for thorough examination as he may desire from each lot of fruit presented to him for inspection. In no case can the inspector inspect fruit at any other place than that provided for the purpose by the Exchange.

"GRADES OF FRUIT.—There shall be three grades of peaches designated and marked as follows: Nos. 1, 2 and 3, with an exceptional grade designated as fancy. Said grades shall be defined as follows:

"No. 1 shall be in size above medium of its variety, of good color, running uniform as possible through the basket.

"No. 2 shall be medium in size, ripe and of fair color, uniform as possible through the basket.

"No. 3 shall be in size below medium, yet merchantable.

"Fancy shall be such fruit as is above the average, or superior to that of its variety, well ripe, of high color, carefully handled, and must in every way be a superior article." — *Compiled from correspondence with H. F. Bodine, Hunterdon Co., N. J.*

A JERSEYMAN'S COMPLAINT.— In New Jersey there are two fruit exchanges with branches in Hunterdon county, chiefly operated in the interests of the peach growers, a fruit-grower's union in Atlantic county, and possibly other similar organizations at large shipping points in the southern part of the State. At Vineland, a large fruit center, the shipping is chiefly through local agents who look after the various consignments and return packages, with a through messenger to secure prompt delivery, the shipper, it is said, being compensated with one-quarter of the ten per cent. charged by the commission merchant. This saves the grower much trouble, delay and annoyance, as all he has to do is to drive up to the platform, unload, and hand the agent's employè a memorandum of his shipment. This is said to be much more satisfactory to the grower than to be obliged to attend to his own manifest at the busy season.

In Essex county the largest fruit-growers sell their products almost wholly through commission merchants in Newark and New York, and deliver with their own wagons. Newark, a city with a population of 181,000, is a large receiving and distributing point to the surrounding towns, receiving train loads of strawberries, peaches, etc., from Delaware, Maryland, and southern New Jersey, long in advance of our home crops; and later on, strawberries, raspberries, grapes, potatoes, etc., come in large quantities from New York State. These are consigned to dealers and commission merchants. The facilities afforded by the city of Newark for local growers to sell their products direct to the consumer have long been inadequate for the purpose. Hucksters and dealers were allowed to occupy much of the limited space provided as a county market, to the exclusion of the farmers, and for years they have been compelled to occupy the public street along the park, which is the pride and glory of the city. This not only impeded travel but was objectionable to private residents on the line. Complaints and appeals were made to the city authorities repeatedly to provide increased facilities. They realized the necessity for doing so, and the committee appointed to take charge of the matter investigated various sites and considered numerous schemes, reporting from time to time publicly, thus keeping the public fully advised of the situation; and they kept advancing the value of their holdings till the original and inevitable decision was reached to secure additional facilities contiguous to the then existing grounds. Meanwhile the use of the streets became more obnoxious and the wagons were declared a nuisance. The green-grocers thought they saw in the situation a chance for profit and joined in the crusade against the producers, and endeavored to get ordinances passed prohibiting the producers from selling from their wagons at retail. In other words, they wanted to be the middlemen through which all the country produce should reach the consumer, and thus compel the farmers to sell their products through commission merchants or accept such prices as they were willing to give. So far did they carry on the war that for a time the farmers and gardeners were compelled to establish their camping ground across the river in Hudson county.

This was a great inconvenience to the people who desired their stuff fresh from the hands of the producer; but the additional trouble, distance and expense brought more trade to the green-grocers, and they were happy. Meanwhile the work of removing buildings, filling cellar, condemning property, and preparing the newly-acquired grounds was necessarily slow, and the grocers foresaw the coming failure of their schemes, so they formed a combine or trust under the name of grocers' exchange, which, to our view, is nothing more nor less than a commission house within the trust. They buy and solicit consignment on commission as do other commission houses. In buying in large quantities they can get better terms than the retail grocer, and divide the purchases among the members of the exchange in small lots to their advantage, and though these retailers pay the exchange the same rates that they would have to pay other jobbers, they would come in for their dividends on the coöperative plan. It is a good scheme —for the green-grocers! PRODUCER.

## ORGANIZATION IN MISSOURI.

The Southwest Missouri Fruit Growers' Association is essentially a fruit exchange. Its handling of strawberries alone for 1890 was thirty-nine car loads, comprising 452,592 quart boxes. The average price for the season was sixty-six and a-half cents net per crate of twenty-four quarts. The association comprises a number of local organizations, each of which has certain powers. The essential features of the organization are as follows:

"The annual membership fee shall be one dollar a year, payable to the treasurer of the association, to be paid at time of enrollment.

"The executive committee shall procure best and most satisfactory rates and prices on box and crate material for the members of this association, and make such rates known only to, and for the benefit of the members. They shall procure refrigerator cars where practicable, secure express and railroad rates, to all points likely to be used by the association. Arrange for one or more commission merchants or agents at each place where fruit is to be shipped, report upon their commercial standing, reliability, and make such recommendations as to each as in their judgment, after investigation, is best for the shippers.

"There shall be a central office provided at some convenient place in the district, from which a complete supervision of the business of the associatien will be had, and records of the business done by the association kept, and collated for the information of the members, and an annual report made of each year's business, and filed at the succeeding regular meeting of the association.

"The trade mark of this association shall be that adopted in 1890, and shall not be used on any crates of berries or fruit not first-class, sound and merchantable, under penalty of a forfeiture of membership; and members so expelled shall be published, and all persons interested, notified of such expulsion. Any person now in possession of a trade mark—star and crescent—of the South-west Fruit Growers' Association, forfeiting their membership, will be requested to surrender their trade mark to secretary, and receipt taken therefor; and if such trade mark be not surrendered. the number of same and the name of the person to whom issued shall be posted as above; that the interest of the association may be protected, local societies shall determine each violation.

"At each shipping station a local organization must be maintained and officers elected, whose duty it will be to coöperate with the executive committee in all matters pertaining to their interests, especially during the shipping season.

"For the purpose of maintaining an agent at each place where fruit is shipped a tax of two cents per crate is hereby levied upon all crates shipped, to be deducted by selling agent, who shall remit such amount on account sales rendered, and make report of same to executive committee. Such agent shall receive the cars, attend to the unloading and delivering, check same and make daily reports to each shipper what his fruit has sold for and the condition of same when received, and perform all other duties the executive committee may desire relative to the business of the association.

"Each local society or persons desiring refrigerator cars for daily shipments shall make satisfactory assurance to the executive committee that such cars will be used, when ordered by the committee, or its agent, at central office, and report daily to central office its demands for cars, and the officers of the local societies shall see that the trade mark of this association is used only as provided.

"The commission men named or recommended by the executive committee, it is understood, are to be employed on terms of last year, rebating two per cent. of their commissions to the treasurer of the association for the maintenance of the expense of this association."—*From correspondence with J. M. Rice, Secretary.*

## A MICHIGAN EXPERIENCE.

THE OTHER SIDE.—A few men who saw very plainly that the fruit-growers here were sadly in need of an organization that could elevate the standard of work and facilitate sales, met and discussed the matter, and finally organized the Michigan Fruit Exchange. About fifty growers subscribed to the articles, which were certainly strong enough, and based on good business principles except, perhaps, that there was no provision for actual inspection. Yet there was an inspector appointed who was to receive a salary, his duty being to distribute a certain stamp, which was to be pasted on the package, guaranteeing the uniform quality of the package, and requesting the buyer to report to the inspector any fraud detected under the brand of the exchange. One of the provisions was that each shipper should put his name on each stamped package. The whole scheme was based on the theory that fifty or more men would be strictly honest because they had signed articles to that effect, and that no supervision was needed, *and that was the rock on which the organization was wrecked.*

One of the first acts of the organization was to decide on the size of package to be used, and a meeting was called and the manufacturers were invited to attend. The members agreed unanimously to use nothing but full standard packages. The manufacturers, with a confidence which their past experience did not warrant, did make up several thousand crates for the strawberry crop, containing full quarts of exactly the dimensions adopted and pledged for over the signatures of forty-five good men. But, alas! when strawberries ripened, forty good men drove up and fearlessly called for the smallest "snide" package they could get, and only five called for the package they had agreed to use; and the next season only two or three growers among more than a thousand located here used a full quart package. It took the manufacturers three years to work off the packages which they expected would be taken in a week. These same good men then packed these crates just as they had formerly practiced, with all grades of fruit, and put the stamp of the "Michigan Fruit Exchange"

on them, and if the fruit was so poor that they were ashamed of it they put a stencil with their number on it in place of their name.

In this manner our growers launched their new method of doing business upon the unsuspecting public in Chicago. The city buyers met the shippers fairly, thinking that at last there was a show for a fair deal, but in less than two weeks the stamp had no character or reputation on the street, and the "Michigan Fruit Exchange" went quietly where the woodbine twineth.

For fear that some of your readers may think that I have some interest counter to the fruit-grower, permit me to say that I have no other visible means of support nor source of revenue than growing fruit and vegetables for Chicago market, with a little straight farming added. After eighteen years acquaintance with Chicago markets and the people who supply it, I may, perhaps, be permitted to say that I believe exchanges can only flourish in a locality where the intelligence and honesty of the growers are above the average, and at points where shipments must be made to a number of cities. In such places, under competent management, organizations of this kind can be made to accomplish great results, as they do in California and elsewhere, but it is not clear in my mind yet but that individual reputation can be made to bring better returns under certain circumstances than any organization, as the difference in surroundings, markets, transportation facilities, etc., cut quite a figure in our business. Still a number of good features in organizations, applicable to any locality, will appear to any thinking man. I do not wish to be considered as being opposed to such organizations, as I am a member of three good societies, and am one of the original directors of the Michigan Fruit Exchange, whose record I have written. R. MORRILL.

*Berrien County, Michigan.*

## ONTARIO.

In Ontario there is the Niagara District Fruit Growers' Stock Company, which works very well. All the stock is controlled by fruit growers, and they appoint agents in various towns who send daily reports to all shippers, and account sales daily on postal cards. Every week they make returns of all cash, and full details of sales and charges to the secretary-treasurer, a fruit grower also, at headquarters, who issues cheques from his office to shippers to cover all shipments. This company has a good capital, with limited liability, and has the confidence of the growers.

The following extract from the annual circular, issued to fruit growers early last year, indicates the method of business :

"The delay in issuing this season's circular was caused partly by the reorganization of the company, through which the company has more than doubled its number of stockholders, thereby largely increasing the stability of an institution which has always been admitted by the fruit-growers of our province to be one of the most reliable and beneficial institutions yet established. We have already added one additional agency to our list, viz : Kingston, with a prospect of establishing one in Winnipeg, if the fruit crops (which have not, up to the present time, maintained the promise of a few weeks ago) of the present season will warrant the company in doing so. It is one of the prime objects of our company, by establishing so many agencies, to cause the distribution of our fruits over as large an area as possible, thereby preventing "gluts" in our principal markets and maintaining prices. The usual commission of ten per cent. for selling will be charged by the company, and cheques will be issued every two weeks (or more frequently if desired) on the Imperial bank, St. Catharines. Any shipper wishing to use a number, instead of his name, can do so by notifying the secretary, who will forthwith allot him one. We learn that some fruit-growers and shippers have a wrong idea in reference to our company, believing that only members of the company or stockholders have a right to consign fruit to our agents, or that permission has to be obtained from the company to consign to them. Now, we would say, for the information of such, that no such requirements are necessary. We solicit consignments from all shippers, and would be pleased to make every fruit-grower and shipper a patron, promising on our part to use every endeavor to handle promptly and carefully all consignments, and to render accounts of sales with the least possible delay. The agencies of the present season are well equipped for doing a large business in a most satisfactory manner."—*Correspondence with L. Woolverton, Ontario.*

## IN FLORIDA.

The Florida Fruit Exchange was organized in February, 1885, with capital stock of $50,000. The organization was perfected and the stock taken by orange-growers of this state. The purpose for which the exchange was organized was systematizing the distribution and sale of Florida oranges and lemons, and to break up, if possible, the system of consigning fruit indiscriminately all over the country. The original intention was to concentrate the Florida crop to about four markets in the United States, and sell it under the auction system in the same manner as the foreign fruit is disposed of. Owing to the very large number of growers in the state, it was impossible to carry out all the intentions of the management in this respect. We have now been in operation five years. We have handled about one million boxes of oranges at average net return to the grower of about $1.60 per box. So far as we have progressed we have been successful beyond our expectations, and our patrons have, as a general thing, expressed themselves as perfectly satisfied with the manner in which their interests have been managed, and with the results thus far obtained. We have, at present, no very strong hopes of eventually bringing all our people together, as it seems to be impossible to bring about a combination that will satisfy all the growers. We have succeeded in reducing the consignment system to a very fine point. When we started out every "curb-

stone" broker in the principal cities of the east and west was receiving Florida oranges on consignment, and, in many instances, the consignors never heard of their shipments after they left their shipping station. To-day only responsible dealers are receiving fruit on consignment, while the bulk of the crop is being sold in the groves. This, in a great measure, is one of the results we sought to bring about when the exchange was organized. We felt satisfied that to bring the sale of fruit down to the state would very materially benefit the producers. Each season now marks an increased purchase of fruit at the groves.

The following copy of a semi-weekly market report will be useful as indicating the work of the exchange. It was issued January 15, 1891 :

'Sales since 12th inst., show following averages : $2.45, $2.19, $2.51, $2.30, $2.24, $2.25, $2.60. We cannot say that the situation has improved, nor do we think it has grown worse since last bulletin was issued. While the averages mentioned above are not very good, still when the immense shipments of large fruit are considered, we feel that there is very little ground for complaint over average prices obtained. Notwithstanding past advice to decrease shipmeuts, the volume of fruit goiug forward has steadily increased for past ten days, hence most markets to-day are feeling the pressure of excessive receipts, and show no inclination toward immediate improvements. The weather still continues cold, and this has its effect on the movement of fruit.

"The top figures for strictly fancy fruit of desirable counts can be quoted at $3.25. Fair to medium grades are selling at $2.25 to $2.75. Large sizes go fifty to seventy-five cents per box lower, according to condition and quality. The calls for mandarins have almost ceased, and tangierines are in very light demand. The recent cold snaps have no doubt forced shipments much against the desires of many growers ; and this, of course, accounts for the continual rush of fruit. So far as we have been able to learn the damage done to fruit by recent frosts is so slight as to be not worthy of notice."—*Correspondence with M. P. Turner, Secretary.*

*Branch of the Akebi.*

FIG. 7. (See page 140).

# THE NATIVE ORCHIDS OF NEW ENGLAND.

FAIRIES OF THE WOODS AND SWAMPS.

A CASUAL observer of our native New England orchids would not find them, I think, very numerous. His eye would be struck by those that are clothed in brilliant colors, and would rest there, without continuing its search for the many unobtrusive but delicate species that reveal themselves only to the diligent and enthusiastic botanist.

The orchid family (*Orchidaceæ*) is very abundantly represented throughout the New England states, and occurs in the widest variation of form. Small and inconspicuous in some species, modestly nestling among the damp moss-grown rocks of some mountain cliff, in others we find large and handsome plants growing abundantly in moist woods, as if escaped from some tropic home. Nature has kindly furnished the showiest orchids in the greatest abundance, and we need not fear for their extermination, for in pulling up the plant, the root rarely follows. As the plant is a perennial, it is thus not destroyed, for it is only the botanical collector who cares for the roots, and here let me say that the ruthless destruction and extirpation of so many of our interesting plants is, I feel sure, due to the reckless vandal, who pretends to love flowers, and shows his zeal by tearing and ripping up everything in his reach. Let a rare plant be known to the true botanist only, and it is safe.

Our orchids grow in every conceivable situation, on barren moors, in deep swamps, on dry hill-slopes and by dusty roadsides. The characteristic features lie in the flowers, which are perfect, that is with staminate and pistillate organs, the one or two stamens which each flower possesses being most curiously borne upon the pistil, instead of being quite separate from it, as in most plants. The floral envelope consists of six divisions, the upper petal, which by a twist of the ovary appears generally as the lower one, being very variable in size and shape, and called the lip. It is here that Nature runs riot and revels in giving this lip a thousand forms, now inflating it, as in the lady's slipper, and again cutting it into delicate fringe, as in our purple fringed orchis (Fig. 1). Very few of the orchids are capable of self-fertilization, and the wonderful adaptation of all their parts to insect agency has been most admirably shown by Darwin in his treatise on the subject.

Most of our species grow naturally in the soil; the epiphytes, or air-plants, which attach their roots to other plants, but without drawing any nourishment from them, as in the case of the parasites, occurring farther south. The roots vary extremely from finely fibrous to tuberous. Within the limits of our range, there grow as many as 15 genera and 47 species. Let us take some rambles in the woods, and through the fields, and, perchance, on mountain slopes and make an acquaintance with the principal ones.

I have in mind, first, a beautiful wood in Shelburne, N. H., among the White Mountains, where I have passed many a delightful summer. I should like to tell of the many interesting plants found there, but orchids are the subject of my story and I must limit myself to my theme. Well, as we enter this enchanting wood, and tread the soft pine needles under foot, we shall see, early in July, the ground spangled with the beautiful stemless lady's slipper (*Cypripedium acaule*). It has selected this particular spot to show its greatest variation in color. Indeed, as I sprang over the wheel of my buggy in my eagerness to rush into the wood, I thought that I had found something quite new. Many of the plants were snowy white, and were freely mingled with the normal rose-purple ones. It was a beautiful contrast. By a little careful search I got a series of six plants, showing every gradation, from the pure white, through white with rosy streaks, to the deepest purple. This lady's slipper is one of our showy orchids and is common all through the states. It has two large leaves at the base, and a single flower on a stem which is some 12 inches or less in height. Its large inflated lip, nearly two inches long in this species, is the prominent character of the genus.

FIG. 1. PURPLE-FRINGED ORCHIS (*Habenaria fimbriata*).

Albinism, in the vegetable kingdom is not uncommon. We are constantly finding it everywhere. Dr. Asa Gray once said, after his attention had been repeatedly called to various examples of these white-flowered forms, on the ground that they should be made varieties, "I wish I could print on the top of every page in my botany, 'Expect to find a white one.'"

It was in Stowe, Mass., in a rich, moist wood that I first saw the larger yellow lady's slipper (*C. pubescens*). There was a large patch of them, and their rich golden colors were exquisite, the large, green leaves on the stem adding much to their beauty. It is a rarer plant than the last, though occurring throughout the states, as is also the smaller yellow lady's slipper (*C. parviflorum*), which has the same range. This plant I first saw in Acton, Mass., on a richly wooded slope. I was conducted to the spot by an old man, who lived near by, an enthusiastic admirer of nature and nature's works, and a worshipper of Thoreau. His small collection of books contained a complete set of Thoreau's works, and he always had an apt quotation from them at hand. He took me through the pastures to this hidden nook and called it his flower garden. None other knew the place, and he watched over the little plants with the greatest care. I was allowed to take a single specimen. *C. pubescens* is about two feet high and is a much larger plant than its near relative, *C. parviflorum*.

FIG. 2. HABENARIA DILATATA AND H. TRIDENTATA.

It has never been my fortune to see our two other lady's slippers, though I have them in my herbarium. The most beautiful of all the genus is the showy lady's slipper (*C. spectabile*), growing in bogs in the western part of our state and in Maine. I have seen it in cultivation at the botanic garden at Cambridge, and it is indeed worthy its name, being two feet high, with large stem leaves and a most exquisite white and purple flower. The other plant is the Ram's Head lady's slipper (*C. arietinum*), with a small greenish brown flower, growing in northern New England.

FIG. 3. LIPARIS LILIIFOLIA.

Let us now turn to the habenaria or rein-orchis, of which we have 13 species. The showiest one of this genus and, to my mind, of all our orchids, is the purple fringed orchis (*H. fimbriata*, Fig. 1). We could go to many places, for it is abundant throughout, if you know the proper localities. It loves wet, shady nooks, and delights to occupy the borders of a wooded stream, where these beautiful plants, standing at intervals on the bank, look like red-coated sentinels in a row. It is about two feet high and bears a raceme from three or four inches to a foot in length, of purple or red flowers each an inch long. No cultivated orchid can exceed the rich delicacy of hue of this native plant. The finest specimen I ever saw was in the Wild River Valley, Me., one July. I have it in my herbarium, and delight to look at it. The plant is nearly three feet tall, and the raceme, crowded with flowers, is a foot long.

A moth visits the flower to draw nectar from the long tube or spur with which it is furnished. As it inserts its proboscis into the tube, each eye necessarily comes in contact with a viscid disk in the flower center. The moth withdraws its head after feeding, and the disks follow, each attached to a little stalk, on the end of which is a pollinium or pollen-mass, the separate pollen grains being connected by fine threads. Almost immediately, these stalks, which at first have an upright position on the moth's eye, assume a downward position by a contracting process, so that when our moth visits another flower to gather more sweets, he unconsciously thrusts the pollen masses against the glutinous stigma, and thus effects cross-fertilization. This is one of Nature's many means to an end. And yet, before Dar-

win's time, how crude was our knowledge of these exquisite adaptations! I kept my beautiful habenaria growing in my room for two weeks before I could make up my mind to press it. With a pencil point or the end of the finger I played the moth in extracting the pollinia, and watching the downward movement of the stalk, and, whereas the moth's reward was the nectar, mine was an insight into the mysterious and wonderful working of nature, who often effects her most beautiful ends in the quietest manner.

FIG. 4. FRUIT OF PUTTY-ROOT.

*Habenaria psycodes*, another purple fringed orchis, is commoner than the last, and found with it. It much resembles *H. fimbriata*, though its flowers are smaller, and the lip is less deeply fringed. The ragged fringed orchis I am very fond of, though its greenish colored flowers are by no means conspicuous to the passer-by. But its lip has a more exquisitely copious fringe than any of the others, and the flower is very delicate. Most any bog or damp wood will be sure to reveal it. I think that a very small proportion of our orchids develop good fruit. The blossoms seem generally to wither or drop off, ovary and all. I got excellent fruit of this ragged orchis in Jaffrey, N. H., one September. It was growing on a moist, shady bank by the roadside, and I watched it carefully as it developed its fine capsules. I had little fear of the plants being disturbed, for when an orchid has reached its fruiting time, it is a very unattractive plant. Its leaves are generally dead and gone or dried and withered, mimicking the dead leaves of the woods or fields.

The white fringed orchis (*H. blephariglottis*) is another handsome plant. To see its raceme of white fringed flowers, come with me to Acton again. It grows in a spongy bog on the borders of Grassy Pond, shaded by overtopping shrubs, in company with the leather-leaf (*Cassandra calyculata*) and the pale laurel (*Kalmia glauca*). I do not call it common, though it is found throughout our range. It stands a foot or two high, and bears a raceme from two to four inches long.

My old friend in Acton took me once to the top of Bear Hill, covered with a growth of pines, and there I found in abundance *H. Hookeri*. It has yellowish green flowers, and is not an attractive plant. It bears two spreading leaves at the base, three to four inches wide. It used to grow abundantly in Shelburne, N. H., on a wooded knoll by the Androscoggin river, and, in fact, ranges all over New England.

A near relative, and a far more striking plant, is *H. orbiculata*, common in the rich woods of northern New England. It has greenish white flowers, and at the base of the scape or leafless stem, two large, shining, fleshy leaves, lying flat on the ground. I found a fine plant of this species last July in Jaffrey, N. H., in a rich wood. Its leaves had a spread of fourteen inches and the plant was beginning to form its fruit. I marked the spot, propped up, with a forked stick, the heavy, drooping stem, and paid frequent visits to it during the summer.

In September, just before leaving for home, I collected the plant in splendid fruit and have even preserved the sawdust-like seeds. The next year's bud, white, and as big as the thumb, was well developed under the dead leaves and rich soil at the base of the stem, ready to perpetuate the growth the following season.

*Habenaria tridentata* (Fig. 2, smaller plant) occurs everywhere in boggy places. It is small, never over a foot in height, with but two or three leaves, and very small, inconspicuous greenish flowers. On a wide stretch of wet meadow in Concord, Mass., where Thoreau was wont to roam, communing with nature, I found some nice specimens, a few years ago, of *H. virescens*. I nearly passed the plants by, half-hidden as they were in the grass, with their green leaves and blossoms so like the color of the surrounding vegetation. I do not call this species very common, but it is found throughout New England. I treasure these specimens, not only for their scientific value as complete representatives of the species, for I took the roots up carefully, though it was hard digging, but, because they were pressed and dried in Hawthorne's study in the Old Manse, by the North Bridge, where the first blow for American Liberty was struck.

In the damp woods of northern New England we will come across two modest species of this genus, less than a foot in height, *H. bracteata* and *H. obtusata*. The small, greenish flowers shrink from the gaze of the vulgar, but the botanist finds them and always gives them a warm welcome. *H. hyperborea* and *H. dilatata* (Fig. 2, taller specimen) are two rather coarse, leafy-stemmed plants, two feet and less in height, growing over our states; the former green-flowered, and the latter white-flowered, the blossoms small and unattractive. I found these plants in great profusion in a boggy field by Willoughby Lake, Vt. The two species were freely intermingled and were from six inches to two feet high.

I have but one more habenaria to record, the extremely rare and beautiful yellow fringed orchis (*H. ciliaris*). Its bright orange-yellow flowers are exquisitely delicate and attractive. Though growing on the Blue Hills, not many miles from Boston, I have never seen it, the discoverer of the station guarding it with jealous care.

Rambling about, as we are, in rather a desultory manner, let us visit in early June some rich bog, in almost

any part of New England. It is dotted, here and there, with the delicate, rosy arethusa (*Arethusa bulbosa*), a plant fresh from fairy-land, about six inches high, with a single flower, one to two inches long at the summit of the scape. It grows from a solid bulb, and care must be taken in picking a bunch for the vase, not to destroy the whole plant, for the bulb is very easily withdrawn from the soft, spongy bog. We will tarry in this locality for two or three weeks and watch the change. The arethusa has gone, and, in its place, we are sure to find another orchid, superficially resembling the former, though rather more modest in appearance, yet very attractive, the pogonia (*Pogonia ophioglossoides*). This plant has one rosy flower at the end of the stem which bears a single leaf in the middle, and a small one at the base of the blossom. Its roots are long and fibrous. Tarry but a little longer into July and you will be rewarded by seeing the pogonia replaced by the beautiful calopogon (*Calopogon pulchellus*). This orchid springs from a solid bulb, and bears several quite large pink flowers, with a linear leaf at the base of the stem. Notice that, in this plant, the flower seems to be inverted on the stem. It is because the ovary does not take the peculiar twist mentioned above, and the lip occupies its true position on the top of the flower. I have often noticed this order of succession in the appearance of these plants, and, where you find one species, you may be quite sure to find the others.

FIG. 5. CALYPSO BOREALIS. (See page 156.)

*Pogonia verticillata*, an uncommon species in New England, strangely resembles, in its sterile form, our common wake robin (*Trillium cernuum*), whose flower, nodding under the leaves, is quite invisible. This is due to the whorl of obovate leaves at the summit of the stem. Just above the leaves is a single purplish flower, the three sepals very narrow, and from two to three inches long, presenting a very strange appearance. It is an early bloomer, remaining in flower but a short time. I have collected it among the Blue Hills, in Milton, Massachusetts, as early as the 4th of June. The little *Pogonia pendula* I have never seen, though it occurs in various parts of New England in damp woods. It bears several rose-colored flowers about half an inch in length. My herbarium specimens show the plants to be about eight inches in height. The rare *Pogonia affinis*, in south-western New England, is quite a stranger to me. It bears a general resemblance to *P. verticillata*, but with shorter sepals. At the Gray Herbarium there is a single specimen from New Haven, Connecticut, and one from New Jersey.

The showy orchis (*Orchis spectabile*), is not uncommon in many parts of New England. It is abundant in the region about Lebanon, N. H., and has a stem some six inches high, bearing a few pink and white flowers of dainty hue. Two large leaves are produced at the base of the stem. I have seen a very handsome plant of this species from Oak Island, a wooded oasis in an extensive salt-marsh, a few miles north of Boston. The habitat of this orchid is not very near this spot, and it is singular that it should be lingering there. It is in company with other plants, equally straying from their wonted home, as the giant hyssop, (*Lophanthus scrophalariæfolius*), and the figwort or scrophalaria. *Orchis rotundifolia*, till lately classed with the habenarias, is not a common plant. It has a single roundish leaf at the base, and a spike of rather small rose-purple and white flowers. It occurs in north New England in woods and bogs.

The rattlesnake-plantain, or goodyera, is a very attractive plant, on account of its tuft of green base leaves, curiously marked with white. The more northern of our two common species is *G. repens*, which is only about six inches high, with a small one-sided spike of whitish flowers. I have seen it in abundance among the White Hills and elsewhere, and always give it a warm greeting. Its place is supplied in south New England by *G. pubescens*, larger than the preceding, but resembling it in general appearance. The flowers grow all around the stem, and the strongly marked leaves make it an attractive plant for a fernery. I saw beautiful specimens of this orchid recently in Montague, Massachusetts, in the rich, wet woods. *G. Menziesii*, much like *G. repens*, has been

found occasionally in New Hampshire, but is extremely rare.

Let us now take a trip to the Island of Nantucket. It is a part of Massachusetts, though only visible from the mainland on a very clear day, being twenty miles distant. We will take a stroll onto the moors, south of the old town—long stretches of sand and grass—and take a look about us. It is an unusual sight, even for a New Englander. The country, once devoted to sheep-walks, is now deserted, and occasionally you cross some deep wheel-ruts, the only roads. They will take you across the island if you follow them. Pine woods are visible in the distance, set out long ago, but where we are standing there is no tree ; all is flat and bare, with stunted grass. To the east the country is rolling and covered with bearberry (*Arctostaphylos Uva-ursi*), and an occasional flock of sheep dart away on seeing you. What is this delicate little plant, which we quite overlooked at first, growing here and there at our feet ; its little leafless stalk scarcely six inches high, with a short spike of minute white flowers ? It is the rare *Spiranthes simplex*, or ladies' tresses, within our limits found only in south New England. We dig a plant up carefully and its solitary tuber proves that we are right. Its delicate flowers will well repay an examination with the lens, and, in this connection, we can give a hint as how to readily distinguish it from its close relative, *S. gracilis*. This latter species is common all through New England, and will often be met with, not only in the woods, but along the roadsides, its slender stalk standing boldly erect, even to the height of eighteen inches. The upper surface of its small lip is green, while that of *S. simplex* is white. *S. gracilis* has clustered roots. I have found more than one tuber on *S. simplex*, but this is uncommon.

Our commonest species of ladies' tresses is, I think, *S. cernua*, a stouter plant than the above-mentioned, from six inches to a foot and a-half in height. I saw a wet field in Jaffrey, N. H., last September, white with it. It has a not unpleasant odor. *S. Romanzoffiana* is not uncommon in north New England. *S. latifolia* and *S. præcox* are rare, and found only in wet places. All the species of this genus much resemble each other.

Two species of twayblade, or listera, are found with us. They are very retiring plants, averaging but six inches in height, with exceedingly small, greenish or brownish flowers in a spike, and a pair of leaves in the middle of the stem. They love the deep, cold woods, and are only noticed by the diligent searcher. *L. convallarioides* I have found in the rich shade about Willoughby Lake. It is a northern plant with us, and creeps south only along the mountains. *L. cordata* is a rarer plant, though of wider range in New England, and is more delicate than the former.

Turn now into a large, moist meadow near Willoughby Lake, and observe that odd little plant, some six inches high, and often much less. That very small greenish spike at the end is a multitude of the very minutest of flowers. A single leaf clasps the stem near the middle. You will need a good lens and careful work to analyze it, I assure you. It is the adder's mouth, a small plant, buried under its scientific name, *Microstylis ophioglossoides*. The generic name refers to its small style ; the specific, to its resemblance to the adder's tongue, a plant closely related to the ferns. It is found in wet places throughout our states, but is far more common in the northern parts. I have found it, at times, in very dry, open, sunny spots.

Climb now up the high ledges that overhang the lake. We are in the region of the rarest and most attractive plants, a rich field for the collector. Here grow the little ferns, *Woodsia glabella* and *Pellæa gracilis*, the leguminous *Hedysarum boreale*, and others. But we are not looking for these just now. Our box and press must wait awhile, for we are hunting for the brother of our adder's mouth, its only New England relative, *M. monophyllos*. Its single leaf is at the base of the stem, and we shall not miss it. It is a rare plant, and in our states is found only in the northern parts. A careful hunt in the wet, shady crevices should reveal it, for I found on July 22, 1885, beautiful little specimens which are now close by me in my herbarium. I well remember the spot ; for I lost my pet and only knife in a crevice of the rocks close by.

The name twayblade is applied to another genus of orchids, of which we have two species, *Liparis Læselii* and *L. liliifolia* (Fig. 3). They somewhat resemble each other, and have a pair of root-leaves and a scape, three to eight inches high, bearing a raceme of small, greenish flowers in the former, and purplish in the latter species. The former is the more northern plant, and likes the bog for its home. It grows throughout New England. . I have collected splendid fruiting specimens at York, Maine. Its relative is a more southern plant and is hardly found north of Boston.

The crane-fly orchis (*Tipularia discolor*) is very rare in New England, but more abundant south. Its long slender scape, from a foot to a foot and a-half high, appears in summer, its small green and purple flowers delicately arranged in a raceme. In the autumn a single leaf is produced at the base of the stem. The putty-root (*Aplectrum hiemale*) acts in somewhat the same way, producing a large leaf in summer, which lasts through the winter, and early in the next summer sends up its scape of brownish flowers. It is rare with us, and I have never been fortunate enough to see it growing. But its fruit (Fig. 4), as I have it in my herbarium, must be an interesting object in the winter woods.

But who can do justice in words to the dainty *Calypso borealis* (Fig. 5), a rare and exquisitely delicate little plant, from three to five inches high, with its single leaf and purple, pink and yellow flower! It is the only species of the genus, and occurs in northern latitudes quite round the globe, giving north New England a taste of its beauty. Cold, damp shade it prefers, and it carefully guards itself by planting its flowers here and there singly in the bog, eluding the search of all

but the most diligent. W. W. Bailey, in his poem, "Calypso,"* most happily calls the little flower the goddess' shoe, lost beneath a pine tree. He says:

"No workmanship of mortal can compare
With what's exhibited in beauty there,
And looking at the treasure 'neath the tree,
The goddess' self I almost hope to see!

"The tints of purple, and the texture fine,
The curves of beauty shown in every line,
The fringes exquisitè of golden hue,
Perfect the wonders of the fairy shoe."

And now we come to our last New England genus, the coral-root, or corallorhiza, uncanny plants, without any green foliage, but parasitic, probably, on roots. A single scape with a raceme of brownish or purplish flowers is all you see. Dig up the plant and wash carefully the brittle root stocks, and the meaning of the name is then revealed. They consist of a cluster of many white branches, closely imitating a piece of coral. The commonest of our thirty species is *C. multiflora*, found in rich woods throughout. It averages about a foot in height and the color of the entire plant is purplish. It seems to fruit freely and flowers all through the season, for I have found it late in September in flower when most of the plants were in fine fruit. *C. innata* is a more delicate plant, not so common, growing in swampy places. *C. odontorhiza* is a delicate and rare species with us.

In this rather cursory talk I have mentioned every species of orchid known to occur within the limits of New England, and I have at least shown that they are not few. They have all been more minutely described by Baldwin, in his charming book on New England orchids, and from which our figures 1–3, and 5, have been taken. I presume that it is not easy to imitate the damp, shady habitat of most of our brilliant species, or we should see them more frequently in cultivation. The common purple lady's slipper is often transplanted and succeeds well. But is it not better to plunge into the deep woods and shady bogs and hunt for them yourself? The tramp, the climb, the wet feet, and, perhaps the barked limbs, give a zest to the pursuit and add tenfold to the keen enjoyment which attends the successful search.

WALTER DEANE.

*Massachusetts.*

*See February issue, p. 124.

# EASILY CULTIVATED ORCHIDS—I.

THEIR GENERAL REQUIREMENTS—THE CYPRIPEDIUMS.

THE SUCCESSFUL cultivation of orchids under glass has from its commencement been regarded as the representation of the gardener's highest skill. Although the mystery with which their treatment was at one time surrounded has now, in a great measure, disappeared, a sufficient number of species yet remain unconquered by the cultivator's art to justify something of the old reverence in which they were held. Immense strides, however, have been made since the middle of the present century, when the cultivation of these plants was first seriously undertaken. At that time, indeed, the enormous quantities that were brought to England to open their flowers, perhaps only once—or even not at all—and then die, served not only to excite wonder and admiration for their beauty, but also a feeling of despair at ever being able to keep them as permanent ornaments to English gardens. The great errors and difficulties of the first orchid-growers arose from an insufficient knowledge, and often an entire ignorance, of the natural conditions under which they grew. One great indispensable condition was supposed to be necessary to their existence. They were known to come from tropical countries and to grow on trees, and without regard to the elevations at which they were found, an atmosphere heated up to suffocation point and steaming with moisture was deemed essential for every orchid. Many English gardeners, and not old ones either, can remember the time when odontoglossums (which, in some localities, are now placed out of doors in summer) could not be removed from one house to another without being carefully covered. With the species that came from high altitudes like the cool upper slopes of the Andes, such treatment meant speedy death, and even with the purely tropical kinds, the all important factor of a free and continuous supply of fresh air being ignored, it was only the naturally robust species that long survived. England was, in short, as Sir Joseph Hooker graphically put it, "the grave of tropical orchids."

After a long and dearly-bought experience and the acquisition of a fuller knowledge of their habitats, the majority of orchids are now grown with as much confidence and success as any other class of plants. Although it is found that owing to the peculiar conditions under which they grow, and to their greater dependence on the atmosphere for food, a more constant and minute attention to their needs is required, their cultivation is seen to be governed by the same underlying principles that regulate the treatment of the commoner types of indoor plants. No one who has acquired a fair measure of success with the latter need have the least hesitation

in commencing the cultivation of orchids. At the same time it should be remembered that in many particulars such as soil, watering, and the regulation of heat and atmospheric moisture, a considerable number of orchids require peculiar and almost individual methods of treatment, and it is always better for beginners to commence with those kinds whose robustness of constitution and amenability to artificial conditions make their cultivation a comparatively simple matter. They may thus lay a foundation of experience which will enable the more difficult species to be mastered, and avoid those irritating failures which have been fatal to the enthusiasm of many a beginner.

From the grower's standpoint orchids resolve themselves into three classes: 1st, those that are so delicate or inelastic in constitution that even in the most skilful hands they always prove short-lived. 2nd, those that are widely and successfully cultivated but require, nevertheless, the care of one who has some course of training in the work. And lastly, those that are so easily grown that the merest tyro in horticulture, if he exercises an average intelligence and has a love of his plants, may confidently venture on their cultivation.

It is a mistake to suppose that orchids can only be grown, or even thrive better, in special houses. In several English gardens I have visited I have seen some of the finest specimens of cypripedium, cœlogyne, vanda and many others, that could possibly be grown, and these in mixed collections of plants. Separate houses for orchids are of value where a large collection of those kinds are grown which require widely different conditions at one season to what are necessary at another. Dendrobiums, for instance, should have a hot and exceedingly moist atmosphere for several months of the year, and a dry and much cooler one for the remainder. The best results, therefore, could not be obtained by growing them continuously with such a genus as phalænopsis, which requires moist and warm treatment throughout the year. But when once the conditions under which an orchid thrives are known, many ways suggest themselves of meeting its requirements. No better place, for example, could be found for dendrobiums in winter than a position near the glass roof of a vinery at rest. In the following papers I hope to pass in review some of the most ornamental genera and species which, besides being cheap and plentiful, are best adapted for beginners and for those who are only able to devote a portion of stoves or greenhouses already occupied by other plants.

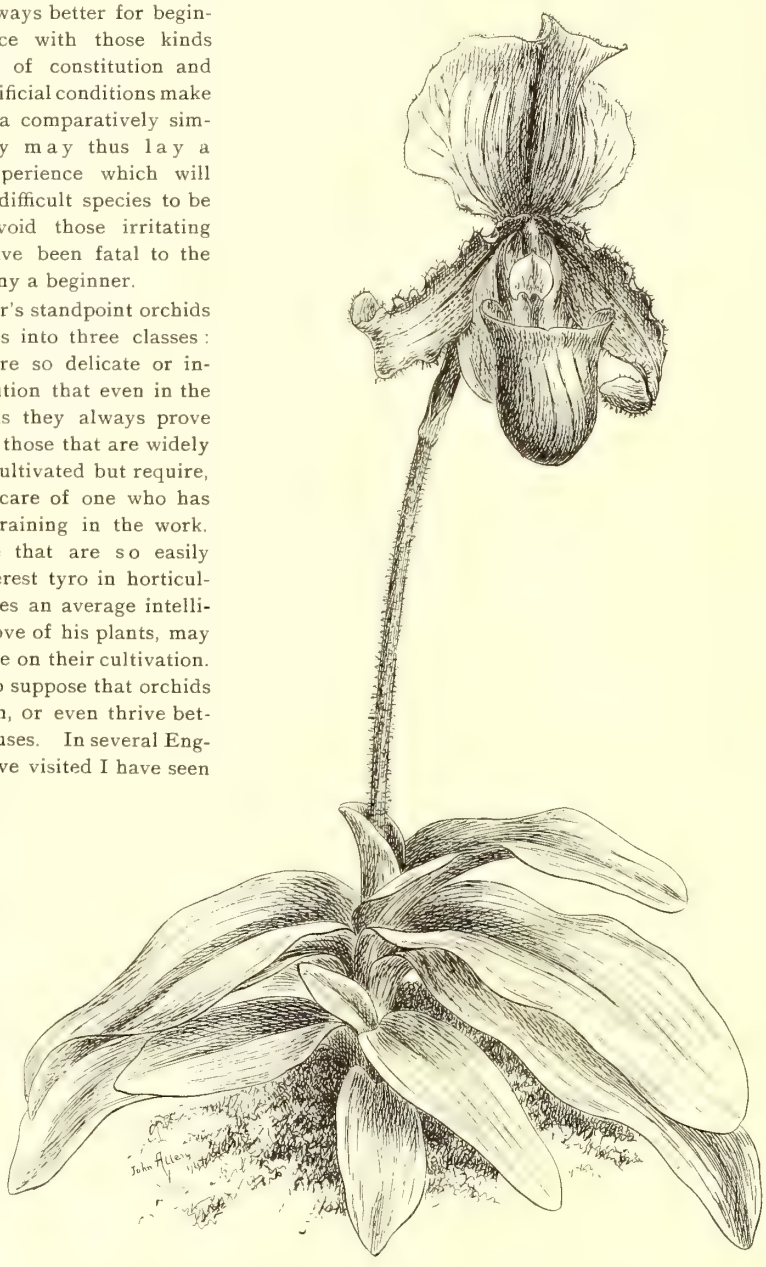


FIG. 1. CYPRIPEDIUM "NIOBE." (See page 160.)

Of the various materials used in the potting of orchids, peat is the one in most frequent use. The best kind for the purpose is that of a dark brown color and full of fibre. For the terrestrial species it may, if of the best quality be used just as it is broken up, but for the more epiphytal kinds it is always necessary by beating and sifting to remove the greater portion of earthy matter, leaving it very much like shag tobacco in consistency. The next important item is sphagnum moss. It should always be used in a living state, and should be of short stout growth, in preference to the long spindly kind which grows in very wet places Loam is a valuable component in the soil of many

orchids, especially the terrestial species of strong growth. The fibrous part must, however, in every case be separated from the pure earth, and that alone used. It is therefore cheaper and less troublesome to obtain the best fibrous loam to start with. Sand is not so much used now as it was some years ago. Mixed with peat and sphagnum it has a tendency to render the whole compost too close and hard for most orchids and to lose that spongy character which they so much delight in. It is useful, however, in all composts of which loam forms a part. The coarsest variety of silver sand is the best.

It is a great advantage to be able to always use soft water for watering and syringing orchids. Where that is not possible river or spring water should be stored in open tanks and exposed for at least a day to the atmosphere before using. For the damping of paths, walls, stages, etc., any kind of water, of course, suffices.

Perhaps to no particular in orchid growing is so much of the superiority of modern growers over their forerunners due, as to the better appreciation of the necessity of fresh air for their plants. Whilst it is important that sudden chills, draughts and drying currents of air be avoided, it cannot be too strongly laid down that a constant and plentiful supply of fresh air is absolutely essential. It is the best plan to have, besides the ordinary movable sashes on the roof, ventilators that may be opened and shut at will let in the walls near the bottom so that the air before reaching the plants is made to pass over the heating pipes. Except during the three or four hottest months we find these bottom ventilators are sufficient to maintain a good atmosphere in all but the coolest house.

FIG. 2. CYPRIPEDIUM LATHAMIANUM. (See page 161.)

CYPRIPEDIUMS.

At present no genus of orchids approaches the lady slippers in popularity, this being due not only to their beauty and variety, but in a great measure to the ease with which they are grown. There are numerous amateur collections around London consisting almost entirely of this genus. For the beginner, there is none so likely to give complete satisfaction. Most of the species have exceedingly handsome foliage, and being of robust, healthy growth, and not deciduous, they have a pleasant

appearance at every season of the year, even if not in bloom. So freely do they flower, however, and so lasting are the blooms, that a very few kinds need be grown to keep up a continuous show.

Without discussing that part of the genus with tall stems of annual duration which is confined to the northern temperate regions, cypripediums fall readily into two groups. The first and larger of these is scattered widely over tropical Asia; the second is purely South American and constitues Reichenbach's genus selenipedium. The general character of the flowers is too well-known to need description. They are remarkable in showing the isolated position the genus occupies in the order. In all the remainder of the orchid family no two flowers can be found differing so radically from each other as they do from cypripediums. The South American section chiefly differs from the others in having a three-celled ovary; the foliage is also long, narrow and pointed; whilst that of the old world species is broad and rounded. The authorities who consider there are not sufficient differences to constitute a generic distinction, have had their views supported by the new species that have been found in New Guinea, which show a considerable approach to the selenipedium group.

Cypripediums are essentially tropical plants; a few species may be grown in an intermediate temperature and still fewer in the cool house, but the great majority require a temperature, which at night during winter does not fall below 55° Fahr. and in summer ranges from 60° to 70°. Even those like *C. venustum* and *C. insigne*, that may if necessary be grown cool, thrive quite well in the warmer temperature. One house therefore is sufficient to contain a perfectly representative collection. The genus is chiefly terrestrial, many of the species being found on rocks with a thin layer of vegetable matter beneath them, and two or three only on trees. The compost in which nearly all thrive best is one of fibrous peat (in which a fair proportion of earthy matter remains), chopped sphagnum moss, and potsherds broken up to about the size of peas. For the strong growing kinds, like *C. longifolium* and *C. Harrisianum*, a little loam-fibre may be added. Cypripediums as a rule are surface rooting, and although young plants may be potted in ordinary shaped pots, we prefer to plant the larger specimens in broad pans four to eight inches deep, according to width, these being filled to at least one-half their depth with drainage In potting, the soil should be built up a little above the rim of the pot and a few patches of sphagnum planted on the surface. Water must be given abundantly from April to October, and even during winter they must never be allowed to get dry, and a moist atmosphere must be maintained throughout the year. On warm sunny days the foliage may be lightly syringed toward evening. Fully established plants are benefitted by occasional applications of weak manure water, and once or twice during the summer a pinch of Jensen's fish manure may be scattered on the soil. In both these matters, however, there is a danger of overdoing the thing. In a state of nature these plants are usually found in shady positions, although there are exceptions; but under glass it is always necessary during bright sunshine to shade them from the direct rays.

The large number of species now introduced to cultivation, and the still larger number of hybrids, gives an almost unlimited range for selection. Of the old world section *C. Lawrenceanum*, *C. Hookeræ* and *C. Dayanum* stand prominent for the beauty of their foliage. *C. barbatum* is an old species remarkable for its free blooming qualities and simple culture. *C. Stonei* is a really beautiful species with fine foliage and flowers of a china-white hue, striped with red and purple; *C. Phillipense* is really related to it. *C. Spicerianum*, although a rare and expensive orchid a few years ago, is now very plentiful—it ought to be in every collection. Other valuable species are *C. Parishii*, *C. ciliolare*, *C. hirsutissimum*, the strong growing *C. villosum* and *C. Boxallii*. *C. Sanderianum*, *C. Rothschildianum* and *C. Elliotianum* are some of the latest introductions; they are all nearly allied to each other and are noticeable alike for the beauty and remarkable structure of the flowers. *C. insigne*, the well-known cool species, has recently been recruited by some very handsome varieties.

All the preceding species when once established are quite easy to grow. Unfortunately the same is not so markedly the case with the beautiful little group formed by *C. niveum*, *C. concolor*, *C. Godefroyæ* and *C. bellatulum*. These four species grow naturally on limestone rocks, and it is found to be a great help to them to mix a few lumps of this material with the soil. They should also have the warmest position available.

Turning to the South American group, *C. caudatum* stands out as the most astonishing of all cypripediums. The petals have been known to reach a length of over thirty inches, growing at certain times at the rate of two inches a day. Its variety *Lindeni* (the old *Uropedium Lindenii*) has not the slipper-shaped lip common to the rest of the genus, but in its place a long narrow petal, like the other two. *C. longifolium* and *C. Rœzlii*, although devoid of much color attraction, are very strong growing and are always in bloom.

Lastly comes the huge group which owe their existence to the hybridizer's skill. It is probable that there are at least 150 named hybrids. The great majority of these are recent of appearacne and can only be slowly increased; owing to this it will be some years before they are available for general cultivation. One of the most encouraging facts about them is that they are all of easy culture, in most cases surpassing their parents in that respect. The two commonest hybrids are *C. Sedenii* and *C. Harrisianum*, but others, such as *C. calurum*, *C. Leeanum*, *C. Dominyanum* are becoming widely spread.

The accompanying illustrations represent two of the latest and most beautiful hybrids. *C. Niobe* (Fig. 1) is the offspring of *C. Fairieanum* and *C. Spicerianum*; the general character of the flower resembles that of the

latter parent, but shows unmistakably the influence of the lovely *C. Fairieanum*. *C. Lathamianum* (Fig. 2) was raised by the Curator of the Birmingham Botanic Garden (after whom it was named) from *C. Spicerianum* and *C. villosum*. The upper sepal is white, with a line of dark purple down the center; the petals are light ochre-yellow and brown; the lip light brownish-yellow.

*Kew.* W. J. Bean.

# SOME CALIFORNIA FAVORITES.

CATTLEYA Percivaliana is the most showy of any of the great variety of orchids in the Golden Gate park; sepals and petals of brilliant rose, the latter beautifully crisped and waved, its lip of deep magenta with rosy edges exquisitely frilled all around; the two sides, rising to enclose the column, pink within and yellow without, and the long yellow throat striped with crimson, with orange spots on each side. The pseudo-bulbs are furrowed, three inches long, each bearing one bright green, thick, fleshy leaf, six inches in length and one or more across.

The fine blooms of *Lælia superba*, a favorite here, are of a laky-purplish pink, sepals and petals lighter colored on the under side, twisted this way and that in all directions, flopping, frilled and scalloped. The side lobes of the lip turn upward, are white outside with rose-pink edges inside, opening gracefully to show the dark-purple curved column lined with yellow, crowned with two conspicuous white teeth; the end lobes of the lip prolonged and twisted into propeller-blades and angel-fins above the convolvulus-like deep-rose fascinating funnel. A plant of *Lælia albida* has ten blossoms on a stem; sepals and petals not twisted, the pale pink open lip stained with yellow.

A low-growing pure white *Cattleya Eldorado* has a deep orange center, a purple stain on lip, and each flower is held up by a curved wire.

*Cypripedium Spiceranium* is a great favorite among the pretty little ladies' slippers; bronze, tipped with green yellow on its side petals; purest white its large double curving hood, with one purple line in the center; deep purple with white spots its odd corselet on its waist front. Here, as everywhere, this beautiful cypripedium is a prime favorite among those who appreciate good things.

*Cattleya Trianæ* has small pseudo-bulbs; the exquisite flowers have soft pale pink frilled petals and paler sepals curving backward in triangular form; contrasting with these are the delicately colored orange throat and deep pink, broad lip petal.

The deliciously fragrant *Phalænopsis amabilis* (see cover of February Garden) is the greatest favorite for home or personal decoration; its long racemes of perest white-winged beauties last three months in bloom. Its only color is a pale yellow spot in center and a few red lines on side lobes and lip, and reddish yellow spots on the tiny butterfly in the middle of the lip. It hangs gracefully from its mossy nest, its winding stem starting from its two broad green leaves. It seems at home here, and is appreciated highly among us.

*San Francisco.* K. P. S. Boyd.

Fig. 1. Phaius Humblotii. (See page 162)

# ORCHID NOTES FROM ST. ALBANS.

SOME OF THE NEWEST AND BEST PLANTS AT SANDER'S GREAT ESTABLISHMENT.

PHAIUS HUMBLOTII (Fig. 1, page 161).—In this we certainly have one of the sweetest orchids now obtainable. It flowered for the first time in England last year, and it has been awarded certificates at horticultural shows in London and elsewhere. *P. Humblotii* is a native of Madagascar, where, according to travelers, it abounds in swamps and marshes. It was first discovered by M. Léon Humblot, a young Frenchman, who has risked his life more than once by visiting climates teeming with malarial fevers, in the interests of horticulture. All the phaius tribe are well worthy of cultivation, perhaps the species most commonly known being *P. grandifolius*, a good old species, the deciduous kinds such as *P. Marshalliæ*, *P. alba*, *P. Bensonæ*. All these, however, are quite distinct, both in habit and appearance, from the subject of this note. *P. Humblotii* is a dwarf-growing species, which is somewhat advantageous, as it does not take up a great deal of room, a necessary point to be considered in orchid cultivation. The flower scape is produced from the base of the preceding year's bulb, and grows to about a foot in length; it is quite erect and of a sturdy nature, each flower spike bearing from eight to twelve flowers, which expand from the bottom. Each flower is, before opening, enclosed in a milky white bract, which falls away as soon as the flower is ready to expand. The flowers are large and well formed. In color they are of a rich rose, except the labellum, where we find a lovely combination of purple, white and orange; the sepals and petals are almost equal, all being boat-shaped, forming a perfect keel; the column is very striking, slender and arches gracefully. In color, it is a pretty pale green.

To grow this species well it is necessary that it should be placed in the very warmest house, where phalænopses or dendrobes are grown, for instance. Being terrestrial, this plant should be grown in pots in a good stiff compost of loam and peat, with a few pieces of charcoal to assist drainage; when growing, the plants may be watered freely, and an occasional damping overhead with a syringe is very beneficial to their growth; care should be taken, however, that no water is allowed to remain in the young growths, as it will cause them to rot, thus spoiling the work of one season. The plants flower during April, and remain in perfection for two or three months.

*Dendrobium Dearei* (Fig. 2, page 163).—When well grown this plant is worthy of a place in the best orchid collection, as its habit is good and its flowers very fine. This species has been in cultivation for many years, though many collections lack it; this is, no doubt, owing to the fact that it is very hard to import, and when imported, very difficult to establish. A specimen recently exhibited at the great Temple show in London, by Messrs. Sander & Co., had no less than one hundred and twenty-five growths, more than half of these being in full bloom. When seen like this it gives one a very good idea of what the plant is when grown under favorable circumstances. The pseudo-bulbs or stems grow to a height of about a foot or eighteen inches. The flowers are produced both from the old and new stems, coming sometimes from the apex of the growth, and sometimes they are produced laterally. In color, the flowers are of a very fine milky white, except for a slight tinge of green on the labellum, which, if anything, adds to the beauty of the flower; when seen to perfection the flowers measure three inches across; the sepals are lanceolate, about three-quarters of an inch in width; petals are almost rotund, and measure an inch and a-half in diameter. The labellum consists of a flat piece coming out at right angles from the sepals and petals; it is about an inch and a-half long and three-quarters of an inch in width; it is furnished with a long pointed spur of a pale greenish color.

To grow *D. Dearei* successfully it should be placed in baskets with a good compost of peat fibre and sphagnum. The East Indian house, with plenty of heat and moisture, is the place where it will thrive best. The plants at St. Albans are all grown suspended from the roof, and are given as much sunlight as is advisable for their welfare. Underneath them is a large tank of water from which there is a continual vapor arising, and which has a very beneficial effect on the young growths. This species is at rest during the winter months, during which time water should be entirely withheld. In March the young growths will make their appearance, and watering may be resumed, but not until the young growths are about two or three inches in length. The flowering season is during the spring and summer months of April till July. The flowers are very durable, and last a long time after being cut from the plants; this fact renders this a most desirable plant to be grown by nurserymen and florists.

*Cypripedium Volanteanum*, *n. sp.*—A very charming new species has recently flowered in Messrs Sander's orchid establishment. It is very much like *C. Hookeræ*, but much finer in every respect. The dorsal sepal is green, with a few dark markings about an inch and a-half

in width at the center ; it is covered with minute hairs on the back part. The petals are rich crimson-purple, with a slight green coloring in the center, and dotted all over with numerous black spots ; the petals are about three-quarters of an inch in width at the extremities, gradually tapering towards the part whence they spring ; the lip or slipper is greenish-brown in color, about the same size as that of *C. concolor*. It is profusely marked with dark lines running in all directions over it. The leaves are very showy. They are somewhat narrow and acutely pointed, a bright green, with richly marked black bars. The habitat of this species is not quite certain, but it is supposed to be found growing in the same district as *C. Hookeræ*. It should, therefore, be grown in a warm, moist atmosphere at a temperature of not lower than 60° Fahr. during winter. It grows in a mixture of peat, loam and sphagnum.

*Cattleya Warocqueana*.—This is a plant which has been lately put before the public as a new species, and it has been the subject of argument in horticultural circles as to whether it is really distinct from what we know as "the old autumn flowering labiata." Be that as it may, it is a plant which is well worth the notice of orchid growers, and should be represented in every collection. The following description, taken from the *Gardeners' Chronicle* will serve to give the reader a very good idea of what the plant is really like, and he may then judge for himself as to its merits or demerits :

"The winter flowering *Cattleya Warocqueana* is one of the most extraordinary introductions of recent times. In England it has been greatly admired, but in Belgium it is the plant of the day. We found upwards of fifty plants of it in flower, and specimens in bud and sheath in all stages, which leaves no room to doubt that its magnificent rose and crimson flowers will be produced throughout the winter. Some of the varieties are so exactly like the true autumn flowering *C. labiata* that actual comparison with the true plant, and careful scrutiny by several good judges, failed to find a point whereby those forms of the new introduction can be separated from it, and which it is thought comes from the same locality as the original plant. Some of its varieties have a large expanded labellum, with the coloring of *C. gigas* ; one of them has blush-colored sepals and petals, and a lip of a rich velvety-crimson shade like *C. exoniensis*, but it is larger than that species. * * * * The species is subject to a very wide range of variation, as there are actually eight new varieties named since the plants have been before the public."

*Cattleya Bowringiana*.—Though a plant of very recent introduction, this orchid has found its way into almost every collection, where it is unanimously accorded a prominent place on account of its amenity to culture and the freeness with which it flowers. *C. Bowringiana* has stepped in to supply what we might call a long-felt want ; that is, in it we have a cattleya which gives us a profusion of rich flowers in the late autumn when all other species are dormant. It also comes in very useful from a florist's point of view, as the flowers are well adapted for all kinds of decorative work. This cattleya was introduced by Messrs. Veitch in 1884, from British Honduras. It is found there growing on the cliffs by the side of streams and rivers. At first sight *C. Bowringiana* bears a great resemblance to *C. Skinneri*, but it is easily distinguished by the difference in the growth and size of the pseudo-bulbs, the flowers are also somewhat smaller, and it has a differently shaped labellum. At St. Albans, last season, a magnificent display of this beautiful cattleya was to be seen. The plants are staged at the coolest end of the large cattleya house, with a southern aspect. Underneath the stage is a reservoir for the purpose of

FIG. 2. DENDROBIUM DEAREI. (See page 162.)

catching rain-water ; and, of course, a good deal of evaporation goes on from this, to the great benefit of the plants. Over five thousand flowers were expanded at one time.

*C. Bowringiana* is perhaps one of the easiest plants to cultivate. It delights in a moderately warm temperature, with plenty of moisture. A fresh current of air is also beneficial, but it should be given so as to avoid draughts, which have a tendency to check the young and tender growths. The plants should be firmly potted in a compost of a clean peat fibre with a mixture of charcoal and sphagnum. The pots should contain quite one-half of their depth of broken pots so as to facilitate drainage. The plants commence to make their growths

in spring and go on through the summer. Plenty of good rain-water should be given them at this period. About the end of August, or the middle of September, the growths will have been completed and the flower sheaths showing. Less water should now be given, as the plants are not in such a high state of activity. The flowers, which are usually produced in October and November, are of a deep rosy purple, with darker colored veins running through the segments. The petals are about twice the width of the sepals, which, when well developed, are nearly an inch in width and about two in length. The lip is closely folded and forms a trumpet. It is very richly colored in the throat with dark purple, near which are two white blotches, making altogether a very fine contrast. Many fine varieties are often found amongst newly-imported plants, some of the most notable being vars. *oculata* and *pallida*. *C. Bowringinia* is named after J. C. Bowring, Esq., Forest Farm, near Windsor, a noted amateur.

*Cypripedium Sanderæ* (Fig. 3).—This orchid has doubtless created more interest in England than any before recorded. Botanically, this lovely gem is connected with the old well-known *C. insigne*, but for matters horticultural, the two may be considered entirely distinct. This wonderful plant has just flowered for the second time in England, and it is now in that superb collection known as "The Woodlands," the property of R. H. Measures, Esq., of Streatham, near London. This plant serves us with an excellent example of the great speculation of importing orchids, and of the great beauty which might be lost to us forever were it not for the skill and enterprise of horticulturists. F. Sander, of St. Albans, imported a quantity of *C. insigne* a little over two years ago. There is no doubt that the importations made by this firm are of a first-rate kind, but no such gem as this was looked for. A story goes that one day Mr. Sander and his manager, Mr. Godseff, were looking through the imported plants of *C. insigne*, when suddenly Mr. Sander, catching hold of Mr. Godseff, exclaimed, "Godseff, what's this?" Something distinct was noticed about the plant, and it was accordingly watched, when lo! a beautiful mass of the richest golden color expanded, and *C. Sanderæ* saw the light of day! Of course one can imagine the astonishment produced by a pure golden *C. insigne*, and the plant was eagerly sought by specialists, the gentleman above mentioned obtaining the plant. *C. Sanderæ* was not seen in its true colors until this year, when it flowered with Mr. Measures. The leaves and general habit are those of *C. insigne*, but more refined in appearance. The flowers are a rich golden yellow, with a white margin to the dorsal sepal; the staminode is slightly darker in appearance, and is highly polished. So far I have not seen more than one flower on a plant, but this is owing to the smallness of the plant; doubtless as soon as the plant grows into a specimen it will flower as freely as other varieties, and then what a magnificent sight will be presented! Only two plants of this are known to exist in this country—the one owned by the gentleman above named, and one by Baron Schröder. It is worthy of note that Mr. Measures was offered no less a sum than a thousand guineas for his plant, with three or four growths. When I saw this plant it was growing amongst all the "warm" cypripediums at "The Woodlands," and it was thriving wonderfully. It is doubtful if ever again such a gem will be found.

*Sobralia Xantholeuca*.—The genus sobralia is one which does not enter largely into the collections of orchid lovers, doubtless for the reason that plants do not exist plentifully in their native habitat. Be that as it may, it is an acknowledged fact that few orchids can compete with the choice members of the genus, one of which is the subject of this note. *Sobralia xantholeuca* is supposed to be a native of British Guiana, where it grows on the hill sides and mountains in a very light spongy soil, a great part of which is decayed vegetable matter. This plant is one of the most easy to establish. Care should be taken that the clumps selected have good crowns or dormant eyes. They should then be placed in a compost of light spongy soil. Sobralias are amongst the tallest-growing species of orchids, and should consequently be grown in a house where room is abundant. Several new growths are made annually; and these attain a height of from three to four feet, rarely more. When these growths are ripened, flowers may be looked for, and it is habitual for the plants to produce as many as from six to twelve flowers from each growth. The flowers are of a rich orange or golden color. The sepals and petals are about three inches in length, and when seen to perfection, an inch in width. The labellum is large and trumpet-shaped, with a faint brown marking on the entrance to the throat. The flowers are unfortunately very transitory, and fade after having been opened for a few days. The finest known specimen of this plant is owned by Baron Schröder.

*Cymbidium Traceyanum*.—A new and decidedly handsome cymbidium has just been brought to light by Mr. H. Tracey, Twickenham, near London. The way in which this plant made its appearance is rather remarkable. A quantity of *C. Lowianum* had been imported and was sold by auction in London. Mr. Tracey bought some of the plants and grew them. In its appearance before flowering nothing could be seen that would lead one to suppose that the plant was otherwise than *C. Lowianum*. When the flower spike made its appearance it was noticed to be of exceptional size, and when the flower expanded it was declared to be quite new, and an acquisition to the orchid family. The pseudo-bulbs and leaves are similar to *C. Lowianum*. The flower spike is of extraordinary size, about an inch in diameter at the base, and gradually tapering towards the apex. When I saw this plant it was bearing sixteen large, handsome flowers. The sepals and petals are greenish-yellow, having eight or nine lines composed of crimson dots and faint stripes. Each of the segments is fully three inches in length. The lip is very large, cream colored. The side lobes are striped with red, and the front portion is spotted with the same color. The lip is

fringed and several ridges run through its center composed of hairy appendages. *C. Traceyanum* is said to be somewhat like the very beautiful *C. Hookeræ* and *C. giganteum*. These latter species, however, are very rarely flowered in this country, and have not been seen by many persons. The plant was exhibited by Mr. Tracey at the Royal Horticultural Society on December 9th, and was awarded a first-class certificate; it was afterwards sold by auction and brought seventy-five guineas. It is an open secret that the plant found its way into the orchid establishment at St. Albans, where it is highly valued. *C. Traceyanum* grows under the same conditions as *C. Lowianum*.

New Hybrid Cypripediums.—During the past year many new cypripediums have been given to horticulture by the hybridizers, many of which are excellent. The following are a few of those raised in the St. Albans establishment:

*Cypripedium Castleanum*.—This is a lovely hybrid between *C. hirsutissimum* and *C. superbum*, and is doubtless one of the most distinct cypripediums of the year. It is pale purple in all its parts, with the exception of the dorsal sepal, which is dark purple, getting faintly lighter near the margins.

*Alcides*.—The result of crossing *C. insigne* with *C. hirsutissimum*. It is a very handsome flower and shows the characters of both parents in a very marked degree. The flower has a waxy appearance, and is pale green, generally with a suffusion of rose throughout the entire bloom. The dorsal sepal is decidedly that of *C. insigne*, with perhaps fewer markings, and of a more refined quality. The petals are precisely the same shape and size as those of *C. hirsutissimum*, and at each tip of the petals is a pretty pink marking. The slipper is that of *C. insigne*, with a rosy tint included; several darker colored veins running throughout. The rostellum is a rich yellow with numerous dark hairs dotted over its surface. The lower sepal is a pale green, with lines of darker green running through it. This plant is justly considered an acquisition to the ever-increasing genus of cypripediums.

*C. Pollettianum*.—In this we have perhaps the most lovely hybrid yet flowered. It is the production of a cross between *C. calophyllum* and *C. ænanthum*, var. *superbum*. It bears a large amount of the latter parent's qualities. The flower is very beautiful, and the predominating color is crimson purple. The dorsal is large and is lined perpendicularly with dark crimson; the apex and margins are white, affording a fine contrast with the body of the sepal; the petals are almost entirely composed of the same color, the higher portions being very rich crimson, while on the lower part close against the rostellum are two pale yellow spots; the petals are also profusely dotted with black spots; the margins of the petals are covered with minute hairs; the slipper is large and well formed, and consists of the same dark color as the other segments; the folds of the "slipper" are much paler and are studded with brick red spots.

*Orpheus*.—Another very distinct hybrid raised from *C. venustum* and *C. callosum*. The plant is very handsome, the flower being chiefly crimson in color and intermediate between the two parents; the petals are drooping as in *C. callosum*, and of a somewhat paler color than the other parts of the flower; both the lip and the dorsal sepal bear out the characters of *C. venustum* in their green mottling. Though not quite so showy as the others, this plant is a desirable addition.

*C. Maynardii*.—For this plant we are indebted to Charles Maynard, who is in charge of the cypripediums at St. Albans. The parents are *C. purpuratum* and *C. Spicerianum*, the characters being well borne out, especially those of *C. purpuratum*. The dorsal sepal is decidedly that of *C. Spicerianum*, with a deep crimson line running through the center; there are two paler lines on either side of this, a character not found in *C. Spicerianum*; the upper portion of the dorsal sepal is neatly reflexed, and at the basal portion there is a band of pale green about half an inch in diameter. The petals are those of *C. purpuratum*, gracefully arching and slightly undulate at the margins; they are of a coppery hue, except at the portion from which they spring, the color here being pale green; a dark line runs through the center of each of these segments, which, in addition to the more prominent one in the dorsal sepal, give the flower additional character; numerous dark brown spots pervade the whole of the petals; the rostellum is prettily formed, and very richly colored with a metallic red; there are a few green marks in the center where the division takes place; the "slipper" is large and well shaped, coppery brown in color, with numerous darker reticulations throughout; the lower sepal is pale green, with darker green stripes. To this plant, when exhibited, a great deal of homage was paid, and it was eagerly sought after by orchid fanciers. There is no doubt that it is a plant which will forever retain its popularity on account of its great beauty and distinctness.

*C. Eyermanianum*.—A very handsome hybrid produced by crossing *C. Spicerianum* with *C. barbatum*, var. *grandiflorum*. It is a very pure and distinct plant, and it has exceptional charms on account of the contrariety of its parents. The plant now noted is—as most hybrids are—intermediate in character, the strongest bearing to *C. barbatum* perhaps being in the foliage; the dorsal sepal also partakes freely of the same character, but with the rich line of *C. Spicerianum* running through it; coming to the petals they resemble the latter species in their length, shape and undulations; the lip is that of *C. Spicerianum* in shape, but with the coloring of *C. barbatum*. This pretty hybrid received an *award of merit* from the R. H. S., and it was named after J. Eyerman, Easton, Mass.

*Cypripedium Youngianum*.—Obtained by crossing *C. superbiens* with pollen of *C. Roebelenii*, and given an award of merit by the R. H. S. on July 8 last. As the parentage of this plant is so decidedly opposite, it naturally follows that the plant is very distinct. The foliage takes after *C. Roebelenii*, and is nearly a foot in

length and over two inches wide, bright green in color, and veined with darker green. The flowers are very fine; dorsal sepal is ovate, and pointed at the apex, over two inches in length; there are numerous purplish-brown lines on a very pale ground. The petals are gracefully drooping as in superbiens, nearly four and a-half inches in length, profusely dotted with light purple spots on a pale ground color; a row of hairs traverses the margins of each petal. The lip is large and closely resembles that of *C. superbiens*, with very little variation in color; on the folds or side lobes of the "slipper" are numerous purple spots; the rostellum (or staminode) is large and distinct, with a pale green reticulation; the lower sepal is pale, with green lines running through. This plant was named after Reginald Young, an ardent amateur orchid-grower.

*C. Aylingii.*—This is not of Mr. Sander's introduction. It was raised in the collection of A. J. Hollington, Esq., Forty Hill, Enfield, by his gardener, Mr. Ayling, after whom the plant is named. The parents of this plant are *C. niveum* and *C. ciliolare*, the cross having been effected as long ago as six years, an exceptionally long time for a cypripedium. When the plant was introduced a good deal of doubt was expressed as to whether the parentage quoted was correct. Mr. Rolfe, of the Herbarium, Kew, however, quickly put down all fears as regarded this point. The flowers partake chiefly of the characters of *C. niveum*, with the same pretty dull red markings on a snow white ground; the lip is pure white and "slipper-shaped;" the leaves are like those of *C. niveum* in size and texture. This handsome plant was sold at auction for fifty guineas.

P. WEATHERS.

*St. Albans, England.*

# MANURES FOR THE VEGETABLE GARDEN.

DISCUSSIONS BEFORE THE BOSTON MARKET GARDENERS' ASSOCIATION.

THE Boston Market Gardeners' Association opened its winter campaign for discussions of gardening topics at its room over the Quincy market, on December 27th. The attendance was fair, and the members listened with marked attention to a paper termed "The Yeast of the Soil," read by Mr. George W. Bowker, the substance of which is given below. The paper evoked considerable discussion, mainly upon the efficiency of fertilizers in place of stable manure.

### THE YEAST OF THE SOIL.

"The yeast of the soil, as I shall consider it, is not plant food, but a plant life which exists in the soil, and but for which all soils would be barren. It is believed that we could not raise a corn stalk or a potato plant unless there was a lower order of life growing at the same time in the soil. We speak of the soil being cold and non-productive. It may be cold, but why is it so? It may be due to an excess of moisture, or because the soil may be too compact and heavy; but the moment we take off the water or lighten the land by plowing, or by the application of manure, it becomes productive. The real reason why it becomes productive is that air and warmth are admitted, and these develop the growth of the little yeast plants. The plant food is thus liberated from the organic matter and is made available. Farmers say that they can hear corn growing in the warm days and hot nights. The corn grows during such weather because it is favorable to the growth of these bacteria in the soil, and they develop plant food as rapidly as the crop requires it. This little fungus will not grow when the soil is very cold or water-logged, so as to exclude the air, or even when it is too dry. Neither will it grow unless lime, soda and potash are present. Whether these favor the growth of the fungus, or need to be present to combine

with the nitric acid, which is formed so as to produce a neutral solution which the crop can take up, are questions which science has not yet fully determined. A soil may be very rich in organic matter or stable manure, and be in a condition similar to that of some of the market gardens, and still be unproductive, because the conditions are not favorable to the production and growth of their fungus-like plant. This is one of the great discoveries of modern agricultural science, and explains and emphasizes the importance, not only of judicious fertilizing, but also of thorough cultivation and drainage. When the weather is warm and moist this fermentation or growth of the yeast plant is going on to develop and convert organic matter into a form of plant food which can be assimilated by the growing crop. Sometimes, however, there is not sufficient organic matter in the soil, or the conditions of the weather are not favorable to the growth of this yeast plant. Then concentrated fertilizers come in and supply organic matter, and also such chemical salts as potash and lime, which are needed where this fermentation is going on. They also supply forms of plant food which have already gone through this stage of fermentation, and are ready for the plant to take up, and which the plant will take up if the material is soluble in water.

"People who apply cart-load after cart-load of manure to heavy land in the spring, or bag after bag of undecomposed animal matter, such as fish or blood, forget that before these can nourish a plant they have to go through a process of decay or nitrification, and that decay is due to bacteria.

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"From my remarks so far you may infer that composting manure is absolutely necessary in market gardening. Most certainly it is if you rely upon stable manure entirely, and are growing several crops on the same land during the season. Now some of you will remember that last year I said we could not afford to compost, and urged that you apply your manure directly to the land. I still adhere to that position. In composting there must be more or less yeast-waste. If the manure is put into the soil and the soil is warm, and regularly cultivated, the yeast plants will be developed, and the food rendered available. You have stored your land so full of organic matter that no doubt during the growing season there is enough plant food liberated from it to sustain many crops, and your aim is to keep up the balance in the soil so that the crops shall never lack for sufficient nourishment.

"This, it seems to me, is a slow and old-fashioned process. Can you afford to wait for nature to liberate the plant food through fermentation? Chemistry has come to the aid of man, and shows him a process by which several of the chemicals can be prepared, ready for the plant. In short, it enables the farmer to save time and take advantage of methods which have been worked out in the laboratory.

"There is also another practical phase to this question. Many of the crops, such as early cabbages, fall celery and spring spinach, are crops which are in the soil when the conditions for fermentation are not favorable, and unless the soil is stocked with plant food which has already bean made available, they will not grow. Here again comes in the value of chemicals, which will nourish as soon as they enter the soil."

At the conclusion of Mr. Bowker's paper much time was spent in discussing the point, whether it was good policy to plow manure into the soil in the fall. It was noticed that the affirmative speakers were those who tilled the heavy retentive soils. To those thus situated, plowing in the manure in the fall had the tendency to admit of earlier working in the spring. The speakers with negative views, it was noticed, were those working the lighter sandy soils, soils which admitted plowing as early as April 10th, and further to increase their earliness the manure was partially fermented in the pile by frequent turning over before applying in the spring, thus making it more soluble and available for early plant growth Many of these latter speakers contended that if manure was applied in the fall the coldness of the soil prevented any fermentation, and the spring time would find it in the same condition as when put on in the fall before.

To the question of Mr. Sullivan, of Revere, whether it was good economy to spread manure upon frozen ground in winter time, Mr. Bowker replied that if the land did not wash he could see no harm in so doing. If there is much wash the urates of the manure might enrich his neighbor's land.

Mr. Frost, of Belmont, spoke in very pronounced terms against winter application of manure, for during spells when the ground was free from snow, the wind carried the manure hither and thither to other pieces of land where he did not want it. He had the past season experimented upon that plan, and he found that early cabbages raised upon spring manured land were ahead of those grown on land manured in the winter.

Mr. Philbuck, of Newton, considers stable manure at $2 per cord cheaper plant food than commercial fertilizers. Stable manure, in addition to actual plant food, exerted a beneficial mechanical action upon the soil.

Mr. Bowker, at this point of the discussion, stated that he would not have it understood that he would have market gardeners dispense with stable manure altogether. He would have them use only enough stable manure to keep up the vegetable tilth, and supplement it with concentrated fertilizers. He would advocate that course on the score of economy, for what need is there in carting manure eight to ten miles out of the cities to get only twenty-five pounds of actual plant food to the ton? For, according to Prof. Goessman, that is all the plant food there is in two thousand pounds of stable manure, the remaining 1,975 pounds being silicates and organic matter that most market gardens contain.

The market gardener near our large cities, working high-priced land, is compelled to use some stable manure, but upon the cheaper interior land a part of the garden can remain in grass, and from time to time this grass land can be turned over, thus furnishing the same kind of organic matter that is contained in stable manure. The

additional fertility required can be obtained from fertilizers. To the market gardener who had, for the past fifteen or twenty years, been applying stable manure at the rate of fifteen cords per acre, he would say to him, stop, and instead of stable manure use commercial fertilizer and nothing else for five years at least. That would be true economy, for the application of two thousand pounds of fertilizer, which is about the right ratio for an acre of land, would not cost nearly so much as fifteen cords of manure.

The question of the cost of manure eight miles from Boston was discussed by many speakers, and the price agreed upon by most of them was seven dollars per cord.

Mr. Derby, of Revere, struck the key-note to the situation on his remarks : He said, circumstances alters cases, different soils require different treatment With him, upon his heavy clayey soil, fall manuring not only improved the texture of the soil but permitted it to dry out earlier in the spring

Mr. Frost, of Belmont, related an interesting experiment with fertilizer on celery. Celery, where fertilizer was used, was far ahead of stable manure, as he experimented both ways. Mr. Frost's experience was doubly interesting, from the fact that he was formerly a skeptic on the use of commercial fertilizers on a market garden. He formerly said that there was nothing equal to stable manure. He further remarked that the market gardens of Arlington and Belmont were now manure sick, so much so that many of our valuable crops could not be grown. It was out of the question to grow sweet melons, cauliflowers, tomatoes, bunch turnips ; and even celery, which was always supposed to do well on old, rich soils, now blighted badly there.

Mr. Stone, of Waterton, spoke of his success in using fertilizers for ten consecutive years, and the soil was steadily improving.

Mr. King, of Peabody, used fertilizers on hoed crops for six years, and the last year gave the best crop. The piece is now laid down to grass, and it gives him his best mowing.

During Mr. Bowker's remarks he stated that he believed that if Boston market gardeners would forego the use of stable manure one season, the stablemen would thereafter pay them for hauling it ; and that it was within the province of this association to combine and accomplish this, placing their reliance for plant food during that season upon concentrated chemicals.

E. P. KIRBY.

# THE EARLIESTFOOT PRINTS OF SPRING.

IF, LIKE MYSELF, the readers of THE AMERICAN GARDEN would fain have hardy flowers all the year round, let me advise you to plant your shrubberies and gardens with the very earliest bloomers as well as with those that grace the later season. If you are so fortunate, from a horticultural point of view, as to live south of Washington, do not fear to indulge yourself with some shrubs of *Chimonanthus fragrans* or winter flower, which is the very earliest, or shall I say, latest blooming plant with which I am acquainted. It flourishes in the south of England, where it is much prized; but it came originally from Japan, and expands its reddish-purple and yellow blooms, more than an inch in diameter, and exquisitely scented throughout the winter months. Though not quite hardy at the north, this beautiful and curious shrub can be safely wintered in a pit, whence, with a supply of English violets, pansies and hyacinths, an abundance of bloom may be obtained for winter decoration. In Washington it flourishes in the open air, and it can be procured from the Kissena nurseries at Flushing, Long Island, and from John Saul, of Washington, D. C.

The black thorn, *Crætegus tomentosa*, can be found in bloom late in February in mild winters. It is a beautiful sight, with its handsome snowy blossoms, in high relief against the sombre coloring of its twigs.

All the forsythias are very early bloomers and strikingly beautiful. Such a glow of cheerful yellow do they present that they are almost dazzling on a bright morning in early spring, with the sun smiling at his reflection in a myriad drops of freshly-melted snow hanging from their pretty bells. If the roots are snugly tucked away under a green coverlid of periwinkle, *Vinca minor*, you will find a few early blossoms of this blue-eyed nursling of rough March braving the latest frosts of spring.

Hazel catkins are interesting at this early season, and so are the soft fluffy pink and grey catkins of the aspen. From the latter the bees obtain their earliest taste of new bee-bread, as well as from the pussy willow. The shadbush or service-berry blooms in March, and all the cydonias or Japan quinces follow in its make. It is a beautiful shrub or small tree under cultivation, and its improved variety, spicata, with its masses of delicate fringe-like white blooms covering the tree, is a fine ornament to the vernal shrubbery. In my garden the blossoming plum and its purple-leaved variety, *Prunus Pissardi*, adorn themselves to greet the advent of the showery month long before any other of their relatives, the fruit trees, are clothed in their garments of flowers.

Still earlier is the *Daphne Mezereum*, in haste to be the first to lend its fragrance to the frosty airs of March. This shrub has small rose-colored blossoms in clusters of three starting from the point, which was the axil of a leaf of the preceding year. Not a young leaf has unfolded when the first flowers of this beautiful but poisonous plant dis-

play themselves. Perhaps we can forgive its noxious qualities for the sake of its charms of early bloom, beauty, exquisite fragrance, and the handsome red berries with which it adorns itself for the revel of summer. Its near relative is the Japan daphne, or *D. Genkwa*, which is a rare shrub with violet-colored tubular flowers of a delightful perfume, blooming a little later.

One of the handsomest of magnolias, *Magnolia stellata*, is also the earliest to display its exquisite pure-white, fragrant blossoms. It is not unusual to see these in March about the time that the aromatic spice bush and *Dirca palustris*, or leatherwood (so called from its tough leathery twigs) display their small yellow blossoms.

*Jasminum nudiflorum*, also yellow, comes about the same time. Yellow is the favorite color for vernal bloom, as though grateful nature reflected back in glowing flowers the generous sunbeams that have once more warmed her bosom to life. The blossoms of the common English furze, *Ulex Europæa*, carry out this idea. This is a fine shrub, very effective in masses, and often giving its first blossoms in the sunny days of the February thaw.

The early snowdrop and many varieties of crocus bloom in March. Chionodoxas, winter aconite, scillas, spring snowflake, meadow saffron and triteleias, join the long procession of early-flowering bulbs, all delightful and of the easiest culture.

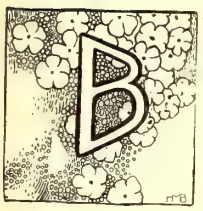
Hyacinths and crown imperials, daffodils and jonquils are too familiar to our readers to need more than a mention. The sweet white violets make their appearance late in March or early in April, and, in the woods we may now look for skunk cabbage, blood-root, twin-leaf and marsh marigold, or *Caltha palustris*, which means "cups of gold." These are fairy cups indeed, studding the waters of the forest pool, bright tokens of the season's wealth. A little later one has the exquisite pleasure of bringing home that "darling of the forest," the fragrant trailing arbutus, which is quickly followed by hepaticas, dog's-tooth violets, anemones, and many other delicate blossoms of the woods.

There is no month in a mild winter when the ubiquitous dandelion may not be found snugly ensconced in a sheltered nook and lifting its cheerful face saucily to catch the chary sunbeams of the dark season, and I have found blossoms of the useful rapid-growing kerria or Japan corchorus almost hidden beneath the snow.

Perhaps my prime favorite among spring flowers is the wall-flower, and this blooms with the daffodils at a time when fragrance is very rare. Its botanical name, *Cheiranthus cheiri*, I especially like. It has something caressing in its sound, suggesting this cherished gem of the early year. No doubt in this brief enumeration of the brave pioneers of spring I have forgotten some that are equally worthy of a place on the roll of honor, and to them it only remains to me to make my bow and to offer my most humble apologies.

*West Virginia.* DANSKE DANDRIDGE.

# NOTES FROM A WOMAN'S GARDEN—MARCH.



BY ALL it is generally conceded that March is one of the most unpleasant months of the whole year. But even in March—boisterous, chilly rough, wintery March—we find many evidences that spring is coming, albeit slowly. Besides the "dancing daffodil," the March breezes have started many another flower. Early in the month the crocuses and snowdrops bloom; the hyacinths and tulips begin to push up towards the light. We find tiny brown and green grasshoppers disporting themselves in our garden. Robins, blue-birds, song-sparrows are beginning to come. The neighbor's hens are already in the field and well to the fore. With all these tokens of advancing spring, we feel that we *must* do something in the gardening line.

There is little one can do so early. We walk over the entire place and gather all the dead limbs blown from the trees during the winter, prune any vines left unpruned, cut and cremate at once every limb of quince or plum tree showing even the smallest black wart.

We are tempted, but we do not uncover any plants; rather renew the covering if it has been too rudely disturbed by the winds of winter. Very early in the month we take account of stock, look over our seed, consult various seed catalogues, and order seeds and plants.

Chrysanthemums, tender roses and any plants stored n the dark cellar are brought gradually into the light and warmth. No matter how hard the ground is frozen outside, we keep always a good supply of garden soil in the cellar, and plant in shallow boxes seeds of pansies, chrysanthemums, cosmos, and any others needing a particularly early start. These boxes are placed in the day time in the cold grapery or in any sunny window. Care must be taken that the earth does not get chilled, and that the boxes have warm quarters at night.

Sometimes we try a hot-bed, but usually decide that it does not pay for the necessary work; too much scorching by day and freezing by night to guard against, to say nothing of snow to be shoveled off the beds, and paths made to it. We prefer waiting a little longer, and then raise our early lettuce and radishes in cold-frames.

We look eagerly forward to April: then spring is not "coming," but is here, and we begin our gardening operations in earnest, and with renewed fervor after the long enforced rest of winter. M. E. VIGNERON.

*Plymouth Co., Mass.*

# The Editor's Outlook.

*THE SYMBOLISM OF FLOWERS.*

FLOWERS are less valuable for their own sakes than for the emotions which they inspire. Their highest sphere is that of symbolism. So long and so intimately have we known this fact that we have all but forgotten it, and we often fail to distinguish the flower from the sentiment which it represents to us. We always think of flowers—unless we are analyzing them—as weak or bold, dull or gay, familiar or retiring. The attributes which appeal to us first are not the merely physical ones, as of redness, roundness or size. But as flowers cannot possess sentiments as a part of themselves, it follows that the emotions which they arouse are but a reflex of ourselves. One cannot see farther than his vision reaches, nor can he feel more than he has capacity for feeling. It is not strange, therefore, that the sweetest and most sympathetic minds find most to love in flowers. It must always be so; and yet, in some degree, flowers are symbols to all of us.

But can one learn to love flowers, then? Yes; and in the same way that he learns to love anything good and pure. If one could not outgrow himself there could be no such things as education and culture. But first of all, one must put himself in a sympathetic attitude with nature. Nature and man are one, not twain. Storms and floods, frosts and heat, shade and sun, are not man's enemies, but his allies. Consider yourself a part of nature, of fields and woods, and your ear at once becomes sympathetic and your heart learns new lessons of love. Then the little voices of nature speak to you, and you feel that you are in communion with the universe. All this does not come suddenly. Soon other men's thoughts add themselves to our own, and we find ourselves in touch with men and nature; and every flower suggests some thought or awakens hope.

Yet these symbolisms are spontaneous. We cannot construct them as we would carve a moulding or design a monogram. All history shows that they have arisen when least expected. The Scottish chiefs had no thought of the thistle until the Dane accidentally discovered it for them. So all our formal attempts to choose a national flower must perforce be failures. No one can conjure up a national sentiment nor bring about an occasion for the choice of a symbol. Ask an advocate of a national flower what the flower is to symbolize, and he will tell you that it is to symbolize the nation! But attributes, not states or objects, admit of symbols. Symbolize victory, charity, fortitude, but not the objects to which they belong; and it were a wretched symbol which were devised a century too late! No! If we choose a national flower, call it only a trade-mark for our escutcheon, not a symbol!

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*REFORM IN NOMENCLATURE.*

THE efforts of societies and individuals to discard the absurd and fulsome names of fruits and vegetables are meeting with some success. Several leading nurserymen have modified the names of fruits in their catalogues to meet the recommendations of the American Pomological Society, and a few seedsmen are simplifying the names of vegetables. And yet the very parties—the station horticulturists—who should lead in this work are among the worst transgressors. The experiment stations are expected to lead in such reforms, and they are under particular obligations with the names of vegetables, since a committee from their number has devised rules for the naming of varieties, and has printed an extended list of corrections; and yet most of the bulletins contain the old names as if no attempt had ever been made to inaugurate better things! It is time for the stations to do more than a passive testing of novelties and giving of opinions. They should stand for progress; should have opinions in advance of dealers and growers, and their convictions should be boldly expressed. In this reform of nomenclature the horticulturists have an opportunity to impress themselves upon the country. If they persistently refuse to publish any objectionable name it is only a matter of time until "brevity, accuracy, and good taste in the naming of vegetables" will be insured. THE AMERICAN GARDEN stands for this reform. Will the stations aid?

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*PLAY GROUNDS FOR CHILDREN.*

AMONG the philanthropic efforts of the present time there are none which appear to be more disinterested or far-reaching than the endeavor of certain men to establish parks and play grounds for children. The Brooklyn Society for Parks and Play Grounds for Children, a corporate organization, is awakening interest in this work.

"A moment's reflection will recall to mind how few and meagre are the practicable means of recreation for the children of the poor in our populous cities and towns. Existing facilities apparently bountiful in their provisions and generally accessible at small cost are nevertheless but rarely availed of, for the want of these means, small as they are, or the opportunity of time to avail of the pleasure and recreation which they were intended to afford. This is particularly true of large cities where, in consequence, it is exceptionally desirable that small neighborhood areas simply designed should be provided for. All are familiar with the narrow and imperfectly cleaned streets of considerable portions of most of our cities : of dilapidated dwellings unfit for occupancy ; of more ambitious structures for tenements over-crowded, illy-ventilated and badly sewered, wherein it is the fate of the young in large numbers to live during the most critical period of life when pure air, exercise and wholesome food are essential to the development into healthy men and women of the future."

There is reason enough for the existence of such a society, and its appeal should meet with response from every citizen. It is a work of greatest moment to the larger cities, and yet its influence should be felt in every village and hamlet. Much of the fullness of life comes from a sympathetic contact with nature, and a child which has the freedom of open air, and trees and flowers, must gain therefrom the first elements of hope and culture. Our children need gardens and sunshine ; and they need them quite as much for the development of the heart as for the body.

But even as a business venture—if one chooses to measure the movement more narrowly—parks and city openings are important : "It has been demonstrated beyond peradventure in the large cities of the country in which public parks now exist, that their establishment, including both the original purchase and cost of construction, has resulted in securing the valuable and attractive feature of the city's resources, enlarged its means of attracting people to it as permanent dwellers ; and as well, by increasing the value of widely-extended areas of property contiguous to such parks, has added a valuable resource in the way of income due to such beneficent influence. It is therefore undeniable that all efforts would be justified that tend to secure grounds to be devoted to such purpose, whether in city, town or village, and whether for immediate improvement or to await the time when such development might be more practicable."

The Brooklyn society has undertaken a great labor, and its largeness is a measure of its value. It has secured the passage of a State law by which any fifteen persons can associate themselves into an incorporated organization, with large powers, for the control and management of lands and funds for this good work with children. Its influence must eventually extend beyond the city to the school and from there to the home.

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*THE FRUIT EXCHANGE.*

THE fruit exchanges have occasioned much perplexity in many cases, both among growers and consumers, and there is a very general feeling that for most purposes they are a failure. If this opinion is correct it means nothing less than admitting that business methods cannot be so well applied to fruit-growing as to other interests. The results sought by the fruit exchange are simply those which accrue from selling produce at the best time, at the best place and in the best way. It is only putting into corporate form, for the good of many, the experience which has been the best for any individual. There is every reason to believe that the fruit exchanges must ultimately be the medium through which at least the bulk of the produce of every large fruit-growing region must pass on its way to the consumer. It simply provides for division of labor, and insures a return to the grower, in a business which is constantly becoming more complex, and in which, therefore, the risks are increasing. In discussing the causes of depression of agricultural interest, it is well to remember that lack of business methods on the part of the farmer has contributed an important share.

And this lack of business method is just the cause of the failure of the fruit exchanges themselves. It usually appears as half-heartedness, a fear to grasp the problems boldly. Mere agreement rarely accomplishes any good. Mr. Morrill's rehearsal upon a previous page illustrates this fact. As a rule, good results can come only from a definite organization under the laws of the State for the particular purpose of transacting business. The horticultural society exists for purposes of instruction and entertainment, and its objects are foreign to that of the fruit exchange. The two are stronger when separate, although one may help the other. No question is more vital to the fruit-grower than the economical and expeditious marketing of his fruit, and our discussion in this and the next issue must enlighten the subject.


*** THE AMERICAN GARDEN *stands for simplicity, good taste and correctness in names of varieties. In general botanical nomenclature it follows Bentham and Hooker and Nicholson's Dictionary of Gardening. In the names of fruits, it adopts the catalogue of the American Pomological Society, and in vegetables the Horticulturists' revision in Annals of Horticulture. In florists' plants, it follows the determinations of the Nomenclature committee of the Society of American Florists. It opposes trinomial nomenclature, and therefore places a comma or the abbreviation* var. *between the specific and varietal names. It uses capital initials for all specific and varietal Latin names which are derived from proper nouns.*

PROFESSOR C. P. GILLETTE, entomologist, has left the Iowa Agricultural College for a similar position in the Colorado College.

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JEAN FRANCOIS HENRY SISLEY, the well known French horticulturist, died at Lyons, the 12th of January, in his 87th year,

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PROFESSOR C. M. WEED leaves the Ohio State University in April to become Professor of Entomology and Zoölogy in Dartmouth College.

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FRUIT PROSPECTS are thus far good all over the country. The winter in Minnesota has been very mild, and the prospects are good for all fruits.

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E. G. LODEMAN has been made assistant horticulturist at Cornell University, *vice* W. M. Munson, who becomes professor of horticulture in Maine.

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BENJAMIN C. TOWNSEND, once president of the New York Horticultural Society, died at his home at Bay Ridge, on Long Island, January 13, in his 73d year.

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MOUNTAIN FLEECE.—I have tried the mountain fleece (*Polygonum oxyacanthum* var.) in the Pine Grove Cemetery and it has given perfect satisfaction, and has attracted much attention.—WM. STONE, *Sup't., Lynn, Mass.*

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W. A. TAYLOR, of Douglas, Michigan, a graduate of the Michigan Agricultural College a few years since, becomes assistant pomologist of the Department of Agriculture at Washington. Mr. Taylor is a practical fruit grower.

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The Horticultural Society of Southern Illinois was organized last December, for the southern forty-one counties of the State. The first annual meeting was held last month, (February) at Centralia. The following are the officers: President, E. A. Riehl, Alton; 1st vice-president, R. T. Fry, Olney; 2d vice-president, Thomas Buckle, Villa Ridge; 3d vice-president, Dr. Daniel Berry, Carmi; secretary, E. G. Mendenhall, Kinmundy; assistant secretary, W. S. Perrine, Centralia; treasurer, T. E. Goodrich, Cobden.

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PARKS FOR CHILDREN.—The Brooklyn Society for Parks and Play-Grounds for Children has secured the passage of a law by which similar organizations may be authorized and given certain powers in any part of the State, and it is undertaking a commendable missionary work in extending its influence. The intent is to extend such organizations generally throughout the State, with a view to give impulse to and encourage every movement among the people in behalf of ample and properly equipped play-grounds and parks for simple recreation and rest.

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NEW YORK ORCHID SHOW.—The fifth annual orchid show will be held at the Madison Square Garden (New York City) this year. Siebrecht & Wadley, the promoters of these now famous shows and who are also the largest exhibitors at them, found that the otherwise very favorable and suitable Eden Musée is now much too small to hold the exhibition. They have therefore rented the amphitheatre of Madison Square Garden, in itself a mammoth greenhouse or winter garden, and admirably adapted for a grand floral exhibition. The exhibition this season will include, besides orchids, any and all choice specimens of other plants, especially all new plants, and the management therefore requests every one to bring or send plants.

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FRUIT PACKAGES.—The city council of Chicago has passed the following ordinance: "No persons, firms, company or corporation shall offer for sale or cause to be sold or offered for sale at retail, within the city of Chicago, any berries or other fruit in baskets, boxes, or other packages except when put up in packages containing a barrel, bushel or some aliquot part of a bushel, according to the table of dry measure. And every such package shall contain the quantity it purports to contain; *provided*, however, that this section will not apply to dried or preserved fruits or the sale of fruits when retailed by the piece.

"All berries or other fruit, whether fresh, dried or preserved, when sold or offered for sale in packages within the city of Chicago, shall be of equal quality throughout the package.

"Every person who shall be convicted of a violation of any of the provisions of this ordinance shall be fined not less than five nor more than twenty-five dollars for each offense."

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IMPROVEMENT OF ROADS.—The New York and Connecticut Divisions of the League of American Wheelmen have created committees to agitate the improvement of country roads. The object is a commendable one and their efforts ought to be crowned with success. As a means to this end, these committees offer three prizes, of $50, $30, $20, respectively, for the best collections of not less than three photographs showing the "badness of bad roads." I. B. Potter, Potter Building, New York, and Chas. L. Burdett, Hartford, Conn., are chairmen of the committees. The following are some of the things which are desired in the photographs: "Photographs showing the common spectacle of the farmer's team and wagon, hub-deep and knee-deep in the muddy road. Photographs showing rough, rutty and muddy roads in their worst condition. 'Stuck in the mud' photographs, showing the farmer or merchant with his loaded wagon vainly trying to drive his patient team and load out of the inevitable mud-hole. Photographs, showing the every day breakdown caused by rough or muddy roads or steep grades. Photographs showing smooth, hard-surfaced roads and (if possible) teams hauling loads over the same."

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NEBRASKA HORTICULTURISTS.—One of the most successful meetings in the history of the Nebraska Horticultural Society was held in Lincoln, on January 13 to 15. A fine display of apples was on exhibition.

"Will the Ben Davis continue to be the leading market apple?" W. R. Harris thought it would continue to lead all other varieties for years to come, as in nearly all parts of Nebraska the Ben Davis is more profitable at eighty cents a bushel than other varieties are at $1 to $1.25. While the quality is not of the best, it is passable, and the very showy appearance gives it an advantage over many other apples whose appearance is not in keeping with their quality. Its freedom from bitter-rot gives it a decided advantage over Winesap. In the discussion following this paper a fruit buyer from Michigan said he had bought and sold many car-loads of apples, and he had noticed a tendency of late years which caused him to think that the Ben Davis has about run its race; that the market frequently became overstocked with it, and people are asking for better apples. He spoke of Grimes' Golden, one of the finest yellow apples in existence. and predicted that in five years the American people would be educated so much in the matter of taste, that it would be hard work to give them the worthless, tasteless, good-for-nothing Ben Davis. In his opinion we should now turn our attention to producing finer quality in our apples or shortly we could find no market for them. Another fruit buyer said he had more calls for Ben Davis than for all other varieties put together; and many of the members held this idea, that no matter how well an apple is flavored if it has a poor appearance it will not sell well, even if the people are educated as to taste. From statistics given by several members it appears that no other apple has paid so well in Nebraska as the much-abused Ben Davis. W. J. Hesser, of Plattsmouth, said he considered the following as the best six apples for market, and that they had been profitable for him in the order named: Janet, Winesap, Ben Davis, Jonathan, Minkler and Duchess.

Regarding profit in the orchard, R. N. Day, of Tekamah, read a very clear and concise paper showing what has been done in his part of the State. Years ago, when the country was new and fruit raising was considered one of the doubtful enterprises, some tree agents came through Bert and Washington counties, and succeeded in selling a large number of trees to the settlers. At that time it was not known what varieties would succeed and what would not. The settlers having nearly all come from the eastern States, they of course asked for the varieties that were successful in those places. The agents, being unscrupulous, promised any variety asked for, and filled the orders with a few good winter apples and the rest with summer varieties. Many of these orchards now contain more than two-thirds summer apples, and of course, are not so profitable as they would have been if a larger percentage had been winter apples. Notwithstanding these serious drawbacks, there are orchards of five to ten acres, that annually pay their owners more than all the rest of the farm. His small orchard brings him, in a year, from $400 to $800. W. Marlatte, of Manhattan, Kansas, said that several years ago he had an orchard of two and one-half acres that paid him anuually more than the farm products of 160 acres, and was equally as profitable as the receipts from cattle pastured on 400 acres of grass land.

In order to avoid as much as possible the substitution of worthless varieties by unscrupulous agents, C W. Gurney, of Concord, presented a resolution condemning the practice of nurserymen giving certificates of agency to tree dealers who are in reality representing only themselves. To prevent the other failure, viz., procuring varieties that are not adapted to this climate, the society has established nine experiment stations in different parts of the State, under the direction of the Regents of the State University, and connected with the Hatch experiment station, to make such experiments each year as the society may think best with the new fruits, and the older ones that have not been tested in the locality in which the station is located. We expect these stations to prove a great good to the citizens of our State, as they can test varieties better and in much shorter time than the individual can.

Peter Youngers, Jr., of Geneva, presented a very instructive paper on "Propagation and Cultivation of Nursery Stock," which should be read by every person

intending to work in this line. He had samples of budding and grafting on exhibition to show the different methods employed by nurserymen in growing trees. His samples of three-year old apple trees were very fine and caused much comment on the various modes of propagating them. Prof. C. E. Bessey said he had been in doubt for some time whether a perfect tree could be grown from a piece-root graft, but his doubts were all removed now after an examination of these trees; that there was botanically no objection to them. The samples showed conclusively what has been claimed from time to time by the advocates of this system: that after three years growth, the tree would be upon its own roots, and that the short piece-root would never develop to any great extent. As this subject has been much agitated during the last two or three years, the members showed a disposition to discuss it at some length. As fully seventy-five per cent. of apple seedlings are tender and will winter kill, it follows that any system of propagation which exposes the seedling root to the air, and consequently to the frosts of winter, is radically wrong. Budding and whole-root grafting come under the head of methods that expose these seedling roots, and, hence are not so well adapted for producing hardy trees as the piece-root system. T. T. Lyon, of South Haven, Michigan, who was in attendance as a delegate from the Michigan Horticultural Society, said he had been quoted as an advocate of whole-root grafting, but he wished to state that he is in favor of that system which gets a tree on its own roots in the least possible time; that the piece-root method filled these requirements better than any other for nearly all varieties of apple trees, and was, consequently the best method. Yet, in some instances, it seemed that it is almost impossible to grow such varieties as the Canada Red without resorting to double working; and in such cases it is advisable to produce the stock by piece-root grafting.

In a paper on Forestry, A. J. Brown, of Geneva, gave a number of measurements which he had made in his vicinity, which go to show how rapidly forest trees will grow in this State. Space forbids our going into details. Ash, box, elder, soft maple, elm, catalpa and Russian mulberry had been most successful in his portion of the State. Notwithstanding the fact, that ash is considered a slow grower, he found that in trees of fifteen years of age and older it was larger by considerable than many other apparently faster growers. E. F. Stephens' article, "Should the Timber Culture Law be Repealed," brought out many facts worthy of note. He is contracting largely to plant out timber claims for eastern persons, and has planted many million trees in the past three years. He says that forest trees can be grown successfully where corn will fail. He is especially successful in the sand-hill regions, and says he experiences no difficulty whatever in getting trees to grow there. While there are, no doubt many persons who are trying to evade the law in regard to planting these timber claims, yet upon the whole, nearly every one desires to have his claim set out with good trees. There are, probably, not more persons trying to evade this law than there are trying to find the weak points in the homestead and pre-emption laws. As to its working a hardship on the holder, by asking him to do the impossible (as is told by many who are working for the repeal of the law), he thinks it is not any harder to plant, or cause to be planted, ten acres of trees in a region of limited rain-fall, than it would be to ask the settler to live on this same land and make his living by farming it; as all well-informed persons know that trees will live with much less moisture than will produce a crop of corn. As a matter of fact, the only reason why some persons wish this law repealed, is because they find it takes too long to obtain title to the land, and consequently is not a good investment for speculators. Persons who actually wish to comply with the intent of the law have no objections to it and would like to see it remain in force.

Professor Charles E. Bessey gave one of his admirable lectures on "Fertilization, Crossing and Hybridization of Plants." After explaining the theoretical part of this subject he proceeded to show his listeners the practical ways of producing crosses in plants. In his opinion the day is not far distant when the practical horticulturist will effect such crosses each year as the necessities of his business seem to demand; and that crosses will be made from time to time with a specific object in view, just as the observant breeder of cattle or horses breeds for a certain purpose. In regard to the effect fertilization may have upon the fruit of the season in which it is effected, the Professor said, it is against all theories of scientific men to suppose that it would have any effect, except upon the seed; yet, recent experiments seem to favor the belief that the fruit is sometimes changed a little by fertilization with the pollen from a different variety. Several of the members had noticed a marked change in the Crescent strawberry when grown near and fertilized by some firmer variety. Others had seen the Winesap apple much improved in color and size by being grown alongside of the Ben Davis. The Professor would not say that these apparent changes are not real; but he advised all the members to make such experiments as they could, and he thought in the course of a few years we would be more able to tell, without guessing, whether or not there is anything in the supposed effect. Many other valuable papers were read.

Of the business measures adopted at this meeting we must not fail to mention the action taken in regard to the proposed scheme for the horticultural exhibit at the World's Columbian Exposition. It appears that a scheme has been proposed, whereby the whole horticultural exhibit is to be headed by the department of viticulture with its attendant industries, wine-making, etc., and that pomology is to be placed last on the list. Of course, all horticulturists who have any love for their profession do not care to have a liquor show at the head of their exhibition, and accordingly, in conjunction with the Michigan Society, delegates were appointed to wait upon the Director General, and urge

upon him the necessity of making a change in the proposed plan.

The officers elected are: President, F. W. Taylor, Omaha; 1st vice-president, W. R. Harris, Tecumseh; 2d vice-president, W. F. Jenkins, Arcadia; secretary, R. N. Day, Tekamah; treasurer, Peter Youngers, Jr., Geneva. C. A. DeFrance, *Ass't Sec'y.*

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Ohio Horticultural Society Meeting at Zanesville. *Bagging Cherries.*—Professor Lazenby said that an experiment was conducted at the Ohio State University during the past season to determine the effect upon the fruit of bagging cherries. The clusters of cherries soon after they were set were bagged in a manner similar to that of bagging grapes, and left covered until the uncovered cherries ripened and were ready to be gathered. On gathering them the bagged cherries were found to be larger, of a brighter color, juicier and more tender than those left uncovered. The latter were firmer in texture and would bear shipping better than the bagged fruit. Bagging produced fruit finer in appearance, and perhaps of better quality, and secured it against the ravages of the birds; but is the difference sufficient for the cost of the bags and putting them on?

*Ground Moles.*—Theodore Longenecker gave an account of his experiments undertaken to determine what is the food of the ground moles. It is the opinion of many that this insectivorous animal feeds upon bulbs the roots of plants, sprouting corn and other seeds and other vegetable substances. These experiments seemed to prove conclusively that they will not eat vegetable substances. Quite a number of moles were caught and placed in cages containing earth in which they could burrow. Soaked corn, bulbs, seeds, roots and various other vegetable substances were put into the cages. But in no instance did they devour any vegetable matter, even when left without other food until they starved to death, as they would within thirty-six hours when left without insect food. After twenty-four hours they would sometimes partake of food; but would die within a few hours afterwards. They seemed most fond of the white grub and angle worm. After being in the hands a few times the moles become quite tame and will eat the grubs and worms while being held. They feed several times a day and will eat twice their weight of grubs in three days.

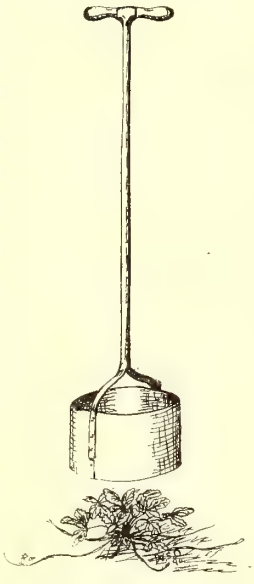


Fig. 1.—Strawberry Plant Trimmer.

*Cross and Self-fertilization of the Cherry.*—The details of an experiment madeat the Ohio State University to determine the extent to which cherries are cross-fertilized weregiven by Professor Lazenby. Six branches, containing from one hundred to one hundred and fifty perfect blossoms were selected and covered with cloths to protect them from insects and the action of the wind—all imperfect flowers being removed. Six similar branches were selected in the same way and marked, but left freely exposed to air and insects. But 3.6 per cent. of the blossoms from which insects were excluded had fruit set, while an average of 21.7 per cent. of the exposed blossoms were fruit. In other words, of every six cherries produced we are dependent upon the agency of insects and the wind for five of them.

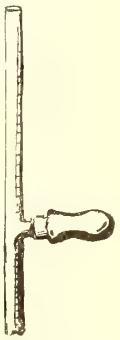


Fig. 2.—Modified Handle for No. 1.

*Peach-Cherry Hybrids.*—The pollination of the cherry blossom with peach pollen was successfully performed at the State University, and several fruits reached maturity. Pollen of the plum was also applied to the cherry blossom and fruit obtained. The pits have been saved and will be grown if possible, and much interest attaches to the possible result.

*Strawberry Plant Trimmer—Figs. 1 and 2.*—E. W. Reid described an implement for trimming strawberry plants in hills, which is much used in eastern Ohio. It consists of a piece of heavy sheet-iron about twenty-eight to thirty inches long and six inches wide, the ends riveted to form a cylinder about nine inches in diameter and six inches long (Fig. 1). Attached to one end of the cylinder and on opposite sides are two pieces of strip-iron which extends about six inches beyond the end of the cylinder and join on the line of the axis to a handle of wrought-iron with a wooden cross-piece at the top, to be grasped in using the implement. The distance from the lower edge of the cylinder to the top of the handle should be about three feet four inches, so that the workman will not have to stoop in using it. Instead of a cross-bar the handle shown in Fig. 2 may be used. With this it is easier to direct the blows and the use of the implement is less tiresome because the position of the hands can be changed. The projecting handle should be about the same distance above the cutting cylinder as the cross-bars in Fig. 1, and the perpendicular projection should reach twelve or fifteen inches higher. The edge of the implement should be kept very sharp to prevent pulling and disturbing the plants when using it. By walking between two rows, and setting the implement down over two hills on one side and then two on the other, the runners can be trimmed off very rapidly and the plants be kept in neat round hills. The implement appeared to be a valuable thing for facilitating the work of the strawberry grower.

W. S. Devol.

# FOREIGN NOTES.

ORCHID EXHIBITION.—There will be an international orchid exhibition at the Hague, May 28 to 31, 1891. For full information apply to Ihr. L. J. Quarles V. Ufford, Spiegel Straat 8, La Hage, Holland.

THE SHIRLEY HIBBERD MEMORIAL.—It has been decided to perpetuate the memory of the late Shirley Hibberd by a portrait of himself, which is to be placed in the Lindley library on behalf of the Royal Horticultural Society.

OBITUARY.—Gotthelf Wilhelm Poscharsky, court gardener at Dresden, Germany, died September 7, 1890, aged 72 years.

William Houghton, treasurer of the Royal Horticultural Society, died recently at Kilmacurragh.

PROTECTION AGAINST RABBITS.—For years I have bound juniper branches around my young trees, for a distance of two to three feet from the ground, and have never been troubled by rabbits. If juniper cannot be obtained any thorny material will answer.—*J. N. Limbourg, in Der Prakt. Ratgeber.*

ORCHID SALE.—Mr. Harvey's collection of orchids, which was one of the largest in England, was recently sold at auction. The following are some of the prices realized on the best varieties: *Cypripedium tesselatum*, var. *porphyreum*, $355; *C. Morganiæ* var. *Burfordiense*, $245; *Lælia elegans*, var., $240.

VINE CULTURE IN FRANCE continues to decline in consequence of the damage done in the vineyards by the phylloxera. Last year the area was 1,243 hectares less than in 1889, a proof that the efforts that are being made to restore vine culture to its former position are not succeeding.—*The Gardeners' Magazine.*

THE WEATHER IN CENTRAL ENGLAND was exceedingly severe in December last. From the 7th to the 31st, on three days only did the mercury rise as high as 32°. The average maximum temperature during this period was 26°; the average minimum, 19°; the mean temperature, 22.5°. On the 22nd the mercury stood at zero.

CHRYSANTHEMUM CERTIFICATES.—The floral committee of the National Chrysanthemum Society granted forty first-class certificates for chrysanthemums exhibited from September 10th to December 10th, 1890. Of these it is comparatively easy to recognize twelve as French seedlings, fourteen as American seedlings, or importation from Japan, eleven as English sports or seedlings, and the remaining three as doubtfuls. The race is pretty evenly run this year.—*The Gardeners' Magazine.*

NEW CATTLEYA.—*Cattleya rex* is a novelty which will cause a sensation the coming season. It is a species entirely distinct from those already known, and greatly surpasses them. The segments of the flower are cream white; the petals are very large and exceedingly graceful in form; the labellum, of the same shade, is light orange-yellow at the throat As to the anterior lobe, it is an admirable combination of gold and velvet purple.—*Le Journal des Orchideès.*

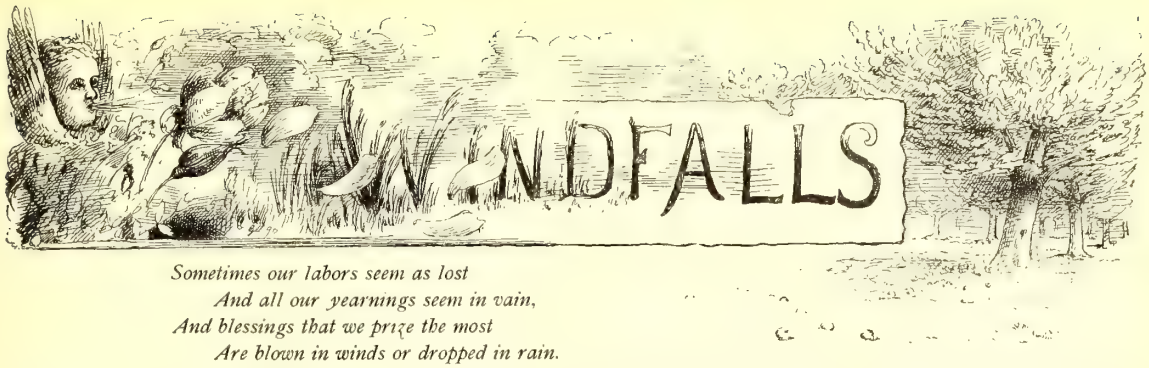
CHRYSANTHEMUMS OF 1890.—In the incurved section of chrysanthemums I fail to find one variety which is a decided advance on the finest of the established kinds. Indeed, the season of 1890 will be remembered as being remarkable in this respect. Not a single variety of high class character has been shown, although several useful kinds have received mention.

Japanese varieties contribute most liberally to the list of novelties.—*Edwin Molyneux, in the Gardeners' Magazine.*

MCDOUGALL'S SELF-ACTING TOBACCO PAPER, which has already occasioned considerable inquiry, appears to be especially deserving attention as an efficient agent for the destruction of plant pests without the trouble and inconvenience involved in the use of ordinary tobacco paper. The sheets consist of specially prepared cellulose, highly charged with nicotine of standard strength, and when ignited they smoulder slowly until wholly consumed, without further attention.—*The Gardeners' Magazine.*

THE EFFECT OF FOG ON PLANT LIFE was reported upon at a recent meeting of the Royal Botanic Society. Mr. W. Sowerby said the destructive action of fog on plants was most felt by those tropical plants in the society's houses of which the natural habitat was one exposed to sunshine. Plants growing in forests, or under tree shade, did not so directly feel the want of light. Soft, tender-leaved plants and aquatics, such as *Victoria regia*, suffered more from fog than any other class of plants.—*The Gardeners' Magazine.*

THE LONDON FOGS.—The severity of the weather of the past month in conjunction with the poisonous fogs which prevailed almost daily in the neighborhood of London, and the consequent wretched light, have been highly injurious to plants of many kinds. Nurseries and private gardens wherein winter gardening is practiced, present an appearance that might well be described as heart-breaking. Orchids are not only flowerless, but even the foliage of many of them has suffered. All the winter flowering begonias are not only flowerless, but in many cases entirely stripped of foliage; poinsettias, linums, euphorbias, eupatoriums, Christmas roses, bouvardias, and even pelargoniums, with many other things, have been reduced to flowerless skeletons by the cruel weather of the past month (December, 1890).—*The Gardeners' Magazine.*




*Sometimes our labors seem as lost*
*And all our yearnings seem in vain,*
*And blessings that we prize the most*
*Are blown in winds or dropped in rain.*

**Eldorado Grape.**—Sixteen varieties of grapes fruited for me last season, among them being such good ones as Brighton, Vergennes, Agawam, Diamond and Delaware; but Eldorado was superior to all others, being very sweet and very sprightly. The grapes are very handsome, equally as handsome as the Diamond, and my one vine was as prolific as any others, except Worden and Wilder. Wilder was by far the most prolific and fragrant. Blossoms of Eldorado are imperfect like Brighton and Vergennes, but they fertilized better than either of these.—EMORY P. ROBINSON, *Ohio.*

**The Western Chinquapin.**—*Castanopsis chrysophylla* is sometimes a short, sometimes a tall tree, and grows in California and Oregon. It has evergreen leaves, smooth and shiny above, but thickly covered underneath with yellow scabs. The flowers hang in slender aments from the base of the leaves (the staminate above the pistillate). Each little flower has five or six lobes and ten or a dozen stamens. The first, which is edible, is a rounded, three-cornered nut, borne within a prickly bur.—K. P. S. BOYD, *California.*

**Kentucky Raspberry Notes.**—Among the smaller fruits the raspberry holds a high rank; and as it ripens immediately after the strawberry, it usually commands a good price in the market.

The best soil for the raspberry is a deep, rich, moist loam; wet lands should be well under-drained. However, the raspberry will do quite well on any fertile soil, if not too wet. The soil should be broken rather deeply, and should be well pulverized, just as it is for cereal crops. The best distance for planting is six feet each way; some, however, plant six or seven feet one way, and three the other. But for several reasons the first named method is preferable; the bushes grow larger and more symmetrical, the berries are larger and ripen more uniformly, and the facilities for cultivation and gathering are better. Set the young plants in hills made at the intersections of the marking furrows, at a depth of three or four inches. Draw the soil up well and press it firmly, that the plant may not be dislodged by the wind. Evening is the best time for planting, and if before a shower so much the better. If the soil be very dry, water should be supplied when planting.

Cultivation should begin early, as soon as the plants begin to grow, or before this if grass and weeds take a start. A light cultivator is the best for the purpose of tillage, but the hoe is often necessary to remove the weeds near the plants. In most respects the cultivation of the raspberry may be the same as that for corn. Cultivate about four inches deep, and once a week, till the middle of July or August, during the first year after setting out the plants. Too late cultivation, in some localities at least, keeps the plant growing, and the wood does not mature sufficiently to prevent winter-killing.

In order to make the plant take a strong, self-supporting, bush-form, the first year's growth must be cut back to about ten inches from the ground; during the following years, all the laterals must be cut back, leaving them about twenty or twenty-five inches in length. By this process a strong, well-balanced bush is formed, the long rainbowed canes which are so annoying are avoided, and larger and better fruit is obtained.

Among the varieties that can be safely recommended may be mentioned the Souhegan and the Tyler, for early crops; and the Gregg for later bearing. These are black-cap varieties. The most popular red-cap varieties are the Cuthert and the Turner. These are said to withstand drouth better than the black-caps.—JAMES I. BAIRD, *Kentucky.*

**Satsuma Orange.**—After a week of hard frosty nights, in which the thermometer got as low as 20° above zero, with bright sunshine glaring on the frozen foliage in early morning, I am glad to say that I cannot perceive that any injury has been done to the Satsuma orange trees planted here last spring, and fully exposed. Our trees are worked on the hardy trifoliata stock. We are strongly in hopes that the trees will come through safely. On the *Citrus trifoliata* stock they will probably make dwarf spreading bushes rather than trees, and if not entirely hardy when fully exposed will be in a shape in which they can easily be protected by a covering of evergreen boughs. Our specimen hedge of *Citrus trifoliata* planted last spring made a fine growth, and we hope in a few years to demonstrate the vast superiority of this orange as a hedge plant for all parts of the country, over the miserable maclura or Osage orange so widely cultivated for this purpose. This true orange will make a dense impenetrable hedge with half the trouble that the misnamed Osage orange will. Its thorns are *long real* spines projecting in every direction, and not long prickles as are the maclura, and it grows naturally more dense than the maclura does

with trimming. I do not see why its little acid fruit may not to a large extent take the place of the imported limes. The fruit ripens in October in Northern Maryland. I am firmly convinced that it is the coming hedge plant for the greater part of the country.—W. F. Massey, *N. C. Experiment Station.*

**The Fitzwater Pear** is one of the newest claimants for public favor. It is introduced to the trade this year by Herbert A. Jones, Himrods, N. Y. The original tree, standing at Himrods, on Seneca Lake, is now some 50 years old. It is described as a winter pear of fine quality and medium size, canary-yellow and somewhat freckled when ripe. Although beginning to ripen early in November, it is said by the introducer to keep well without cold storage until January. It resembles the Lawrence and some have thought the two to be identical, but others state that while the Lawrence is sweet when ripe the Fitzwater is acid.

**Fertility for Pears.**—I have read much as to orchard treatment of pears. Having once the largest pear orchard on the Atlantic coast, I would remark that I have found that different varieties of pears will bear a different amount of food; for instance, the Seckel will bear more than the Bartlett. In fact the most difficult problem in pear culture for me to solve has been the amount of food that each variety requires.—G. F. B., *Leighton, Va.*

**Seedling Fruits.**—My experience in improving the currant is the same as Mr. Marvin's (page 716, December issue). Some fifteen years ago I raised almost five thousand from the best varieties and expected, with our peculiar conditions of soil and climate, to obtain at least one valuable variation, but nearly every plant bore fruit very much resembling the parent form, and among the thousands not one was found that was decidedly superior in productiveness, size or quality, though varying much in vigor of growth and foliage.

Our American gooseberry varies much more from seed, both in bush and fruit, hardly any two seedlings being alike. From Houghton, black, purple, red, yellow and white ones were obtained, many being larger than the parent; some quite sweet, others very acid; some ripening very early, others very late; some persistent, others falling to the ground like apples when ripe. Many of the bushes were dwarf and stocky like the English kinds, others spreading, weeping or trailing. In the lot were several promising ones; but all were destroyed, as the large European varieties thrive so well here. The English sorts do not vary as much from seed.

I have also found pears very refractory; from 1,250,000 Bartlett seedlings and many thousand seedlings of Easter Buerre, Seckel, Duchess and Winter Nelis, not one variety was obtained superior in all respects to the parents. Yet from some other hybrid and crossbred fruits truly wonderful improvements have been made, and I shall take great pleasure after further developments in recording some successes in that line.—Luther Burbank, *Sonoma Co., Cal.*

**The Oriental Nuts.**—The life-like engraving and article on one of the Japan walnuts in the December number of The American Garden prompts me to send you some sample nuts. You will observe several kinds, all no doubt forms of *Juglans Sieboldiana*, but among the many thousands of seedlings which I have raised from these and from the Tower House trees I have watched in vain for the least variation in foliage or growth. Even *J. Mandchourica* and all the various forms which are obtained from Japan and Corea (samples of which I also mail) are so much alike in foliage and growth that no one has been able to observe any difference in the young trees. The roots of all are much branched with an abundance of lateral and fibrous roots, making the trees as easy to transplant and as sure to grow as apple trees. You will notice that some of the *J. cordiformis* varieties are flat and pointed like a chestnut, with an exceedingly thin shell which opens along the suture on the slightest tap, exposing the fat sweet kernel unbroken and complete. I am not acquainted with any other nuts which are superior to the cordiformis varieties, and they vary in form and size surprisingly. No doubt they may be greatly improved by selection and cultivation.—Luther Burbank, *Sonoma County, Cal.*

Fig. 1. Juglans Mandchourica—Natural Size.

[Some of the nuts which Mr. Burbank sends, showing the various forms, are represented natural size in the accompanying engravings.—Ed. Am. G.]

**Cory Corn in Nebraska.**—In the December number (p. 754) I note an article in relation to the culture of Cory sweet corn in Nebraska. The writer has grown Cory sweet corn in Nebraska for the past ten years and most emphatically contradicts the statements made by Mr. Barler. While I had a great many acres this past season which were burnt up by the drouth, still I had some acreage that would yield as high as twenty-five bushels per acre, which was very good for the past season. —W. E., *Omaha.*

**Tomato Croutes.**—In this dish, the desirable "gamy" flavor of the raw tomato is retained in the cooking. In this case they should be rather small and flat. Scald and peel, and cut off a slice from the stem end, leaving about three-quarters of each tomato.

Place them, cut side down, on a slice of buttered bread, cut of fitting size. Arrange on a buttered pan sprinkle with salt and pepper, and bake at least half an hour.

This is quite an ornamental *entrée*, easily prepared, and assists wonderfully at a meal where cold meat is the *pièce de resistance.*

Late in the season, or when for any reason the tomato cannot be obtained in its best condition, much more difficulty is experienced in giving it a good appearance at table. We are then treated to the inevitable tomato salad, tomato sauce, tomatoes scalloped, tomatoes stuffed, tomatoes stewed, tomatoes *a la carte*, tomatoes *en diable*, etc. So long as the essential flavor remains these may be excellent articles. When, however, autumn frosts have cut down the garden crop, we are reduced to the canned fruit for our supply. This latter, to be thoroughly good, must be produced in a soil and climate where the tomato reaches its very best quality; otherwise it is harsh in taste, and by no means suitable to any but the strongest stomachs. And the climate and soil which best suit this invaluable fruit are those which produce in perfection the melon, the peach, and the sweet potato.—*Selected.*

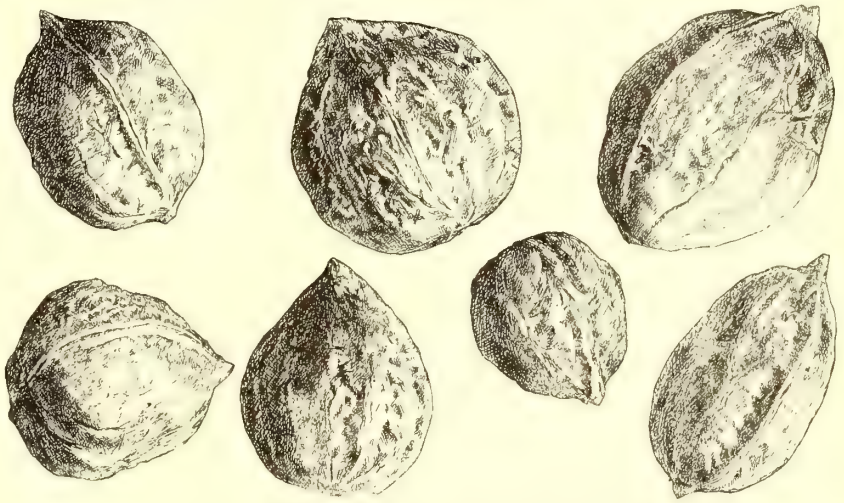


FIG. 2. JUGLANS SIEBOLDIANA.—NATURAL SIZE.

**A Cabbage Pest.**—What will destroy worms infesting my early cabbage? The worms are larvæ of a small ash colored moth, the body an inch or less in length and probably a line or less in thickness. It is doubtless native to this region, as it has been here to my knowledge fifteen or twenty years, and I do not find anything like it described in any of the books on injurious insects.

The larvæ is quite small; perhaps not more than a line in length at first and at maturity not one a half inch. In color when first hatched it is gray, later changing to blue and finally green.

FIG. 3. JUGLANS CORDIFORMIS.—NATURAL SIZE.

The moths are very abundant from 1st of June till 1st of August, or later, depositing their eggs—in the evening—on cabbage and all related plants, such as turnips, radishes, etc. The larvæ eat the leaves and work into the heads of the cabbage so much as to often spoil it entirely for eating. What can I do to destroy them or stop their work?—W. C. C., *Oregon.*

*Answer by Dr. C. V. Riley.*—The description of the insect which is damaging the cabbages does not correspond exactly with any of our well-known cabbage pests. After careful consideration I am inclined to think that the insect is the garden web-worm (*Eurycreon rantalis*), or some close ally. The cabbage pionea (*Pionea rimosalis*) corresponds in the habit of burrowing into the head, and in fact I should be inclined to think that this insect might be the one intended were it not for the fact that Mr. Cusick says that the full-grown larvæ is green, whereas the pionea larvæ remains bluish or purplish until it spins its cocoon. The exact determination, however, will not affect the matter of a remedy, which should be, spraying with Paris green or London purple when the cabbages are young, or with a dilute kerosene emulsion as gathering time approaches.

**Bean Weevils.**—I send a box of beans which are much infested by a little beetle. The seed was sound last spring, but the crop is being injured in the bin. What is the remedy?—JOHN F. RUPP.

[The insect is the bean weevil (*Bruchus Fabæ*). There are many species of these weevils, some living in corn, and one, the common pea beetle, living in peas. The ripe beans can be easily rid of the pests by placing them in a tight box or barrel and then pouring in a few spoonfuls of bisulphide of carbon. The vapor—which is explosive—will quickly dispatch the insects.]

**Pascal Celery.**—In 1890 I grew six varieties of celery—Golden Heart, Golden Self-Blanching, Kalamazoo, Sulham Prize Pink, New Rose and Giant Pascal, and the latter was so much superior to all others in growth, size, appearance and tenderness, that I wish to urge your readers to try it this year.

I have fine success growing celery plants by sowing the seed in drills as early as ground can be got in good order, laying a narrow board over the drill-row and by

tramping on board firm the ground; then cover with old carpet or like material, which I leave on till the green can be seen in the rows. I water when needed on the carpet, and use some nitrate of soda when preparing the bed. Seed should be covered as lightly as possible.—EMORY P. ROBINSON, *Ohio.*

**Onion Seed Should be Sown Early.**—Experiments by Professor Green at the Ohio Experiment Station confirm the experience of all successful onion growers, in showing the importance of giving onions an early start so that they may get hold of the soil before dry, hot weather sets in. Old horticultural writers taught the same thing a century ago. MacDonald sowed his "seeds in February, sometimes on a slight hot-bed, or merely under a glass frame; and between the beginning of April and the middle of the month, according to the state of the weather, he transplanted in drills about eight inches asunder and at the distance of four or five inches from each other in the row." James did the same thing. In McIntosh's "Book of the Garden" he has full details, of which we have space only to quote a few words. He says: "The seed should be sown about the beginning of February in light, rich sandy soil, placed over a hot-bed of moderate temperature—say 45°; or they may be sown in what is called a cold pit or frame. Towards the end of April the young plants should be carefully taken up, without injury being done to either their tender tops or equally tender fibres, and transferred to the open garden."

This is a very old and well-known practice, but has been discarded in this country for many years because we had found that by sowing the seed very early out-doors, making the land rich and by thoroughly cultivating or hoeing between the rows it was not necessary to thin out the crop more than would unavoidably be done during the process of seeding.

It is not necessary to start the American varieties of onion in the hot-bed and be at the labor of transplanting them. But it is certainly desirable to start the seed as early as possible. Half the failures in onion growing are the result of late spring.

This is the lesson we draw from Professor Green's experiments. They were made to show the advantage of transplanting as compared with out-door sowing. Unfortunately, however, the seed of the out-door crop was not sown early enough. Professor Green waited, before sowing the seed, till the soil was in a nice working condition for transplanting the plants and all danger from frost was over. A practical onion grower in that time would have had the seed up and possibly the plants big enough to hoe. Furthermore, the onions grown from seed are thinned out to three inches apart in the row. If they had been sown early and the soil was rich, an inch apart would have given a larger crop. As it was, the transplanted Yellow Danvers, set three inches apart in the rows, averaged three ounces each, and those late sown, and thinned out the same distance, but not transplanted, averaged only two ounces each. No one will claim that there is anything to be gained by transplanting. The gain comes from early sowing. It lengthens the season and gives the onions a chance to throw out roots and get hold of the moist soil before dry, hot weather sets in. Transplanting does harm rather than good; it checks the growth. It may be a necessary method when we are growing the large, late Spanish or southern varieties. They succeed best in a long season and with irrigation. Why they are not more extensively grown in the southern states I do not understand. With an article that can be so easily transported long distances, it would seem that we here at the north can hardly hope to make hot-house culture pay, except on a small scale for local demand. A few days ago a correspondent in Michigan wrote that he thought of raising and transplanting five acres of these southern onions, and asked advice. I replied "Don't." Another gardener in New Jersey wrote that he thought of setting out an acre. This is better—half an acre or quarter of an acre would be better still. Professor Green's experiments were made on plots four feet square, or the 2,722½ part of an acre.

If you are going to try the transplanting method, try at the same time soaking the seed and keeping it till it sprouts and then sow it the moment the frost is out of the surface soil. Early sowing is one great secret of success in growing onions.—JOSEPH HARRIS, *N. Y.*

**Everbearing Potato-Vines.**—In a small Connecticut town not far from New Haven, lives an elderly tailor with his wife, both brought up to habits of thrift and economy. Their little place has a well-kept appearance and shows a constant effort to make it neat and attractive. The garden plot is quite limited in size, and careful manipulation is necessary in planting to make it supply their wants of summer garden truck. From the wife I learned something of interest to me in potato culture. Twenty hills of potatoes were planted in well enriched soil, started as early as possible and given good care and culture. From these few hills a supply of this necessary article was obtained through the entire season. As the season advanced, the woman, with trowel in hand, carefully probed the ground about every hill, and finding the largest grown tuber, would carefully separate it from the vine, replacing the dirt. From a few hills enough for one cooking could be obtained. With a little care the thing was kept up through the entire summer, until finally late in the season the hills were uncovered, only to find almost, if not quite as large a crop, yet to be dug as if this continual revenue had not been enjoyed through the entire summer. This can be truly called a method of obtaining everbearing potatoes. The vines, relieved from time to time of their burden of tubers, keep making a new effort to bear more or develop those that otherwise would have amounted to nothing.—E. F. C., *New Haven.*

**Rhubarb and Sage.**—John T. Erds inquires (January, p. 49) how to propagate rhubarb and sage. The directions given are good; but plants of either, grown

from seed will after the second year produce seed freely, which is very weakening to the plants; and when producing seed, leaf production ceases. Why not grow the mammoth sage from cuttings? It roots as easily as a coleus; it rarely flowers and I have never seen it seed. It produces a wealth of foliage. Plants of it are offered by several florists. I know of no rhubarb better than Paragon, which never seeds, but must be grown from division of the roots. It has less acidity than other varieties. I had a field of twelve hundred roots and only twelve flowered, and these were "rogues."—E. S. MILLER, *Long Island.*

**A Green Rose.**—While this natural curiosity is not unfamiliar to students yet the floricultural world in

A GREEN ROSE. ONE-HALF NATURAL SIZE.

general looks wise upon its being mentioned and gently murmurs "humbug."

Although I had frequently heard of this variety of rose yet, until this past summer, it had never been my good fortune to see a specimen. This past season, however, the Hon. T. V. Welch, of Niagara Falls, had a fine plant growing in his rose bed, it having been received among a mixed lot of tea roses he had purchased.

The soil having been well prepared, this, as well as the other roses, made a fine growth, and bloomed freely all summer. As well shown in the engraving, it is a slender long-jointed grower, the foliage being delicate and of a light green color, the leaves being sharply serrated; the young wood has no thorns, while on the older portions they are not at all numerous.

The plant is exceedingly floriferous, as suggested by the many buds to be seen in the illustration. The full-bloom blossom is in size equal to the La France or Bon Silene, but it is very double, being a rosette of fine leaflets, which if of a bright hue, would be considered very desirable; but the color is a faintly pinkish-green, thus being rather inconspicuous in appearance.

The flower, however, when expanded, has a very pleasant delicate fragrance, which, while not so pronounced as in the teas generally, yet is quite noticeable.

Of course, among so large and brilliantly colored a family as the rose, this green member is hardly to be considered worthy of cultivation, yet it is very interesting as a botanical specimen, for it is an excellent example of the fact that our most prized flowers all depend upon their colors, in being more than a mere mass of leaves, as this, besides a slight variation in shape and size, is the most that distinguishes the petals of flowers.—ELMER E. SUMMEY.

**The Water Hyacinth.**—On page 55 of January AMERICAN GARDEN is a faithful picture of the water hyacinth (*Pontederia crassipes, major*), which interested me. Four years ago I placed a small plant of the above in one of my lily ponds, and it attracted so much attention that I will give your readers my experience of this curious water plant.

It is not the flower alone that arrests attention, but the whole behavior of the plant. The water hyacinth is, to a certain extent, independent of the soil above which it floats. I presented a beautiful plant of the above to a friend who placed it in a common candy jar. There was no soil in the jar, and yet, throughout autumn and winter, the plant grew and flourished, and blossomed for a long time. Its fine silky flowers, with its balloon-like balls, make a carp pond a grand sight to see. The leaves of this plant are borne on curious, swollen stems, which, at first sight, appear like those of a pitcher-plant. These stems are filled with delicate spongy air cells. The plant floats around on the water. The flowers are a beautiful lilac-rose color. There is a great upright spike which produces flowers in abundance the whole summer. A small plant spread itself over a large surface in our ponds, covering at least 100 square feet. The wind seems to drive the plant around as if it has not taken hold of the soil below.

There are several kinds of pontederia, and all thrive well in warm shallow water. The black, delicate and lace-like roots are very attractive. They are useful to carp as a spawning place. This plant can be kept in a greenhouse or on a window all winter. An armful taken from a pond and placed in a fountain during a fair will attract thousands of visitors. The flower stalks will stand erect all the time; they are, therefore, preferable to our fine lilies as plants for exhibition.—S. H. FEGELY, *Pa.*

**Detroit's Greeting to the Chrysanthemum.**

O! royal flower of far Japan,
Grown dear to hearts American,
Our lovely city of the strait
Counts you the fitting, royal mate
For all her golden autumn days,
So varied in their mood and ways.
These perfect blooms, that time has brought
To beauty, symbolize our thought.
White-petaled blooms are like the hearts
Of maidens; but the flame-tipped darts
Of cupid hide in scarlet tips—
Beware! who press them to their lips.
The Tyrian purple's like the pride
Of stately dames; while by its side
Nestles a gentler sister rare.—
The peaceful lavender, so fair.
This sweet pink bloom, like girlish cheeks
In changing tints, emotion speaks.
Bright ruby-red this blossom gleams,
Like smiling lips, its welcome seems.
Bronze-browns, with golden lights are here,
Like "deep welled eyes, serene and clear;"
While, like the spirit of the fall,
Orange and yellow rule o'er all.
O! flower of every glorious hue,
Our eyes are beauty-filled with you;
We greet you with our warmest smiles,
Our queen of color's wondrous wiles.

—*Aristine Anderson.*

**House Begonias which won The American Garden Prize.**—The *Begonia Rex* is considered by many a difficult plant to grow in the living room; but our experience is to the contrary.

The first ones we ever owned were purchased to relieve the monotony of the geranium, fuchsia and other plants that had filled the window year after year, giving no real variety.

They were six in number, and after potting carefully in equal parts sand, woods earth and old manure, the 3 inch pots were placed in a common platter. The space between the pots was filled with moss and nicely rounded over the top with living green moss from the swamps. By watering carefully so as not to wet the leaves, the plants thrived and the moss was fresh and green from fall until spring. The following summer, the plants rested and in the fall we were fortunate enough to have a small greenhouse. This season many new varieties have been added to our collection, but the six formed the foundation of the collection exhibited twice the past season, and at one of the exhibitions were awarded a year's subscription to THE AMERICAN GARDEN.

The varieties were: Queen Victoria, Queen of Hanover, Rex (species), Argentea, Duchess de Brabant, Louis Chretien, Mme. Treyve, Walter Ried, Argentea Guttata, Silver Fleece, Gloire de Sceaux, Prince Trowbetzkoy. The first six were the original, and we know these can be grown in the parlor.

Plenty of warmth, a fair amount of moisture and freedom from strong sunlight and dust, we find the important conditions of success with these begonias in house culture.

The last named in the above list attracts a great amount of attention, although we never have seen it catalogued. The mature leaf is a light green, margined with a darker shade, while the young leaves show no trace of green. It is like red plush or velvet. As the leaves increase in size they gradually take the green while the stems retain a red cast. The under side of the leaf is quite as handsome as the upper. The blossom is nearly the same as most Rex. With such grand combinations of color as we find in *Begonia Rex*, they are flowers to use throughout the year, and especially are they useful for house culture.—G. E. PHELPS, *Hampden Co., Mass.*

**Rare Lilies.**—*Lilium giganteum.* The flowers are white, striped on the outside with purple. The stem often attains to 14 feet in height, bearing from 12 to 20 flowers on a stem. It is one of the most majestic of all lilies. It grows freely in my nurseries in the open without any protection. An English florist of this city first called my attention to this lily by a glowing description of its appearance, as he had seen it in England, where it was grown in very large pots. He said the bulbs were brought from Nepaul.

As these lilies have proved hardy in New York, it would be well to afford them a prominent place in the garden, if the high price of $2.50 does not prove an objection to moderate purses.

*Gloriosa or Climbing Lily.* A native of Nepaul, Senegal and Mozambique. Four kinds are known. The flower is more curious than pretty. *Gloriosa superba* is thus mentioned by A. R. Wallace in "The Malay Archipelago:" "The soil seems very poor, consisting, chiefly of decomposing clayey shales, and the bare earth and rock is almost everywhere visible. The drought of the hot season is so severe that most of the streams dry up upon the plains before they reach the sea. * * * In the lower grounds are a variety of weedy bushes. * * Here is found the beautiful Crown Lily (*Gloriosa superba*) winding among the bushes, and displaying its magnificent blossoms in great profusion."—ANNIE GRISCOM, *Reading, Pa.*

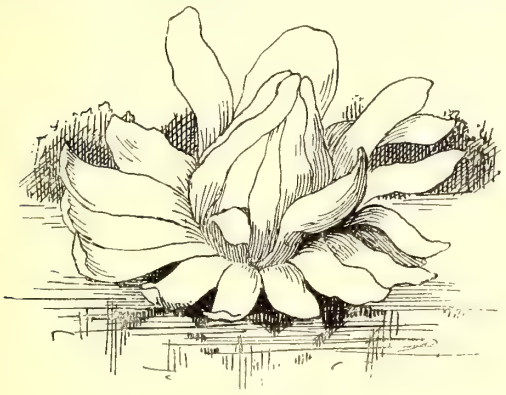
**Box.**—How shall I grow boxwood for edgings? *Mrs. G. C.*

[Box is commonly grown from cuttings. These can be taken from the mature wood in the fall and be treated like currant cuttings; but a surer way is to grow them in boxes in a cool greenhouse with slight bottom heat. Cuttings of the green wood may be made in summer, at which time they had better be shaded in frames. Box also grows readily from layers made in spring.]

**Conifers for Missouri.**—Please let know what evergreens to plant for a wind-break. I want such as are hardy, close-growing and rapid growers.—F. W. HOUSER, *Missouri.*

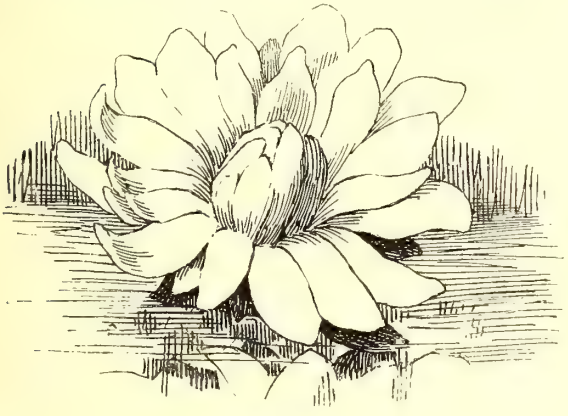
[For Kansas, Professor Popenoe (Bull. 10) recommends red cedar, Austrian pine, Scotch pine, *Picea pungens*, *Pinus montana*, *Pinus rigida*, *Pinus mitis*, white pine, Norway spruce, blue spruce, Siberian arbor-vitæ. Perhaps these would also do in Missouri.]

**Movements of Victoria Flowers.**— A striking characteristic of the wonderful *Victoria regia* is the rapidity



FLOWER AT 3 P. M.

with which the petals open, so fast, indeed, that the beholder can actually see them move. A reporter spent



FLOWER AT 4 P. M.

the afternoon in the conservatory endeavoring to make a sketch of the unfolding blossom, but the flower changed

FLOWER AT 5 P. M.

so rapidly that it was a task well nigh impossible to draw a correct outline. Within the short space of two hours the outer rows of petals fell from an upright wing-like position to a drooping one, while the center expanded from a tight ball to a cone, which latter suddenly unclosed to show the stamens, the last stage occupying not more than twenty minutes. The accompanying illustrations give an approximate idea of how the flower appeared at 3 P. M., 4 P. M., and 5 P. M., at which hour the conservatory was closed. It was impossible to catch the intermediate positions—nothing short of instantaneous photography could have done it.

At 5 P. M. the flower had moved fully a quarter of a yard away from the edge of the big leaf near by. An hour earlier the leaf lapped over the edge of the flower. It would really seem that the flower stem was lengthening, or that the expanding petals were carrying the flower forward like sails.—*San Francisco Chronicle.*

**An Old Orchid.**—There are many odd and peculiar orchids, but the one now in bloom at the Harvard botanical garden in Cambridge easily takes the palm for a rare combination of beauty and size. The *Angraecum sesquipedale* is suspended from the roof of one of the tropical houses, and is about two feet across. The leaves are very fleshy, long and pointed, and of a light green color. They are focused at a central point, presenting the appearance of a fan. Beneath are the snake-like suckers, which absorb moisture and feed the plant.

Rising from the centre are four strong green spikes, each bearing three blossoms, making a dozen in all. Words are poor to describe them. They are about six inches in diameter, in the form of a star, and of a pure white. It is considered very remarkable that so small a plant should bear so many and so perfect blossoms. The plant is a native of Madagascar, and is supposed to be seventy years old. It was brought here about thirty years ago, and its cultivation dates from that time.—*Boston Globe.*

**Painted Novelties.**—I am getting so hardened that when I take up a flashy catalogue, with a plant set forth in gaudy colors, I pass it by without reading. Some of them, of course, turn out all right, but what is the use of so much paint? Will there not come a day when these foolish women (they are mostly women) will lose confidence in this sort of advertising, and settle down to some good old standby, letting the novelties go by the board? These novelties are boomed at an exorbitant price, sometimes; and some poor little farmer woman straightway pinches here and there, until the requisite dollar or two is saved, and off it goes for this much lauded plant. Or, perhaps, with a desire to secure her own plant free, she gets up a club, tramps around the neighborhood through good and bad weather to secure the desired number, and then forwards the the order. In course of time the plants arrive, and "owing to the unprecedented demand for the plant" the stock is about exhausted; but she receives the plants, some of them of the most diminutive size. She goes around with her heart in her mouth, and delivers the plants to her club, and such a time as she has!

They all berate her soundly for sending for such plants. From time to time she hears at home and abroad, "such plants and such a price," until at length the poor soul is driven to say, "I will never buy any more plants." Now, if she had only said "novelties," it would have been well. There are numberless fine plants catalogued that will give such entire satisfaction when received and grown, that it is a pleasure to order them. So we "country folk" had better let the novelties severely alone, until tried well, and until the stock is inexhaustible.—*Hyacinth, Iowa.*

**An Ever-present Wonder.**—How great the change wrought upon the nature and formation of plants by the simple process of cultivation! And how few among the many who are familiar with most field and garden plants would know the original of these plants, or could tell how this transformation was brought about, although they may employ the very means in the cultivation of their crops. Take the cabbage plant, with its firm, bulky head of white, crispy leaves, and trace it back to its primitive condition, and we find it with a long slender stalk, loose leaves, a merely wild weed, with scarcely a remote resemblance to its cultivated condition; or the beet and the turnip, with their large thick tubers, bearing scarcely a resemblance to the maritime weeds, we may say, with their thin, fibrous tap roots, whence they sprang; or the large, fleshy, luscious peach, derived from a small, bitter fruit; or even that golden grain, the staff of life, wheat, which also bears very little resemblance to the plant from which it descended. And these wonderful changes have been brought about by the simple process of breaking and stirring the soil in which they were to be grown, together with the effects of climatic changes, and the mixture of species, and man's selection. If we take a piece of land, even rich land, and plant upon it a crop of wheat, or cabbage, without breaking and fining the soil, thus unlocking its fertile properties, and exposing all to atmospheric influences, the product will be far inferior to the seed sown. Then, if this product be permitted to fall upon the ground, the product will further depart in its characteristics from that of the original seed. And this deterioration will continue until scarcely a trace of the characteristics of the seed sown will be discernible. On the other hand, if this process be reversed, the soil be broken and thoroughly pulverized, and regularly stirred for a time thereafter, these lost qualities can be restored, aad even improvement made on the original excellencies of the seed or plant. This shows the value of cultivation; and it also shows the loss sustained by even indifferent or improper cultivation. Good soil and good seed are valuable, very valuable, but without the turning about of the soil by the efforts of the husbandman, the harvest will ever grow shorter in quantity and deteriorate in quality. Were all the plants and fruits thus improved set back to their original condition, is it too much to say that the tendency of civilization would also be backward? At least, it seems very evident that the advancement in the one, and the improvement in the other have progressed hand in hand.—James I. Baird, *Kentucky.*

**Jay Gould's** passion for flowers is almost equal to his passion for financiering. His hot-houses at Irvington on the Hudson, presided over by Mr. Mangold, are world-famous. In one of them he has over six thousand orchids, embracing 120 varieties. Mr. Mangold succeeded in getting 500 of these plants to bloom at one time this winter, but their owner was not well enough to go out to see them. He had a hundred blooms packed carefully in cotton and sent to his New York residence every week. One of the hot-houses is known as the hospital, and there the delicate and sickly plants are sent to be nursed back to life, if possible, and it is there that Mr. Gould spends the most of his time when visiting his conservatories, endeavoring with his own hands and his knowledge of the subject to save the life of some rare flower.—*Ex.*

**About Niagara Falls.**—There are a few items concerning this locality that have interested me much, and they may be interesting to your readers.

We have such a vast surface of rapidly flowing water that never is frozen over, neither above nor below the falls, that the temperature both summer and winter is very much limited in its range, The river performs the same service for our atmosphere, that a great balance-wheel does for machinery, so that we experience none of the extremes that prevail but a short distance east of us. None seem to think of covering their vines here, while in Central New York such covering seemed indispensable. Peaches are also raised here, sometimes in wonderful abundance, though the crop has many drawbacks aside from cold weather. The effect of the spray upon the vegetation immediately around the falls is interesting. So much moisture affords new and unusual conditions for certain plants. I have seen the turf near the falls, so covered with the blue flowers of several kinds of lobelias, that it suggested flower-beds when seen from a distance. The flora of the place must be very interesting to botanists. The apples grown near the falls are famous in this region for their high flavor. An orchard of hollow trees, now dying of old age, once had a high reputation. Its fruit was called spray apples, and brought an extra price in the market. Another peculiarity of this locality, especially of the Canada side is the heavy and forbidding clay soil. This is not universal, for Drummondville hill, or as it is now called "Niagara Falls South," appears like a huge load of sand dumped on a great clay plain, making a few square miles of pleasant soil to work. The center and highest part is rather dry, but the borders of the heap are excellent for gardening. But more hopeless land for gardening than some of this clay can scarcely be imagined, especially in a wet late spring. Its original fertility has been almost exhausted by continuous cropping with grain. Besides, it is strongly suggestive of Cook's salve when one disturbs it in wet

weather. But nevertheless, with all these drawbacks, it has proved to be the best soil for strawberries that I have ever worked. I was surprised when I came here four years ago, to find how long strawberry beds would last. Very good crops have been taken from beds four or five years old. The quality of the berries is also excellent. The largest specimen of Sharpless that I raised last year was eight inches in circumference as measured with a tape, and there were many more that approached it in size. The chances of success in gardening are somewhat increased by the fact that water for irrigation, pumped up from the river, is available to those who are willing to pay for it. With its help one can modify the bricky condition of the soil in dry weather, and work it when it dries to the right consistency.—H. J. SEYMOUR.

**Spring Flowers.**

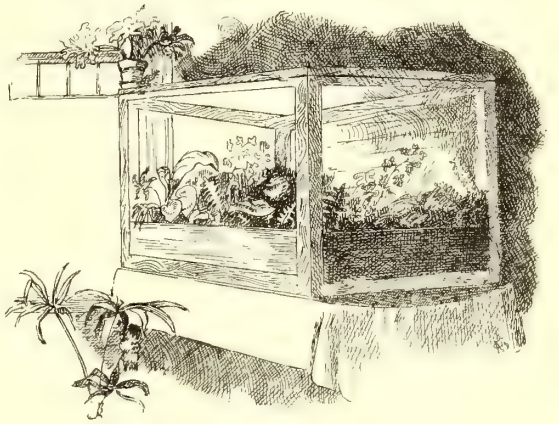
I know not which I love the most,
Nor which the comeliest shows,
The timid, bashful violet,
Or the royal-hearted rose.

The pansy in her purple dress,
The pink with cheeks of red,
Or the faint, fair heliotrope, who hangs,
Like a bashful maid, her head.

For I love and prize you one and all,
From the least low bloom of spring
To the lily fair, whose clothes outshine
The raiment of a king.

—*Phœbe Cary.*

**A Home-Made Fern Case.**—In one of Eric's long vacations he made a fern case for his plant-loving auntie's birthday. There were three half windows in the cellar, each with a single glass. He bought end pieces, fitted them, and used one of the windows for a cover, fastening on with strong hinges. He bought a zinc tray that could just fit inside, the case standing on a table, and the whole could be lifted on and off; though being very heavy the cover was generally lifted when the plants were watered, or new ones put in. Auntie was delighted with her gift and preparations for filling the tray employed our leisure for many a day. First came excursions to the woods for soil that ferns like. This is to be dug out of old stumps, and rich, black, scented stuff it is. One day when we came to a very large old stump, and put in a trowel, out jumped a chattering squirrel and several little ones, as much astonished as we were, but they were gone before we could gather our wits. This earth was mixed with meadow soil and sand, and all of it baked in a hot oven to destroy the insect germs that raise such havoc among the choice ferns and begonias. After the soil was in the tray, placed on a table in a north bay window where the sun would not burn the leaves, we commenced to collect the plant family that would live harmoniously in their glass case all winter. And for this, much wisdom and experience is necessary. Native ferns die down in the fall, so it is best not to gather these; for we want our case to refresh our eyes, with its lovely shades of green, when winter reigns without, and we can look through the case at the snow-covered ground beyond. The florists have southern ferns that when small are not costly, and they grow very fast in the moist air within the glass. But there are things in the woods that will do well, and many pleasant excursions with basket and trowel can be taken for specimens. Moss of all kinds looks green all winter. Partridge vines will show their red berries, and if you can find a root of arbutus, you may succeed in raising this lovely flower. Begonias do well, especially the Rex varieties, so hard to raise in the window garden. Their leaves grow very large and beautifully marked behind the glass. When you have had a fern case one winter you will always want one. In the summer it can stand on a shady piazza or down cellar. If the hot sun strikes the glass it will burn everything in the case. But in September the tray will



A HOME-MADE FERN CASE.

need arranging. I take all my plants out, throw away those that are wilted, put in new earth, water thoroughly and it soon looks nicely. One of the charms of a fern case is to find new specimens every fall.

Last September I went to the florist and bought a *Maranta discolor*. The leaves are shaded from white to dark green, and are very pretty. It also has a pretty white flower. Another was a *Sanchezia nobilis*. It lights up the case, for the leaves are streaked with yellow. A florist is generally willing to advise you about the plants that will do well in a case. After the plants are put in, the soil well soaked with water, your case takes care of itself. Only one thing you must watch for—snails. With all your care, they may get in, with a new plant. They leave an ugly smear on the glass, and when you see that and a large hole in your choicest *Begonia Rex*, search until you find him. He is generally behind a leaf; or, if in the evening, on the glass. If you put a small piece of potato in, it is a good trap. If the readers of THE AMERICAN GARDEN knew what a beautiful ornament a fern case is, and interesting all the time, especially if they study about the ferns and other plants, they would be sure to have one.—SISTER GRACIOUS.

**Heating Hot-Beds.**—THE AMERICAN GARDEN desires to secure the experience of every one who has experimented with the heating of hot beds by any other means than by manure.

**A New System of Ventilation for Orchid Houses.**—In order to grow orchids well, especially those native to elevated regions, it is necessary to give them a humid atmosphere, and this should be frequently changed; but in summer or when the air outside becomes dry, its introduction into the greenhouse may have an injurious effect upon the plants, due to the drying of vegetative organs. Every one knows that the quantity of the vapor of water held in suspension in the atmosphere is in proportion to the temperature, and that the higher the temperature is, the greater is the amount of vapor held. When the air becomes heated it can carry a greater amount of vapor, and it draws this from all bodies capable of furnishing it. In the greenhouse these bodies will consist of the walks, the tables and the plants; and it is probable that free access of the outside air, heated by the sun, will be injurious to the vegetation, especially to those plants which require a permanently humid atmosphere about their roots. The large quantities of water used in the greenhouses during the summer no doubt remedy this, but would it not be better to admit air already saturated with moisture? With this idea in mind I have devised a system of ventilation which has given excellent results. The cost is only trifling. Through the foundation of the greenhouse I made rectangular holes, twenty inches wide by fourteen inches high; then I put in a layer of bottle glass broken into pieces about the size of peas. The thickness of this layer depends upon the thickness of the walls. Upon this bed, I placed a metallic screen, made of galvanized iron wire, the meshes being rather fine. This screen had been folded upon itself several times at the ends, so that when put in place there was a space of almost half an inch between it and the glass. Then came a second layer of glass and a second screen, and so on until the hole was entirely filled. After water was thrown upon this filling, a current of very moist air entered the greenhouse, for the air had to pass over a large surface of wet bodies; and since the latter were not capable of decay, it remained perfectly pure. I also noticed the air entering the house had been considerably cooled, and this I consider a favorable circumstance, especially for alpine plants, which languish in the heat of our summers. To exclude vermin of all kinds I fastened a screen of copper wire on the inside so that it closely covered each hole. The edges of the screens were imbedded in the masonry. Some persons may object to pouring water on these fillings several times a day; but to do this is a habit that is easily acquired. With a good syringe, a large amount of water can easily be forced into the holes, and when one considers the excellent results that follow, the extra burden will be considered very light. —Em. Pierret, *in Le Journal des Orchidées.*

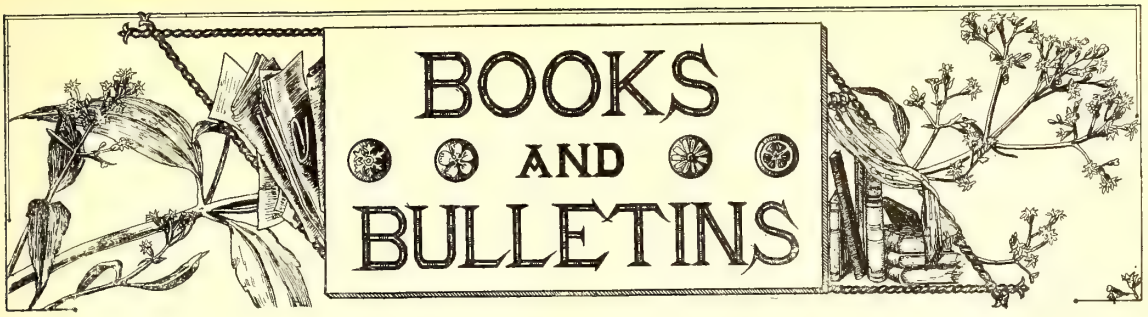
**Paper Flower Pot.**—The American Garden has given the Neponset paper flower pot a good trial, and is of the opinion that it is a most useful contrivance for shipping plants and for use in the starting of young stock for the market.

**Some Early Spring Insects.**—Almost as soon as the cabbages, radishes and turnips appear above ground, the flea beetles will attack them. Ground tobacco stems will keep the pests at bay. The cut worms, also, are anxiously waiting for a chance at the early vegetables. Gratify their anxiety by strewing a few bunches of clover leaves, or pieces of cabbage, about the garden before planting time, but be sure to dip the baits in a mixture of Paris green and water before distributing them. The early worm will get caught. It is now time to cut out raspberry canes containing tree cricket eggs. Recent observations show that this insect does considerable good by feeding upon plant-lice, but it is doubtful if the benefit counterbalances the injury where grapes and raspberries are largely grown. A dose of hellebore in time will save many times nine leaves on the currants and goosebeeries. Dust the bushes as soon as small round holes appear in the lower leaves. Repeat the application a week later. Few insects are easier to keep in check if you begin early. Hand-picking may seem a doubtful remedy for the white grub, but it will often pay in garden practice. If the soil is filled with these pests, and it is in many localities now, put a small boy with a tin pail after the plow and have him gather in all of the brown-headed rascals he can find. Then let him use them to feed the chickens, or for fish-bait Look out for the first crop of potato beetles. Destroy them before they deposit their eggs and you will be saved much trouble later.—C. M. Weed, *Ohio.*

**Hydrangea Treatment.**—H. H. H., in the January issue (p. 53) asks how to prune *Hydrangea Hortensis, paniculata.* This shrub is seldom pruned as severely as it should be. I cut the annual wood back to one joint; since there are three buds to each node this will give all the wood the plant can well nourish and produce panicles of large size. I have had seven feet of wood and panicles twelve to fifteen inches long as a result of such pruning. If not cut back hard the growth will be thick and weak, and the panicles will be numerous and very small. The latter mode of trimming will answer if quantity instead of quality of bloom is the object sought. —E. S. Miller, *Long Island.*

**"A love** for floral occupations, so simple and so natural, that in all times and countries they have been the delight of the highest, as well as the lowest, insensibly strengthens upon us as we become interested in the growth of plants and the development of the varied forms of beauty and grace with which every leaf, tendril, and blossom is replete; and the exercise involved in the pursuit thus, soon becomes, also, a source of pleasure and mental satisfaction, and is not, as in many other cases, an irksome duty performed for the preservation of bodily health."—*A. J. Downing.*

**Horticultural Progress.**—It is marvelous to what success horticultural science has attained. Here is Jim Miller, actually raising black-cap raspberries on cornstalks, whereas only a few years ago Bill Nye's attempt to graft the doughnut on the pie-plant was an absolute failure.—*Adrian (Mich.) News.*




THE GOLDEN FLOWER, CHRYSANTHEMUM. *Collected, arranged and embellished with original designs by F. Schuyler Mathews. L. Prang & Co., Boston. 4to. Colored plates. $10.* This is probably the finest and most important art-book upon cultivated plants yet issued from an American press. It is a collection of beautiful portraits of representative chrysanthemums and unique panel designs, and poems by various authors dedicated to the chrysanthemum or to particular varieties. The following sorts are illustrated: Kioto, Laciniatum, Neesima, Mrs. Alpheus Hardy, Mrs. C. H. Wheeler, Moonlight, Tokio, Jardin des Plantes, Cullingfordii, October Beauty, Ceres, Golden Dragon, Medusa, Lilian B. Bird, Peter the Great, John Thorpe, King of Crimsons Christmas Eve. The portraits are all but one in full color and life size, and are executed with great faithfulness. The purely artistic features of the plates and designs are everywhere fresh, graceful and inspiring. A few pages of general matter concerning the chrysanthemum are introduced by the compiler, but the chief textual features of the volume are short poems, mostly incorporating some legend or sentiment. The Japanese legend of the origin of the chrysanthemum from the transformation of a beautiful woman, is marvelously symbolized in a glowing frontispiece, in which the golden flower springs from the hair of the princess; and Louis Carroll has sung of the same legend, of

**Chrysanthemums.**

> "That gold-encircled head, with radiance quaint
> As Fra Angelico's sweet aureoled saint:—
> Her marvelous crown of womanhood—
> The queenly Golden Flower's."

We are glad to see the story of the ardent Neesima told so well, with such ample record of the varieties which he introduced. The story of that most wonderful flower of modern times, the Mrs. Alpheus Hardy, reads like romance; and the flower will spread the memory of the missionary's name throughout the flower-loving world.

The book is in every way a jewel, and we hope that it augurs of the time when America can support many more as passionate and inspiriting.

JOY AND OTHER POEMS. ROSE BRAKE POEMS. These are two dainty little volumes by our correspondent Mrs. Danske Dandridge, from the press of the Putnam's. The poems are short, sweet and musical, born of a restful nearness to nature. Their music is of that peculiar airiness and daintiness which one can hear only when he listens; it is the faintest silver note struck in the throat of a blue-bell, or tripped from a harp tuned on the wing of a bee. It is the matin

**Books of Verse.**

> "Of elves that sport beneath the moon,
> Around the hazel or the thorn,
> While crickets chirp a dancing tune
> Till all the east is red with morn."

One lives in a sweet and dreamy world when he reads them, where every note is fine-drawn and crystalline, a sort of silent symphony borne in colors and perfumes.

> "Fashion thin horns of blossom-tubes and blow;
> Tinkle the lucent pebbles of the rill;
> Fetch me a mating bird to twitter low;
> Spin sounds of night, fine-drawn, remote and shrill,"—

This is an invocation to dreams! It is too fragile to be read aloud. And this, the spirit which dropped into the throat of the wood-sparrow, is like a fairy octave played upon a crystal:

> "'Twas long ago:
> The place was very fair;
> And from a cloud of snow
> A spirit of the air
> Dropped to the earth below.
> It was a spot by man untrod,
> Just where
> I think is only known to God.
> The spirit, for awhile,
> Because of beauty freshly made,
> Could only smile;
> Then grew the smiling to a song,
> And as he sang he played
> Upon a moonbeam-wired cithole
> Shaped like a soul."

We only fear that too few people can hear these little voices. But the music is above criticism, because unlike everything except itself. It is like a

> "Gauzy veil of gossamere,
> Dew-embroidered, gemmed and sheer,
> Thrown about the woodland ways."

A FEW FLOWERS WORTHY OF GENERAL CULTURE. *B. A. Elliott Co., Pittsburgh, Penn.* This is the eighth edition of this artistic brochure. Although it is designed primarily as an advertising medium, its manner and matter are so superior to anything else of the kind which has appeared in the country that we can not refrain from calling attention to it. It is a masterpiece of skillful printing and illustration. It comes to us this year with a white embossed cover, and with illustrations as soft and expressive as those in the great magazines. Sixty pages are devoted to an attempt to show the superiority of native and hardy plants for garden decoration, over the few gaudy and unrefined immigrants which do service in the omnipresent carpet-bedding. And no one, it seems to

**Attractive Plants.**

us, can read these pages without resolving to throw away his coleus and achyranthes, and plant more enduring and graceful plants in their stead. Some good accounts are given of Newport Gardens, Dosoris, and the values of various groups of plants.

THE TREES OF NORTHEASTERN AMERICA. *By Charles S. Newhall. 12mo. Pp. 250. 116 Illustrations. New York: G. P. Putnam's Sons.* This book contains popular descriptions of all trees growing naturally or commonly in the northeastern states, or rather, the territory included in "Canada and the northern United States east of the Mississippi river." It is not clear what the author means by the northern states; it is certainly not the region of Gray's Manual, nor even the region bounded southwards by the Ohio river, as species which come within the latter range are omitted. We particularly notice the absence of the pecan and of the true water-oak (*Quercus aquatica*). The method of the book is admirable. Keys or guides to the species are founded entirely upon obvious leaf characters, so that one need not be a botanist in order to find the name of any tree. The illustrations, or rather diagrams, of leaves and fruits are mostly very characteristic, although crude; but there is occasionally one which is untrue, as those of the fruit of the pawpaw and butternut. The descriptions of the species are well arranged, and any one who can read can understand them. We feel, however, that the attempt to find vernacular equivalents for botanical terms is not always successful. We do not see that "lance-shaped" is any clearer or better than "lanceolate." The term is simply an arbitrary expression to designate a certain form of leaf, and it is by no means true that lanceolate leaves are lance-shaped, if lances of modern days are used for the comparison; and if lances of other days are to be the measure, the reader is likely to be confused. We do not propose to quibble over trifles, but we are strongly of the opinion that arbitrary and conventional terms do not admit of translation. Digitate leaves are certainly not "hand-shaped," notwithstanding the etymology of the term, and obovate leaves are not "inversely egg-shaped." And as a matter of euphony and brevity, the older names certainly have the preference. But Mr. Newhall's book is a good one, and the faults, if they exist, are debatable ones. It is certainly better to err in the endeavor to make one's self understood than in an endeavor to be technical. Every one who loves trees should have the book, and it will prove a source of delight.

**A Book about Trees.**

THE MISSOURI BOTANICAL GARDEN. *12mo. Pp. 165. Illustrated, and containing a map.* This beautiful volume is a full collection of documents concerning the history and aims of the botanic gardens which have come so prominently before the public during the last two years. The collection includes a biography of the founder, Henry Shaw, his will, first annual report of the director, an account of the first annual banquet of the trustees, and various reports and addresses. Numerous illustrations of unusual excellence grace the volume. The book is a worthy inaugural of a great and beneficent project.

**Missouri Botanic Gardens.**

THE SECRETS OF CANNING. *A Complete Exposition of the Theory and Art of the Canning Industry. By Ernest F. Schwaab. Pp. 150. Baltimore: John Murphy & Co. (Price, $5. Supplied by Rural Publishing Co.)* The canning industry is enormous, and it is essentially an American enterprise. "The wrappers, scattered all over the world, are monuments to American enterprise, and tell in a noiseless language the simple story of American progress." The first authentic information concerning the canning industry dates back only to 1810, when Appert wrote a book upon the subject. "Now, 1890, the canning industry has grown to immense proportions, numbering about 20,000 factories in operation, scattered over the broad domain of forty-one states and territories. Maryland leads in the number of factories, followed by Maine, Virginia, New York, New Jersey, Delaware, California, Illinois, Alaska, Ohio, Pennsylvania. * * * These factories give employment in various capacities to 1,000,000 persons during the canning season, while those directly and indirectly concerned amount to 4,000,000; they use the raw material, fruits, vegetables, etc., produced on 1,500,000 acres of land, thus furnishing a home market for the products of 30,000 farms." It is a wonder that all this industry has not been fully explained long before this. The business has been purposely guarded, no doubt. Mr. Schwaab's opportunity is therefore great. He has written what may be called a trade book. It is devoted to descriptions of methods, estimates of cost of plants for certain capacities, the canned-goods laws of various states, and a list of packers in the United States. It includes the whole canning industry—fruits, vegetables, meats and fish. To the horticulturist, the chief value of the book lies in chapters 3 and 4, which treat of varieties of fruits and vegetables best suited to canning, hints on cultivation, and prices paid, and processes of putting-up. The book is everywhere terse and clear.

**The Canning Industry.**

THE NEW ONION CULTURE. *A story for young and old, which tells how to grow 2,000 bushels of fine bulbs on one acre. By T. Greiner, La Salle, N. Y. Pp. 62. Illustrated.* The "new onion culture" is the transplanting of onions from a cold-frame or hot-bed into the field. Mr. Greiner lays claim to priority of discovery of this system, or at least of its practical application to field culture. Mr. Green, at the Ohio Experiment Station, has developed the method independently and simultaneously. The seeds are sown in western New York about the first of March. The rows are placed three inches apart in the frames, and one and a-half ounces of seed is used for each sash, giving about 8,000 plants. When the onions are about three-sixteenths inch in diameter, they are transplanted to the field. Mr. Greiner places about 130,000 onion plants to the acre, and a man will transplant from 2,000 to 4,000 per day. Only one and a-half

**New Onion Culture.**

pounds of seed is required to plant an acre by this method, as every seed is allowed to produce a plant, while six or eight pounds are required by the common method. This saving in seed about equals the extra expense of handling the young plants in frames. The cost of transplanting the onions is about $50 per acre, and Mr. Greiner says that this is fully offset by the saving in thinning and weeding of the ordinary crop. The expense of growing the crop, therefore, is about the same in this method as in the common methods. The advantages of the new system are marked. Every bulb matures fully; the crop is two to three weeks earlier; the bulbs are more uniform in size and shape, and twice or thrice the yield is secured. And Mr. Greiner finds that transplanted onions sell for about twenty per cent. more than common ones. The account of this onion reformation is told in a half-story form, and it is as interesting as a novel. It all looks plausible and reasonable; at all events, every man who grows onions should have the little book.

CONTRIBUTIONS TO THE BOTANY OF VIRGINIA, being No. 2 of Vol. II, of the *Memoirs of the Torrey Botanical Club*. These contributions contain "Notes on the Spring Flora of Southwestern Virginia," by Anna Murray Vail, Dr. N. L. Britton and Mrs. E. G. Britton, and "Notes on the Autumn Flora of Southeastern Virginia," by Arthur Hollick. Even the plants of the Old Dominion need to be better understood. All parts of the state are known to be rich botanizing grounds. Here much of the northern and southern floras meet, and the mountain regions still need careful exploration. Several critical notes have resulted from a couple hasty trips. Dr. Britton describes a new clematis (*C. Addisonii*), closely allied to Pursh's *C. ovata*, and he decides that the little *Anemone nemorosa* does not occur in this country, but the plant which has passed for that species he designates *A. quinquefolia;* and *A. trifolia*, a Linnæan species, is again elevated into specific rank. A new variety is added to *Pentstemon lævigatus* and *Senecio aureus*. A two-day's collecting trip about Norfolk added four species to the state.

**Virginia Botany.**

BULLETIN NO. 75, NEW JERSEY EXPERIMENT STATION. *Insecticides and How to Apply Them. By John B. Smith. Pp. 34. Illustrated.* Professor Smith gives the results of considerable experimentation concerning new insecticides, or new uses for old ones, with instructions for the application of insecticides in general. He has found that the commercial potash salts are good insecticides. This is a important addition to our remedies, for potash is at the same time one of our best fertilizers. The kainit or German potash salts is found to destroy wire-worms, cut-worms and all sorts of root lice, when applied liberally as a fertilizer. It is also recommended for the white grub in strawberry patches, and the cabbage maggot. The best method of application for all ground insects "would be a broadcasting in fertilizing quantity before or during a rain, so as to carry the material into the soil at once." Kainit was used in the proportion of an ounce to a pint of water as a spray for rose and wheat lice. The lice were killed speedily, and the plants were not injured. Muriate of potash was also effective, but it often injured the plants. Tobacco decoctions of various strengths were used for plant lice, flea beatles, slugs and some other pests, usually with excellent results. Upon rose chafer "it was absolutely ineffectual, the beetles seeming to consider it an extra relish, provided for their especial benefit." Very fine tobacco dust proved useful for many plant lice, and the "X O Dust," a commercial preparation of which tobacco is the base, is commended. Tobacco is an excellent fertilizer, also. Carbolic acid added to the tobacco dust increases its efficiency. Naphthaline, a waste product from the manufacture of illuminating gas, and known as "moth camphor" and "tar camphor," appears to possess some value as an insecticide, especially for plant lice. It had no other effect on the rose chafer than to drive the insect to the lower side of the leaf. Fish-oil soaps prove sure and safe remedies for plant lice. Professor Smith finds the following recipe good: Hirsch's crystal potash lye, 1 lb.; Fish oil, 3 pts.; soft water, 3 gals. Dissolve the lye in the water, and when brought to a boil add the oil. It should boil about two hours, and when done can be filled up to make up the loss by evaporation. When cold it can be cut into cakes. For use, the soap is placed in sufficient hot water to dissolve it, and then diluted with about eight gallons of water. Kerosene emulsion is particularly recommended for all forms of scales and lice which are protected by shell-like coverings. With pyrethrum, the best results are obtained by pouring hot water through it in a bag, thus getting a decoction. Dilute a saturated decoction about four times with cold water. This makes a good remedy for cabbage worms. It will keep but a few days. Fresh caustic lime appears to have some value as an insecticide, especially upon the cabbage worm. Experiments with it this year failed to discourage the rose chafer. Gas-tar and tar-water proved to be worthless. "Sunderlin's insecticide," which is a finely precipitated carbonate of lime, did not kill plant lice, but it was useful upon shiny slugs. It is a good diluent for the arsenites when they are applied in powder. The Eureka insecticide seems to possess no merit except for red spider, for which it is a specific, as are other sulphur compounds. Sludge-oil soap, a commercial preparation, killed the rose chafer! It also killed the striped cucumber beetle and the elm beetle. "I am inclined to believe that we have here a very valuable insecticide, but one which needs considerable experiment in order to ascertain its range of usefulness." Partially successful experiments upon spraying squash and melon vines with arsenites for the root-borer, are reported. On page 24, in speaking of the difficulty of reaching cabbage lice which are hidden in the folds of the leaf, the author writes as follows: "One of the general complaints is to the effect that it is impossible to reach the lice by the ordinary means of sprinkling; and the objection would be a serious one,

**New Insecticides.**

were it not that there exist means for doing well just exactly what the ordinary sprinkler will not do. To this, attenion is elsewhere called." What is this "means?" Why does not the author state clearly just what the method is? It is important. The quotation conveys the idea that this "means" is described in the bulletin itself, but the only thing which we can find which seems to warrant the statement, is this sentence on page 9, concerning the Vermorel nozzle: "For the cabbage field, nothing can be better, and really satisfactory application can be made only in some such way." The bulletin would have been better if a concise summary of results had been appended.

BULLETIN No. 76, NEW JERSEY EXPERIMENT STATION. *Some Fungous Diseases of the Sweet Potato. By Byron D. Halsted. Pp. 32. Illustrated.* This is the first bulletin to discuss the diseases of the sweet potato, and yet nine definite and serious diseases are described. This is an illustration of the hidden or obscure difficulties with which the farmer has labored, and it is an excellent instance, also, of the manner in which the stations are coming to his aid. The existence of the sweet potato diseases is itself sufficient reason for the establishment of an experiment station in New Jersey.

The soft rot (*Rhizopus nigricans*) is most destructive in the store room, although it may be found in the field at digging time. The tubers quickly become soft and worthless. The mould usually enters the tuber through the upper extremity, where it is severed from the main root. "The mould fungus that causes soft rot is very contagious by contact, as every grower of sweet potatoes who has suffered from this trouble well knows. It is quite safe to assume that the mould makes its entrance to the root from the surrounding medium, and usually after the roots are harvested. It does not, so far as known, begin by infecting the leaves of the growing plant, and then pass down the stem, as is true with the soft rot of the white or Irish potatoes. That it comes from without the plant, and finds any broken, bruised or cut spot in the root a favorable place for entrance, suggests the importance of being careful in the harvesting and subsequent handling, that the least possible harm shall come to the skin of the roots. It is also true that the soft rot is greatly favored by a moist atmosphere, especially shortly after digging, at the time when the roots are undergoing the process known as "sweating." At this critical period it is very important that the potatoes be stored in a well-ventilated, artificially-warmed room, that maintains a constant temperature of not far from seventy degrees, or about that of a living-room. Those growers of "sweets" who keep their crop for the late market, or hold the roots until spring, are of one accord, that to avoid the soft rot, a stove or furnace is an essential part of the furniture of the storage cellar.

**Soft Rot of Sweet Potato.**

The black rot (*Ceratocystis fimbriata*) is one of the most destructive sweet potato diseases, and its habits are obscure. It is a dry rot. "The rot begins at a certain point and gradually spreads in all directions, until the whole root is decayed. When the patch is of the size of a half-dollar or so, it begins to break up at the center, as indicated by the darker irregular places in the middle of each decayed spot. The black rot is usually evident in the roots at digging time, but many of them are so little affected then that they find their way into the market, and any further loss from the increase of the decay falls upon the middlemen and consumers." The disease first appears upon the young plants, usually in the hot-bed. The shoots are affected with a black rust, and spots of the same stand upon the root. Badly rusted plants are always discarded by growers, but the slightly diseased ones escape attention, and the fungus develops upon them during the whole season. These diseased vines are usually feeble. The disease is communicated from the vine to the tubers. "From the investigation of the subject, it is seen that the black rot fungus is abundantly supplied with spores, and they may be found in one or more forms in every patch of diseased substance in the root or sprout. These spores, being formed under ground, as a rule, tend to charge the soil with the germs of infection. How long the spores can remain alive and inactive is not known; but very likely for many years, and the roots of one crop may become inoculated from the fungus of a previous crop upon the same soil. In like manner, the spores being light as dust can be carried from one field to another by the winds. The difficulties of applying a satisfactory remedy are not easily overcome, for the trouble is so largely underground. In the first place, there is no doubt that only healthy sets should be used, which means the careful selection of perfectly sound roots for the hot-bed. In order to get the best plants, it is possible to use some remedy in the hot-bed, as, for example, a compound of copper, the Bordeaux mixture, or similar substance which will tend to keep the sprouts from outside contamination. There is also something in the setting of the plants, for if they get a poor start, as from chilling rains, they are weakened, and thereby made more susceptible to the attacks of the black rot. It is not to be considered that the circumstances of the season or conditions of the soil are in any sense the cause of the black rot, as a specific fungus is necessary for that; but it, like all other living things, is dependent upon its surroundings. It is possible that certain kinds of manure, as heavy cow-dung, for example, are more conducive to the development of the rot than horse manure, and a commercial fertilizer may be better than either. Such questions must be settled by a thorough testing made in the field. It seems impracticable to apply any substances to the soil to kill the germs that have accumulated there. As a rule, the only way is to let the fungus starve out, by withholding the crop upon which it feeds, until the germs become extinct. While a grower with superior sweet potato land may be loath to set aside his best crop, there is no doubt that in some cases, in the long run, it would be the most economical."

**Black Rot of the Sweet Potato.**

Soil rot (*Acrocystis batatas*) is perhaps the most serious

and obscure of the sweet potato diseases. The roots are attacked when young, and the diseased portion ceases to grow, causing the tuber to become constricted or knotty or variously misshapen. The fungus exists in the soil, and attacks plants which are perfectly healthy when set. "From the conditions that surround the growth and preservation of this soil rot fungus, it is likely that it cannot be eradicated by any of the ordinary methods of spraying with copper compounds. It is most emphatically in the soil, as every sweet potato grower well knows. With the black rot, it has been shown that one of the great precautions is to have perfectly healthy sprouts; but this will avail almost nothing in the case of the soil rot. The infection is by means of the brown spores that are lying in and upon the soil. It might be possible to dip the roots in some substance not injurious to the sprout, that would destroy the germs afterwards coming in contact with the plants. In like manner, it is possible that some substance might be placed in the hills before the plants are set out that would kill the fungus. But the field experiments of the past season with sulphur, lime and various other substances have not demonstrated that any of these are satisfactory remedies. The adoption of a long rotation, so that sweet potatoes come as a crop many years apart, is probably the most practical method of getting the field clean of the destructive soil rot."

**Soil Rot.**

The stem rot attacks the young shoots and the tops of the young tubers, causing them to die and decay. The rot descends for an inch or two into the tuber, and the diseased tuber sends up young sprouts in the vain effort to renew the plant. Dr. Halsted has not yet been able to identify the fungus which causes this disease. The only remedy which he can suggest is rotation.

**Stem Rot of Sweet Potatoes.**

The white rot causes portions of the tuber to become white and chalk-like. "The trouble is first noticed by the slight depression in the root at the base of one or more of the hairs. These depressions continue to enlarge and deepen, and in bad cases, several may become confluent, and finally the whole of the potato is of a chalky consistency and consequently worthless." The fungus causing this disease is not positively identified, and no remedy is suggested.

**Sweet Potato White Rot.**

In the dry rot (*Phoma batatæ*) "the whole upper end of the root becomes dry, much wrinkled, and exhibits upon the surface a multitude of pimples. The whole substance of the potato is diseased, and, with the exception of certain pits for the production of spores, there is very little change of color, while an almost powdery condition of the substance has replaced the previous juicy tissue of the root, as seen in health." "As this form of rot is as yet only occasionally met with, there is no cause for alarm from it; but the fungus nature of the dry or pimply rot being established, it is evident that as a safe preventive, all such decayed potatoes should be destroyed and not allowed to remain upon the soil, where the countless spores may mature and spread the trouble. All possible precautions should be taken in clearing away the rubbish after each crop."

**Dry Rot of Sweet Potato.**

The sweet potato scurf (*Monilochætes infuscens*) covers the tubers with a rusty coat. "In some soils, nearly every potato will be wholly or in part covered with a scurf, while elsewhere the roots are free from it. It is quite objectionable, for while not causing the decay of the roots, there is a shrinking of the potatoes, and for this reason and the less attractive appearance, the market value of scurfy potatoes is a-half dollar or so per barrel below those that are bright and clean." "The scurf is found upon the roots above the potatoes, particularly upon that portion from which all the potatoes arise. No attempts have been made to find a remedy for this trouble. It is likely that the fungus may pass from a scurfy root used for propagation, to the sprouts developed from it, and therefore it is a precaution to use, if possible, roots for the hot-bed that are bright and free from the scurf. It is also possible that some quality of the soil may favor the growth of this dark mould, and when this is known, something may be done to reduce the trouble. Some kinds of manure may favor its development, and it is likely that something could be applied to the freshly-dug potatoes that would check the spread of the scurf."

**Sweet Potato Scurf.**

The leaf blight (*Phyllosticta bataticola*) produces white dead patches upon the leaves, and often seriously injures the plant. It can probably be held in check by spraying with some of the fungicides. The leaf mould (*Cystopus Ipomœæ-panduranæ*) is a serious sweet potato pest. "The affected leaves at first lose their healthful green color, and the paleness is soon followed by brown patches that after a time become quite dark. Upon the under side there may be seen small patches of a whitish color. These are places where the leaf-skin has been broken, and multitudes of white fungus spores have formed." The fungus thrives upon a wild morning glory or man-of-the-earth (*Ipomœa pandurata*) which grows in Jersey and southward, and this weed should be destroyed.

**Leaf Diseases of Sweet Potato.**

Bulletin No. 24, New York State Experiment Station. *Experiments with Strawberries. Pp., 20. Illustrated.* This bulletin records the work of C. E. Hunn, but, although it is written in the first person singular, no name is signed to it. Work of such an important character as the crossing of plants should have the author's name attached to it.

The bulletin urges the farmers of New York to grow more strawberries, and it gives a good series of notes upon many varieties. It would have been better, however, if more definite and succinct conclusions had been drawn. The best of the newer strawberries for the farmer's garden are Bomba and Haverland for early, Burt and Daisy for medium, Crawford and Middlefield for late. "There are several of the

**Strawberries at Geneva, N. Y.**

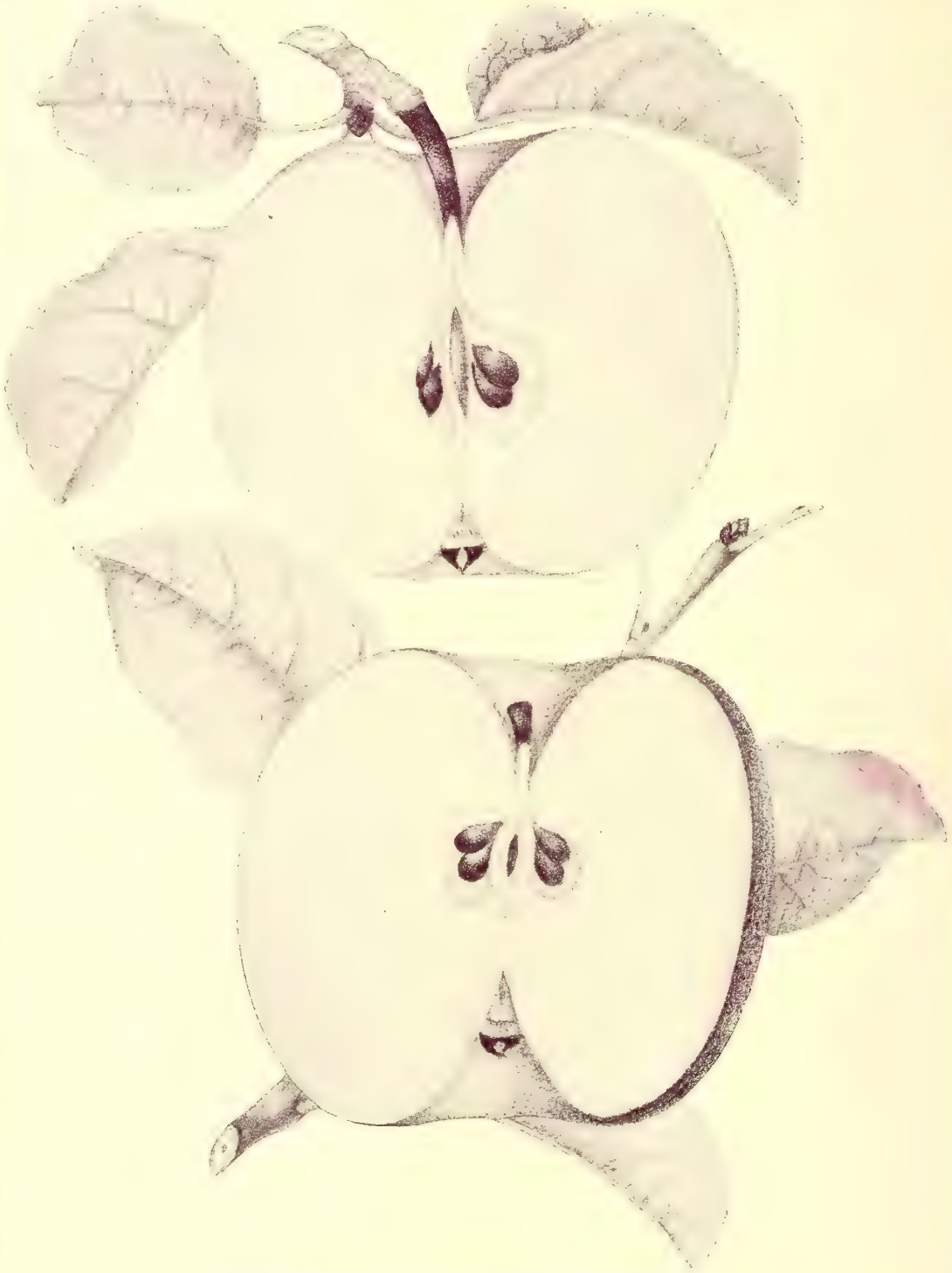
older varieties that will give good satisfaction, as Bidwell, Downing, Crescent, Cumberland, and on heavy soil none are better than Sharpless." Useful tables are given of the lengths of picking seasons of different varieties, and of the comparative injury by leaf blight. Reports upon varieties are also given by L. J. Farmer, of Oswego county, N. Y., and by Green's Nursery Company, of Rochester.

**Strawberry Crossing.**

Mr. Hunn has made many experiments in crossing strawberries, and eight plates of cross-pollinated plants, grown in a greenhouse, are given in the bulletin. These plates are given for the purpose of throwing some light upon the vexed question as to whether there is any immediate effect of pollination in the strawberry. Unfortunately, the particular methods and conditions of performing the experiments are not stated, and we are not sure but that some of the variation which appears to be due to the influence of pollen may not arise from the forcing of the plants under glass, or from injury to the fruit in the manipulation or imperfect pollination of it. It is hardly possible to trace any definite influence of pollination in the eight cases discussed, however. Four Crescent plants were crossed, but the resulting fruits were either true Crescents or else they varied in a somewhat indefinite way. The plant pollinated by Old Ironclad bare fruits "more of Ironclad type than Crescent, but the largest fruit was flattened much more than is typical of either parent." The plant pollinated by Lennig's White gave fruits of Sharpless type and color. It would be interesting to know what these plants would have produced if they had not been treated, that is, whether they were true Crescent types. Three plants of Johnston's Late, which is less variable than Crescent, gave no variations when crossed with Lennig's White, Sharpless and Dawley. Louise, crossed by Lennig's White, gave Sharpless-like fruit. We shall watch with interest the records of the offspring of these crosses.

Many seedling strawberries have been grown at the Station, and it is interesting to know that from a thousand plants only five have been saved as worth further trial. "Of 700 seedlings fruiting this year for the first time, less than 50 have been noted as good enough to give one more year's trial." L. H. B.

*"I long for the preservation of those pure, simple, holy tastes, which have led our countrymen, in all ages, to delight in the pleasant fields, in the pleasant country houses, in the profound peace of noble woods, so favorable to high and solemn musings, and in all those healthful and animating sports and pursuits that belong to such a life."* —HOWITT.



TWO RELIABLE APPLES—Yellow Transparent and York Imperial.

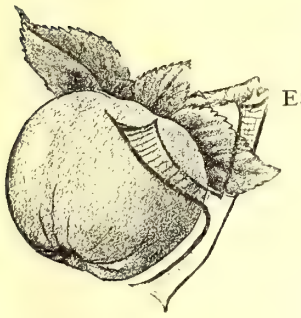
(See Page 203.)

# The American Garden.

*Vol. XII.* *APRIL, 1891.* *No. 4.*

## APPLE ORCHARDS OF MY YOUTH.

A RAMBLE IN MEMORY THROUGH CONNECTICUT FIELDS.



ES, I well remember the old apple orchards of my boyhood. There were no canker worms in those days, no borers, no apple maggot; but we always had the common apple worm here in Connecticut, and the tent caterpillar. But my mother, a native of central New York, never saw a wormy apple till she came to Connecticut in 1819.

In those days—seventy years ago—most of the orchards were native fruit and very vigorous, and there were no borers to sap their vitality. There were a few old grafted trees, and an occasional young orchard was being planted, of mostly grafted fruit. On my farm, orchards were planted in the last century, mostly of native fruit, but containing a few body-grafted trees. I remember four American Golden Russets, two Westfield Seek-no-Furthers and two Pearmains. These, in my boyhood days, were large trees, bearing abundantly of choice fruit. They stood in turf, mowed once or twice a year, and not plowed during the present century.

One only of these old friends, a Seek-no-Further, planted, according to tradition, by my great-grandmother about 1760, while her husband was plowing, now survives. The ice and winds, that laid low its comrades, have made sad havoc with its branches, and the blue bird and the woodpecker have found a home in its hollows. It still bears good fruit, about two barrels this last year. Some of its fruit won the first prize at New Orleans in 1885, as the product of an apple tree one hundred years old. What a cluster of memories it holds! No other living thing on the farm has so many. Seven generations have partaken of its fruit, have climbed in its branches and rested in its shade. The perfume of its opening buds has refreshed us in spring, and its fruitage has gladdened us in autumn. The song of the sparrow and robin in its boughs has wakened us in the morning and cheered us in our daily toil. The hang-bird has swung its cradle from the outmost branch, and the squirrel, with one eye open to mischief and one for self-protection, has chattered and gambolled among its gnarled branches, and sought shelter in its heart; and while we have looked upon it, what has it seen of us? It has seen generation after generation come and go, gathered home, even as the mower gathers the harvest. A veritable patriarch, it still baffles wind and snow. Now and then a broken branch has been lopped off, but it has had no other care. Year by year the fruit is beaten or shaken off rudely, and yet it clings to the old homestead with steadfast love!

"Cotemporaneous trees," to an old man, become doubly interesting, but this one covers not one but many lifetimes. While ancestral trees deserve our regard and care, those of our own planting, like our own children, have special claims upon us. The man who plants a tree or an orchard and leaves it entirely without care or protection is like a parent setting adrift his children upon the world, without compass or anchor; and as these moral shipwrecks only fail to shock us because the wave of time covers them from sight, so good husbandry removes the trees it cannot care for. But have you never seen an old neglected orchard, where time or fire has removed the adjacent home, each tree infested with suckers, the branches moss-covered and broken, struggling with the golden-rod and blackberry,

consumed by insects, and yet smiling with a wealth of blossoms in spring, and to the last of life glowing with the golden tints of fruitage? Of all deserted fields or farms a deserted orchard seems the saddest. It tells much of hope and joy now gone forever!

Some of these old trees persist as mere wrecks, rotten and broken, never having attained great size; but others have reached great stature and are still vigorous. The largest tree which I know is one which stands in Cheshire, Conn., and which the accompanying engravings show. It is a small yellow sweet apple, keeping well into the winter.

"The Crooked Orchards, Rugged and Picturesque."

The following description was written by Norman S. Platt, of Cheshire, in 1880. Since then the effects of age have become more apparent. "An apple-tree in the northwestern part of Cheshire, standing in Mr. Delos Hotchkiss' dooryard, is thought to be the largest in the United States. Its age can be traced by a family tradition to one hundred and fifty years at least, and it may be twenty or twenty-five years older. It is, at the present time, of symmetrical shape; the trunk is nearly sound, without a scar or blemish on it; there are eight large branches, five of which, Mr. Hotchkiss tells me, have been in the habit of bearing one year, and the remaining three the next. He has gathered in one year from the five branches eighty-five bushels of fruit, and his predecessor had harvested a crop of one hundred and ten bushels from the same five branches. By careful measurement I find the circumference of the trunk, one foot above the ground, above all enlargement of the roots, to be thirteen feet eight inches. The girth of the largest single limb is six feet eight inches. The height of the tree has been carefully measured and found to be sixty feet, and the spread of the branches, as the apples fall, is one hundred feet or six rods."

When shall we plant apple-trees? Better in our early years, but continue every year of our lives! My grandfather, at the age of fifty years, planted apple seeds in a nursery to raise trees for an orchard. He grafted them and transplanted them, and for many years enjoyed their fruit, and had the satisfaction of leaving some living thing to remind his children and grandchildren of his kindly love and forethought. These stocks were grafted about two feet from the ground, when one inch in diameter, a ball of clay bound with tow being used to cover the joint. This was the only method practiced in these parts for grafting till about 1834. Vermont grafters then came, using grafting wax and furnishing scions. They grafted many young and middle-aged trees that have proved very satisfactory.

In those days we had Golden Russets, Seek-no-Furthers, Pearmains, Rhode Island Greenings, Esopus Spitzenbergs—glorious ones!—Gilliflowers, Pippins or Pound apples, Swaar and the Sweet Bough—of which I have never known enough grown for the boys—with a few other kinds. But the native fruit was the great reliance, and every farm had its favorite trees, some of which were multiplied by grafting, but more often from suckers grown from roots disturbed by the plow. This practice accounts for several trees of the same variety in the

same orchard or neighborhood with no marks of grafting. There were summer, autumn and winter varieties, sweet and sour, some quite as good as our choicest grafted kinds of the present day.

Did these old orchards bear well? Yes, abundantly previous to 1835. At that time I had never heard of apple failure. Then there came a succession of cold springs, blasting the blossoms, and ice storms breaking the trees so that with the incoming of the temperance reformation, doing away with cider, many orchards were cut down and few new ones planted for twenty years. But my boyhood memory is with orchards bending to the ground with fruit, while the walnuts and chestnuts and butternuts could be gathered by the bushel—the latter sometimes by the cart-load where there was a large family of boys or girls. Rural hospitality was royal hospitality around the big blazing hearth, with a bushel of butternuts or a half bushel of walnuts, with the accompaniment of cider and apples. Carp at them as we may, it is still true that around these homely firesides, with these simple luxuries, grew up men and women of noble character.

"The Largest Tree which I Know."

Our grafted apples now are the selections from the best natural varieties of the old days. Litchfield county has given at least two and perhaps three that stand very high in my estimation. The Excel is an early winter apple of the Spitzenberg type, which originated in Sharon. The tree is more vigorous than the Spitzenberg, a better bearer, fruit larger and more tender; flavor not quite as high, neither the color. The Hurlburt originated on the farm of Gen. Hurlburt, at Winchester. The tree is very vigorous and a great bearer; fruit medium size, yellow, mostly covered with bright red stripes, mild sub-acid—good for eating or cooking from November to January.

The Burnham Sweet is said to have originated in Cornwall on the farm of Judge Oliver Burnham. The tree is a vigorous grower and great bearer; fruit large, smooth, green, yellow flesh, and of excellent quality; October to March. In many re-

spects it is the best sweet apple that I know. But now I am in a quandary. Our local grafters have disseminated it all about, and now we find there are two varieties among us, varying little except in the period of ripening, one maturing in October, and the other a good winter keeper. Both varieties are called Burnham Sweet, but the farmer who has one tree is satisfied, and does not trouble himself about the other kind. So that I am led to doubt whether the old Burnham tree was a seedling, and also to doubt the opinion of some that soil and stock make all the difference we note. At present we believe that the late keeper is the true kind, like the old tree.

THE TRUNK OF A GIANT.

Our rural districts in those times had no market for their apples ; a few bushels of native fruit shaken from the trees, the purchaser helping to pick them up and paying in work a York or Yankee shilling per bushel, or if grafted a quarter, was all the chance for sale. Apples were picked up all the fall and made into cider, both to secure that necessity and to keep them away from the cows. The winter apples had small attention. A half day in October, with men and boys, filled the carts from which they were delivered to the bins in the cellars as roughly as potatoes. They were never picked from the trees, but always shaken or poled off. Indeed, this practice still prevails to a considerable extent. Last fall I hired a lad of eighteen years to pick apples. He was brought up on a farm, but it was not easy to teach him. He said that he never knew anybody to pick apples before, they "always shook 'em off." This same lad was set to pick apples from a tree grafted, with several kinds, and was directed to keep them separate, which he said he could easily do. But he took his own way to determine the difference — he tasted them ! Of course in the vicinity of large towns and cities more attention was paid to the culture of improved varieties, but they got no more pleasure from their orchards than did the farmer and the farmer's boys, and the village boys too, for that matter ! Apples were as free to every one as were the wild fruits of the field and wood.

Contrast with this our modern facilities for market ! We not only meet in competition in our local markets apples grown a thousand miles away, but

our New England fruit is known in the markets of the world. These markets demand and will pay well for good sound clean fruit well packed. A real surplus of such fruit is very rare, though our local markets may be glutted for a time.

The practice of burying apples was common in old times. A dry, sheltered place was selected, where the snow was apt to accumulate. The fruit was piled in pyramids of ten bushels, covered with straw and earth just before freezing weather. The covering did not exclude all frost, but protected from alternate freezing and thawing. Apples not only keep thus till spring, but they come out very tender and fresh. The skins were so tender that they would bruise readily, and keep poorly when taken out, but they were very fine for immediate use.

The most efficient persons in those early days in cultivating and disseminating fine fruit were the clergy. Not only did they care for the spiritual vineyard, but the material orchards received their attention. Their exchange travels about the state and frequent public meetings gave facilities which they readily embraced, so that many old parsonages were marked, not only by a generous hospitality, but by the orchards.

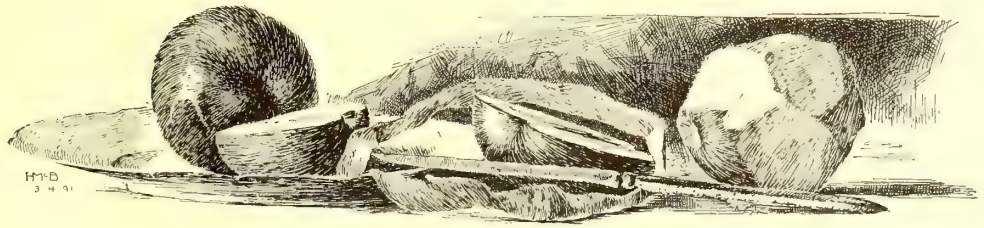
The first commercial orchard I ever saw was in Dutchess county, New York, planted about 1830, by a Mr. Comstock. There were some twenty or thirty acres, all of one variety, the English or Poughkeepsie Russet, for the New York market. The trees have very upright branches, bear abundantly a small, smooth, long-keeping apple of good flavor, and the orchard formed a feature of marked interest on the Sharon and Poughkeepsie turnpike.

What condition is most favorable to the health and longevity of the apple tree? We find our largest and healthiest old trees standing in some sheltered spot of warm fat land, never touched by the plow, nor too much trodden by animals. All over this State this is the universal rule. Much plowing of an orchard tends to shorten its life, and results in premature decay. We do not mean that an orchard should have no care nor culture because the apparently uncared-for trees have surpassed in longevity and fruitfulness any others, but only that these trees prove the conditions most favorable for simple long life. Their roots have spread wide and deep, because they were never wounded, and the natural depth of soil was such as to allow them to take a deep hold.

When I began farming, nearly fifty years ago, I planted a small nursery in a corner of the garden, with seeds chosen from vigorous native fruit. I grafted the trees myself and transplanted them to the orchard. Most of them have done well, but one tree, a Pippin, has borne thirty bushels of good apples in a single year, and is now in most vigorous health. I should like to take my readers in a ramble over my own orchards in the fruiting season to study the different varieties under their varied conditions of age, exposure, fertility and kindliness of soil, for I never go about them without pleasure and profit.

In renewing in memory my boyish rambles in orchard and wood, my companions have been again with me. Alas! so many of them are never again to be seen in the flesh! The crooked orchards, rugged and picturesque, have come back as a sweet memory; and I remember, too, to look with lenience upon the boy who does not carry off more apples than he can eat!

*Connecticut.* T. S. Gold.



Ex-President Hayes' Home, from the West.

# THE HOMES OF HAYES AND GARFIELD.

AT this stage of American development it might be difficult to agree as to what constitutes a typical American home. The architect, the landscape gardener and the florist have worked in harmony to erect homes that fairly rival the famous "show" places of England, and that speak well for the broad culture and liberality of the owners. Yet these cannot be called typical, for the wealth which creates them must always be exceptional, even in a country where wealth accumulates as it now does here.

In our cities the exigencies of circumstances, the constraints of space, and the compulsory abandonment of individuality make it incumbent upon us to look farther afield for a home that may stand as a synonym of the American character. The main attributes of this character are sturdy manliness, independence, completeness, and the absence of superficial veneering.

It seems especially fortunate that a home embracing these types should be occupied by a man who has been the chief executive of our nation. The home of a president becomes an object of interest to the whole people irrespective of party, and often almost a mecca to the traveler and tourist. There is a laudable desire, which is something more than mere curiosity, to know how the man, who is, or has been the president is housed, and what are his surroundings are.

Spiegel Grove I am inclined to characterize as typical; if not wholly so it is at least a good example of what an American home should be. Let us pause a moment at the name, however, before we enter its hospitable portals. The builder of the place, the uncle of ex-President Hayes, designed that the name should suggest, in some degree, the "good cheer" that he hoped would abide there with him and with those who should come after. It requires a somewhat free rendering of the German word to wrest this meaning from it, but that the wish of the founder has borne fruit is amply testified; the gates are never closed; friends and stran-

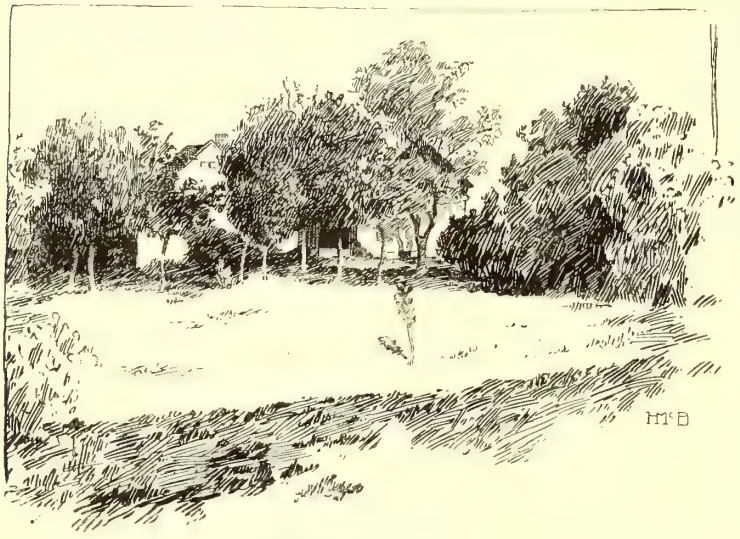
gers alike are welcome to the grounds, and the laughter of merry children is heard as they romp about in the long summer days.

The grove, which is the one feature of the home of ex-President Hayes, covers a tract of about thirty acres, and fronts upon one of the main avenues of the city of Fremont, Ohio, and lies about three-fourths of a mile distant from the center of the town. The grove is a piece of native woodland, dense with a heavy growth of oaks, hickories, hemlocks and other forest trees. The house, a plain brick dwelling, roomy and comfortable-looking, is almost in the center of the grove, so far back from the entrance that it can hardly be seen when the trees are in full leaf. A circling driveway leads up to it and ends at the steps of a broad porch which crosses the entire front of the building.

"Or a Mass of Roses."

The grove has not been marred by any paltry devices of civilization. There are no rustic seats to torture the bones of comfort-seeking loungers; no summer-houses to belittle the great temple of the trees; no signs to "keep off the grass." The surroundings are exquisitely neat. There is a good substantial turf beneath the trees and in the open spaces where the trees have grudgingly made way for smooth lawns; drives and walks wind through the grove, with here and there in open spaces a modest flower bed or a mass of roses from which one picks almost without stint. Besides the grove, the household contains more than an equal area of cultivated land. On this a thrifty orchard, an extensive garden, a few vines, grain field and meadow combine to supply the material needs of the home. The whole aspect of the place is wholesome; a place in which a man may find rest for body and mind, and in which good work may be done. That it is not the home of an idler is indicated by the business-like look of the library with its desk piled high with papers and correspondence, the many books open at hand and the well-filled shelves, which are clearly not filled for show. The eight thousand volumes overflow the library proper and encroach upon parlor and drawing-room, and even are partly housed in the roomy and well-lighted attic which also serves in turn as the ex-president's work room. It is clearly a house that is lived in, not merely made the temporary abiding place of the owner, and in substantial simplicity is well worth studying and copying as an example of how an American sovereign should be housed.

In the library various agricultural and horticultural works and the current records of the experiment stations testify the intelligent interest with which General Hayes keeps "in touch" with such subjects, while the thoroughly cultivated farm, in which he takes great personal interest, entitles him clearly to rank as a representative farmer. But it would be considered an infringement of the rights and dignities of "Jimmie," for seventeen years the head gardener and out-of-door factotum, if credit were given to any but himself in such matters as the care of the garden, farm and grounds. The ex-president's relations with his employés and those about him in his home are simple and kindly, and each, from stable-boy up, feels a personal interest in properly doing the honors of the place to the casual visitor.



THE LITTLE OFFICE.

It was mid-October, and the day was such an one as we associate with the season, when I visited the homestead of the late President Garfield. There are few homes in this country which have sprung so suddenly into prominence, and so quickly acquired a fame that is beyond mere notoriety, as this unpretentious dwelling at Mentor. To reach it I drove out from the little city of Painesville, in northern Ohio, along a road flanked on either side by comfortable farm-houses surrounded by well-tilled fields, while here and there a vineyard gleamed purple with its harvest. The maples wore their autumn colors, and splotches of yellow and red and brown loomed up beside and before us. The village of Mentor is not much more than a single long street, and as we drove through there came to mind Tennyson's line—

"Through the long street of a little town."

Well out upon the western end of this street, and somewhat isolated from the others, stands the house to which so many pilgrimages were made during the memorable political campaign of 1880. The house has been changed somewhat since that time, but yet has no particular feature to distinguish it from others about, except a stone addition upon the north-east, which has been built since the president's death for the purpose of housing safely his books and manuscripts. The front of the dwelling shows what it was and still is—an unpretentious brown frame farm house, adapted to the changed conditions that have been wrought by the encompassing of the farm into the village. The marked feature that impresses one here, and for a long distance along this lake shore, is that the country is almost a continuous village. The farms which lay upon either side of the road upon which the Garfield place fronts seem to partake more of the character of comfortable suburban houses than of the farm, *per se*. The road, which should be called a

THE HISTORIC LANE.

street, and have the dignity of a name, is the old state road, and runs from Euclid avenue, Cleveland, direct to Delaware avenue, Buffalo, thus connecting two of the finest urban thoroughfares of which our country can boast. It does not require a very great stretch of the imagination to look ahead to the time when its whole length of some two hundred miles shall be a continuous line of handsome country homes—for such is the destiny of these roads along which our great cities are growing up. The land is already too valuable for the ordinary uses of agriculture, and fruit culture is being largely resorted to in order to get commensurate returns from the value of the investment. Grapes especially are largely produced, and apple and peach orchards occupy a considerable acreage. The Garfield place comprises one hundred and sixty acres. Of this some ten acres are given up to lawn, which makes a pleasant setting for the house. There are a few vines, a young orchard, and perhaps a hundred peach trees; but as yet most of the land is being used for the purposes of a stock farm. James R. Garfield, the younger son of the president, is engaged in a systematic study of the much-discussed question, "Does farming pay?" and in his effort to solve the problem is raising mainly such crops as can be most profitably fed, keeping a herd of some forty fine Hereford cattle, and selling from the farm only the surplus products. Besides the Herefords, a dairy of a half dozen Jerseys is kept to minister to the needs of the home table. In all the farm operations a strict system of accounts is kept, and the conclusion thus far arrived at is that cattle have an up-hill task before them to pay their way upon lands of such value. The low portions of the farm have been underdrained, and intelligent direction is given to the effort to bring it to a high state of fertility.

"A Slow and Rushy Brook Affords a Restful Stretch of Rural Landscape."

The place was purchased by General Garfield only four years before his death, and it is to be regretted that it was not his home for a sufficient time to enable him to impress his individuality upon it. Little effort has been made to ornament the grounds, beyond keeping the ample lawn in good condition and planting and preserving the shade and ornamental trees about the house. A group of fine locusts stands upon the west; a tall native pine rises at the front, while here and there we notice a gnarled old English cherry, a graceful paper birch, some Norway maples, a London smoke-tree, a

weeping mountain ash, etc. Historically famous is the little office, shown at the right in one of our views, which was the general's work-shop and library; and also the lane which leads from the rear of the grounds direct to the railway, and through which the visiting delegations marched as they came to greet the party leader. The lane is lined with small forest growth, but our picture can do scant justice to its beauty as we saw it, clothed with all the coloring of mid-autumn. Back on the farm a slow and rushy brook affords a restful stretch of rural landscape, pleasing in all its aspects, and a notable feature of the place.

Altogether the place has a wholesome look and a mosphere about it which would justify its choice as the home of a man who might at times become "weary with the cares of state." It offers the quiet and retirement and restful association with nature which the city home cannot give, and amid its village environment may stand as a compromise between the city and the too remote retirement of the country.

*Ohio.* JAMES K. REEVE.

# YELLOW TRANSPARENT AND YORK IMPERIAL APPLES.

*See Frontispiece.*

ON THE upper part of the frontispiece is a drawing of the Yellow Transparent apple, made true to nature in size, shape and general characteristics of its internal structure. This variety was first introduced into the United States from Russia by the United States Department of Agriculture in 1860. Scions of a great many varieties were imported at that time from that country and distributed throughout the United States, and so far as can be learned, Dr. T. H. Hoskins, of Newport, Vermont, was the only original recipient of scions of this variety, or those which others may have had have not been brought to notice. At least all the stock now in existence, so Dr. Hoskins informs me, can be traced back to his place. There is no doubt that it is a decided acquisition to the list of early summer apples, ripening, as it does, about with Early Harvest and Summer Rose, and being larger than either of those varieties. The color is a very pale yellow, and the surface smooth and usually quite free from scab. In flavor, the fruit is a pleasant sub-acid, and although not very rich, it is, when fully ripe, of fair quality to eat from hand, and excellent to cook. The tree is hardy and succeeds in cold countries much better than ordinary varieties. It bears most abundantly, as I have had opportunity to observe in several parts of this country.

The other variety illustrated on the same plate is York Imperial, which is by no means a new apple, as it has been known for more than twenty-five years, but like many other fruits of very superior quality, it is only within the last few years that it has been planted by market orchardists in any great quantity. Having originated at York, Pa., it has been known and grown for market by the people of that region, and its culture has extended into Virginia and other adjacent states, in some of which it is known under the synonym, "Johnson's Fine Winter." It is one of the most profitable varieties for winter market in the eastern states. It has also been planted in a small way in the cental and western states, and this year I received specimens for identification from California. It is fast growing in popularity in Illinois, Missouri and Kansas, where it takes rank in profitableness with Ben Davis, Winesap, and other late-keeping apples. The illustration shows an average specimen as to size and form. Nearly every specimen is inclined or lop-sided, and some very much so. An occasional specimen is quite flattened in shape, and so oblique in form as to be very difficult, or even impossible, to pare on a machine. This, indeed, is its chief fault. The color is a solid, purplish red, with scarcely any signs of being striped, varying in degree from a very pale, blush-like color to that so deep as entirely to obscure the yellow undercolor. The eye is set in a very deep basin. The flesh is very firm and of a yellowish tint, and the flavor is a rich pleasant acid. It keeps well into spring, and as a market winter apple, all things considered, is one of the most productive and profitable varieties for planting in the great apple-growing regions of the country.

*Washington.* H. E. VANDEMAN.

# THE ECONOMIC PLANTS OF JAPAN—IV.

## BERRY PLANTS.

AS A PEOPLE, the Japanese care little for small fruits. They have not yet learned to value the properties in berries which we esteem so highly. Among the country people it is rare to find berry plants of any kind under culture, and when they gather and eat the wild berries, it is more with a view to lengthen out a meal than to please the palate by their delicacy.

In the larger towns, and especially in the open ports, it is somewhat different. There the foreigners have initiated their use and culture by creating a demand for berries, and this demand has gradually been augmented by those of the natives who live partly in foreign style, and thus a market has been established, which is usually well supplied by gardeners who make the growing of foreign vegetables more or less a specialty. They bring their wares to certain *yaoya* (green-grocers) who deal in foreign vegetables and fruits and sometimes also in poultry, and to these the cooks make their daily pilgrimages to make selection for their masters' tables. Strawberries are most in demand and best supplied. Raspberries and blackberries cannot always be had. The cultivated varieties of all three of these have been introduced from America, and they are grown in the same manner as with us. It is only our older varieties of small fruits that we find there, which were introduced by the Colonization Department more than a dozen years ago—those kinds which are now gradually passing from the stage here. And these are likely to be the only ones that will be grown there for a long time to come—until that class of fruit shall have risen so high in popular estimation that the demand for it will stimulate enterprising growers to originate or import new varieties.

The *yaoya* sells the berries by weight and not by measure. And, by the way, would not American consumers be in favor of adopting the same plan here? If they could buy their berries by the pound, instead of by the so-called "quart" basket, with its bottom elevated suspiciously near to the top, they would at least know how much they got for their money. Such a change could work no hardship to the producer; for what is but simple justice to the purchaser cannot possibly be unjust to the seller. The berries could be picked and shipped in light, shallow trays, which could be returned when empty. The plea for the use of the American berry-basket is its convenience in handling the fruit. But, if on that account it has become a fixed institution, would it not be well for us to copy from the Japanese so far as to sell it by the weight of its contents—so much per ounce or per pound—rather than by the hypothetical "quart." But I digress.

It is not only small fruits that they sell by weight, but also onions, potatoes, cabbage, and, in fact, nearly all products of the garden. The scales used are a wooden steelyard, if such an anomalous term is permissible. It is a round wooden bar, on which the weights are marked by brass tacks at regular distances from the fulcrum. This bar is balanced by the merchandise suspended at one end and a weight pushed out on the long end, till equipoise is established. Their system of weights is on the decimal plan. The unit is the *kammé*, equal to eight and one-third pounds avoirdupois, which is sub-divided into 1,000 *mommé*, and small quantities are usually sold at so much per 100 *mommé*. Strawberries are abundant enough to be cheap. They sold in Tokio at from five to eight cents per pound. Raspberries and blackberries were comparatively scarce articles, and sold correspondingly higher. There is nothing in the culture of these which calls for special attention here, and I will therefore confine myself to brief notices of their leading wild species.

FRAGARIA VESCA, L.; (Jap., *Ichigo*), is wild in many places in the country, but I have never heard of its being cultivated or in any way improved. Where it is abundant, the fruit is gathered by the women and children.

FRAGARIA INDICA, Andr.; (Jap., *Hebi-ichigo*, *Kuchinawa-ichigo*), and FRAGARIA CHILENSIS, Erhr.; (Jap., *Yoshuhebi-ichigo*, *Oranda-ichigo*), are also said to be found wild in places, though I have not seen them. *Oranda-ichigo* means Holland strawberry, and would indicate that this species had been brought there by the Dutch, when they traded with Japan three centuries ago.

### RASPBERRIES AND BLACKBERRIES.

The genus rubus is represented by a long list of species, many of which produce edible berries of value, and a very few of which are of unusual merit. First among the latter stands

RUBUS PHŒNICOLASIUS, Maxim. (*Rubus occidentalis*, Thunb). Jap., *Saru-ichigo*, *Urajiro-ichigo*, *Yebicara-ichigo* (Fig. 1). This somewhat remarkable raspberry is wild in the mountains of central and northern Japan, though I have nowhere found it very abundant. It is a bush of from three to seven feet high. The canes are more or less inclined to spread and ramble, and they are thickly covered with stout hairs and weak prickles, set at right angles to the stem. Foliage light green, white below, resembling that of the common raspberry; the terminal leaflet is larger than the others, broadly oval, dentate or doubly dentate, or even lobed. Flowers very small, white; sepals large, hairy, viscous, and after blooming they close again over the fruit, and grow in size with the

berry, so as to keep it effectually covered until it is full grown, when they open and expose the fruit to view. When the sepals first open the berry is white, but in two or three days it turns bright red, when it becomes sweet and delicious, with a flavor something between the common red raspberry and the blackcap. It blooms late in the mountains, not until the last of June, and the fruit ripens in the last of August. On the plain I found that it matured fruit about a month earlier.

In the summer of 1887 I spent some weeks of my vacation in the mountains at Usui Toge, Nagane Prefecture, where I found many plants of this raspberry growing luxuriantly in the yellow, almost sterile scoria, thrown out of Asama-yama long years ago. Arriving there in the middle of July, the bushes had bloomed, but the young fruit was clasped so closely by the sepals that it appeared like great swelling buds that gave promise of giant flowers. I waited patiently for them to open, and finally, upon examination, discovered to my surprise that the buds concealed a berry instead of a blossom. When the fruit ripened, I gathered some seed and sent it to J. T. Lovett, of Little Silver, New Jersey, with a request to test the value of this species under the conditions of soil and climate of this country. I felt sure that if it would grow here as it did in its mountain home in Japan, it would be a valuable addition to our list of small fruits. The seed germinated freely, aud the young plants succeeded beyond expectations. In 1889, the stock raised from this seed was sold to Mr. Childs, of Floral Park, Long Island, who has disseminated it under the name of Japan Wineberry. It is perfectly hardy here, grows well, and is a heavy yielder of fruit.

A twig showing leaf, flower and bud is represented, natural size, in Fig. 1. As a berry plant in has the great advantage over other varieties that the fruit is never attacked by insects. The hairy, viscous calyx, which covers the berry till it is full grown, effectually repels all insects. I examined them carefully, but never found a wormy berry on this species. This was not owing to lack of insects, for the berries of several other species growing in the same locality were nearly all wormy. The berry is of good size, firm and handsome. But it is not only valuable as a berry plant. Its luxuriant growth, bright foliage and reddish appearance of the stems, owing to the color of the hair, make it a unique and striking ornamental plant, which is worthy of a place in every door-yard in the land. It will grow in any soil, but it attained its greatest size in the loose scoria peculiar to the Usui Toge mountains. The only merit that I could discover in this soil was that it was well drained. In a dry country it would have been sterile, but the very frequent and heavy showers kept it moist and able to support plant life. This raspberry propagates itself in the same manner as the blackcaps, by bending the tips of the canes to the ground, where they take root. It is not cultivated by the Japanese, but they gather the berries wherever found.

RUBUS TRIFIDUS, Thunb. (*Rubus incisus*, Miq.; *Rubus ribifolius*, S. and Z.; *Rubus hydrastifolius*, Gray). Jap., *Kaji-ichigo*. This species is abundant everywhere in the mountains. The canes are very stout, seven to ten feet high, upright, cylindrical, smooth, no prickles; leaves large, palmately veined, mostly seven-cleft, serrate, dark green above and but slightly lighter below. Berry of good size, scarlet, drupes pointed; it ripens gradually through July. The Japanese name (Fire-raspberry) refers probably to the red color assumed by the leaves in the fall. The people gather and eat the berries, but it is not cultivated. The plants are not very productive.

RUBUS PALMATUS, Thunb. (*Rubus coptophyllus*, Gray). Jap., *Momiji-ichigo*, *Awa-ichigo*. Canes four to five feet, smooth, prickles moderate in size and number; leaf palmately veined, small, mostly five-cleft; lobes acute, doubly serrate, dark green above and rather lighter below. Fruit a small berry of no great value, but it is gathered for food. The plant is a shy bearer.

RUBUS TUKKURA, Sieb. (*Rubus Coreanus*, Miq.). Jap., *Tukkura-ichigo*. Canes upright, vigorous, six to eight feet tall, brown with a bluish bloom, smooth; prickles few, but strong and pointing somewhat upward. The leaf has five to seven leaflets, the terminal one largest, doubly serrate or lobed. Fruit small, red, consisting of but few drupes; not of much value, but utilized as an article of food.

RUBUS PARVIFOLIUS, L. (*Rubus microphyllus*, Don.; *Rubus triphyllus*, Thunb.). Jap., *Nawashiro-ichigo*. This species is found all over the country. Stems small, weak, some of them trailing; leaf small, three leaflets, doubly serrate; prickles few, weak, directed downward; berry small and of but little value, but used for food.

RUBUS MORIFOLIUS, Sieb. (Jap., *Kuwa-no-ha-ichigo*), that is "mulberry-leaved raspberry," is a species worthy of culture. It bears large black raspberries of excellent quality. I have seen but one plant, and that not a very good one, but it had several handsome berries, which ripened early in June.

RUBUS INCISUS, Thunb.; Jap., *Ki-ichigo*. Canes four to five feet, rather slender, cylindrical, brown, with few and weak prickles, bushy; leaf small, entire, three-cleft, dark green above, lighter below. Fruit small, bluish-black, of no great merit. The plant is, however, productive, and I have noticed that country people hold the berries in much esteem. It is wild in the mountains, but is often cultivated as a hedge plant about the houses, partly, perhaps, on account of its fruit.

Other species which furnish edible fruit, but which I have not had opportunity to examine, are: RUBUS BUERGERI, Miq. (*Rubus moluccanus*, Thunb.); Jap., *Fuyu-ichigo*. RUBUS CORCHORIFOLIUS, L. (*Rubus villosus*, Thunb.); Jap., *Birodo-ichigo*. RUBUS IDÆUS, var. STRIGOSUS, Max. (*Rubus strigosus*, Mich.); Jap., *Yezo-ichigo*; wild in the northern island. RUBUS TRIFLORUS, Richardson, var. JAPONICUS, Maxim. (*Rubus cæsius*, Thunb.); Jap., *Gogo-ichigo*. RUBUS THUNBERGII, S. and Z. (*Rubus hispidus*, Thunb.); Jap., *Kusa-ichigo*, *Yabu-ichigo*. And in the Hokkaido, RUBUS CHAMÆMORUS, L., the Cloudberry, found also in the New England states and northern Europe. RUBUS VILLOSUS, Ait., our blackberry, has

been introduced. It grew well on the college grounds, but the people have not as yet learned to appreciate it as it should be.

The gooseberry, RIBES GROSSULARIA (Jap., *Maru-suguri, Gooseberry*), and the currant, R. RUBRUM (Jap., *Aka-suguri, Aka-ribisu*), are not indigenous, but have been imported, and may occasionally, though rarely, be seen near the open ports. The black currant, R. NIGRUM, I have, on the other hand, never seen in Japan.

RIBES AMBIGUUM, Maxim. (Jap., *Tenbai yashabishaku*), is a native species, wild in the mountains. It forms a good-sized bush of spreading habit, with hairy leaves and greenish flowers. The fruit is a large orange-yellow berry, nearly half an inch in diameter. The country people eat these berries, and they also make an extract from them which is sometimes used in staining cabinet-work. The bush is never cultivated.

The following species of the genus are also indigenous to Japan, but I have not heard of their fruit being utilized: R. FASCICULATUM, Sieb. and Zucc. (Jap., *Yabusansashi, Kihiyodori*); R. PETRÆUM, Wulf., var. TOMENTOSUM, Maxim. (Jap., *Yezo-suguri, Aka-ribusa*); R. GROSSULARIOIDES, Maxim., (Jap., *Suguri*); R. JAPONICUM, Maxim. (Jap., *Komagatake-suguri.*)

DEBREGEASIA EDULIS, Weddell (*Morocarpus edulis*, Sieb. and Zucc.). Jap., *Yanagi-ichigo, To-ichigo.* This is a fruit-bearing bush, which I believe is unknown to horticulture in this country. It is said to be wild in central and southern Japan. The bushes that have come under my observation have been planted in gardens. It must not be inferred from this that it is at all a common garden shrub. On the contrary, I believe it is planted only occasionally, and then by collectors or admirers of the wild flora. The bush sends up vigorous, upright shoots from the roots of indefinite growth, and branches but little. The bark is dark brown and internodes very short. The leaves are entire, very narrow, and five inches or more long, crimped and rough, bluntly serrate;

FIG. 1. SARU-ICHIGO (*Rubus phœnicolasius*). (See page 203.)

dark green above, gray below. This narrow-pointed leaf at first sight reminds me of the willow. Possibly this resemblance may have given rise to the name, *Yanagi-ichigo*, which means "willow berry." The plant belongs to the same family as the mulberry (*Urticaceæ*), and the fruit resembles the mulberry in form, but smaller and yellow in color. It is very similar to the fruit of the paper mulberry (Broussonetia), both in color and size. The berries are juicy and pleasantly fruity in flavor, but without any decided acidity or sweetness. They are borne in small clusters on short, pendent stems, along the sides of the shoots, where they hang like little yellow ornaments. They ripen toward the close of the summer. It is a bush that it might be well to experiment with in this country. The bark yields a tough fiber, which, however, I do not think is utilized by the Japanese, although it is stronger than that of several other plants which they grow solely for their fiber.

The Juneberry, AMELANCHIER CANADENSIS, Torr. and Gray, var. JAPONICA, Miq. (Jap., *Zaifuri-boke*, *Shidezakura*), is also indigenous to northern Japan, and its fruit is gathered and eaten. It is so well known in this country that it needs no description here.

They also eat the berry of VIBURNUM DILATATUM, Thunb.; Jap., *Gamazumi*. It is a bush of close, upright growth, with opposite, broadly oval or often cordate leaves, somewhat rough and with smooth margin. The buds are large and conspicuous. It is not cultivated. It has no merit as a berry bush.

The berry-like fruits of the three following species of cornus are also eaten, viz: CORNUS CANADENSIS, L. (The Bunch-berry or Low Cornel); Jap., *Gozen-tachibana*. C. OFFICINALIS, Sieb. and Zucc.; Jap., *San-shuyu*. C. KOUSA, Buerger (*Benthamia Japonica*, Sieb. and Zucc.); Jap., *Yama-boshi*.

The first named plant is common in the northern island, and is also familiar to northern people in this country. The low, creeping stems terminate in a whorl of leaves, and bear a small, round berry. *C. officinalis* is a handsome tree, which yields a long-stemmed, oblong, red fruit, an inch long and half an inch in diameter. It is sometimes cultivated for its fruit. It would however, be worth more for ornament than for its fruit in this country. The same species has been named *C. sanguinea* by Thunberg and *C. ignorata* by K. Koch.

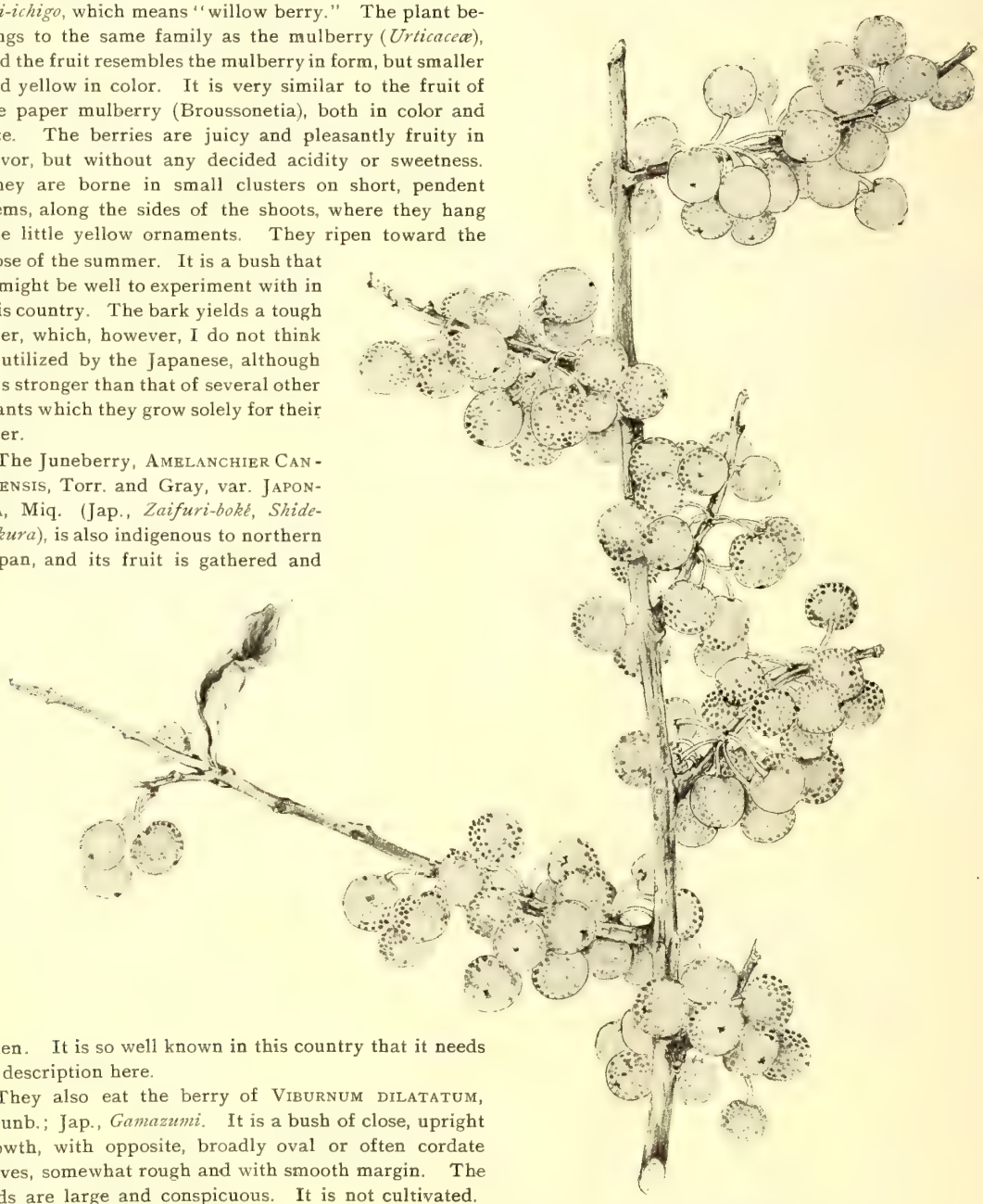


FIG. 2. AKI-GUMI (*Elæagnus umbellata*).

*C. Kousa* is also a small tree, indigenous to Japan and bearing an edible fruit. Its greatest merits, however, consists in its ornamental qualities. It bears a large, showy white flower in June, and cannot fail to be appreciated here for the park and lawn.

The genus vaccinium is represented in the north by several species, among which the following yield edible berries, which are used for food: VACCINIUM VITIS-IDÆA, L. (*U. Jesœuse*, Miq., the Small Cranberry); Jap., *Kokė-momo*. V. OXYCOCCUS, L. (*Oxycoccus palustris*, Persoon; *O. vulgaris*, Pursh.); Jap., *Tsuru-Kokė-momo* (the Cranberry); this species is occasionally, though rarely, planted in the northern bogs. V. HIRTUM, Thunb. (*V. Smallii*, Gray); Jap., *Usu-ichigo*, *Usu-no-ki*, *Sunoki*. V. ULIGINOSUM, L.; Jap., *Kuromame-no-ki* (the Bog Bilberry). V. PRÆSTAUS, Lam.; Jap., *Iwa-tsutsuji*. V. OVALIFOLIUM, Smith; Jap., *Kuro-usugo*.

One other berry should be mentioned, and I am done, viz: ELÆAGNUS UMBELLATA, Thunb. (*E. parvifolia*, Wall; *E. parvifolia*, Royle; *E. reflexa*, Decaisne and Morr.); Jap., *Aki-gumi* (Fig. 2).* This species is, I believe, practically unknown in this country. It is a large bush which is indigenous over a considerable portion of Japan, and is often cultivated for its berries. A twig of these is illustrated in Fig. 2. They ripen in the latter part of October or in the beginning of November, when they can be found on the fruit stands in most parts of the country for a few weeks. The bush is exceedingly prolific, the last year's twigs being almost completely covered with berries. As will be seen in the illustration, the berries are small, not larger than currants, and they often shrink or wither a little after being cut off. In color they are reddish-brown, with many small, gray specks. The skin is a little tough, and encloses a juicy pulp, which surrounds a single, flattened soft seed, not unlike a tomato seed in shape and size. They are always marketed on the branches, these being cut off much to the injury of the bush, and carried to town in large bundles. They are relished by all, but especially by the children, who run about with branches in their hands, and munch the berries while at play. To judge from their consistency, these berries should make good jelly and jam.

C. C. GEORGESON.

*Kansas Agricultural College.*

* The "goumi," introduced into the United States under the name of *Elæagnus pungens* is *E. longipes*, *ovata*. Several other species of the genus are cultivated here, either for fruit or ornament.—ED.

# A NORTHERN APPLE ORCHARD.

WANDERINGS IN QUEBEC.

UMMER waned. Autumn, with its brilliant tints of early October, found my wife and I in the Province of Quebec, wandering by steamer or rail or carriage through the quaint, delightful valley of the St. Lawrence.

It seemed a land of quiet contentment, the French Canadians sitting at their doors through the sunny midday hours, in no heavier employment than smoking a pipe of peace—ebony or bronze "lilies" that "toil not." But by the presence of the old-fashioned wheel we discovered that their wives do "spin." Up a winding river we went at last, glowing with autumn foliage, and past trees heavy with ripening nuts. But it was apples we wanted—that is a sight of an orchard we were told was to be found here that would repay us for our travel. Everybody was ready to show us the way; all the rural population turned out to smile on us as we landed one bright morning on the wharf, near where we hoped to find the fruit farm we sought, and after a few minutes' walk we at length found ourselves on a rough and stony road, in a curious old French village of small cottages that skirted the banks of the river, where the overhanging trees threw shadows into the waters. At the gate that led to our destination, a flat boat, named "Psyche," and a pair of idle oars, were very suggestive and excited the curiosity of "Pomme" (that's my wife). But the turnstile was before us, and we slowly walked up the long lane leading to the old stone house that seemed to stand sentry in front of this ideal orchard. But the house was deserted and silent; some fine Dorking fowls were plainly monarchs of all they surveyed and roamed unmolested over the fancy beds, and through the avenue of trees that skirted the well-kept lawn. There was a distant tapping, as if some wood-peckers were at work, and as far away as the eye could see, amid the density of green and crimson was a row of endless barrels, and a youth with a hammer driving in the last nails. As we walked on to where ladders were standing and figures could be seen up in the crimson and green trees, we found ourselves confronted by a pair of soft, grey eyes, under a hat that reminded us of Dr. Holmes' story of the boy who told another that two of the most respectable deacons of the town were having a horse-race, and when questioned "Where?" facetiously remarked, "Round the brim of your hat." Under the wide straw hat of our orchard deity was the face of a young girl, whom I instantly and mentally named "September," so rich was she in all that was beautiful of health and bloom.

Pomme had stopped to question a five-year-old fairy, who, with brown, wide open eyes and soft brown hair, stood eating a Flemish Beauty pear near by. The russet of her cheeks and the soft, plump brown hands well suited the fruit her sharp, white teeth were biting, and I thought she well suited the name of the russetty fruit. But "September" did not for one moment relax her energy in sorting the fruit that was brought to her in

half bushel baskets by a medly crowd of boys and girls, with one or two old withered dames. Three rows of barrels, choice, seconds and thirds, or "scalawags," she said, with a quiet smile, in answer to my questions,

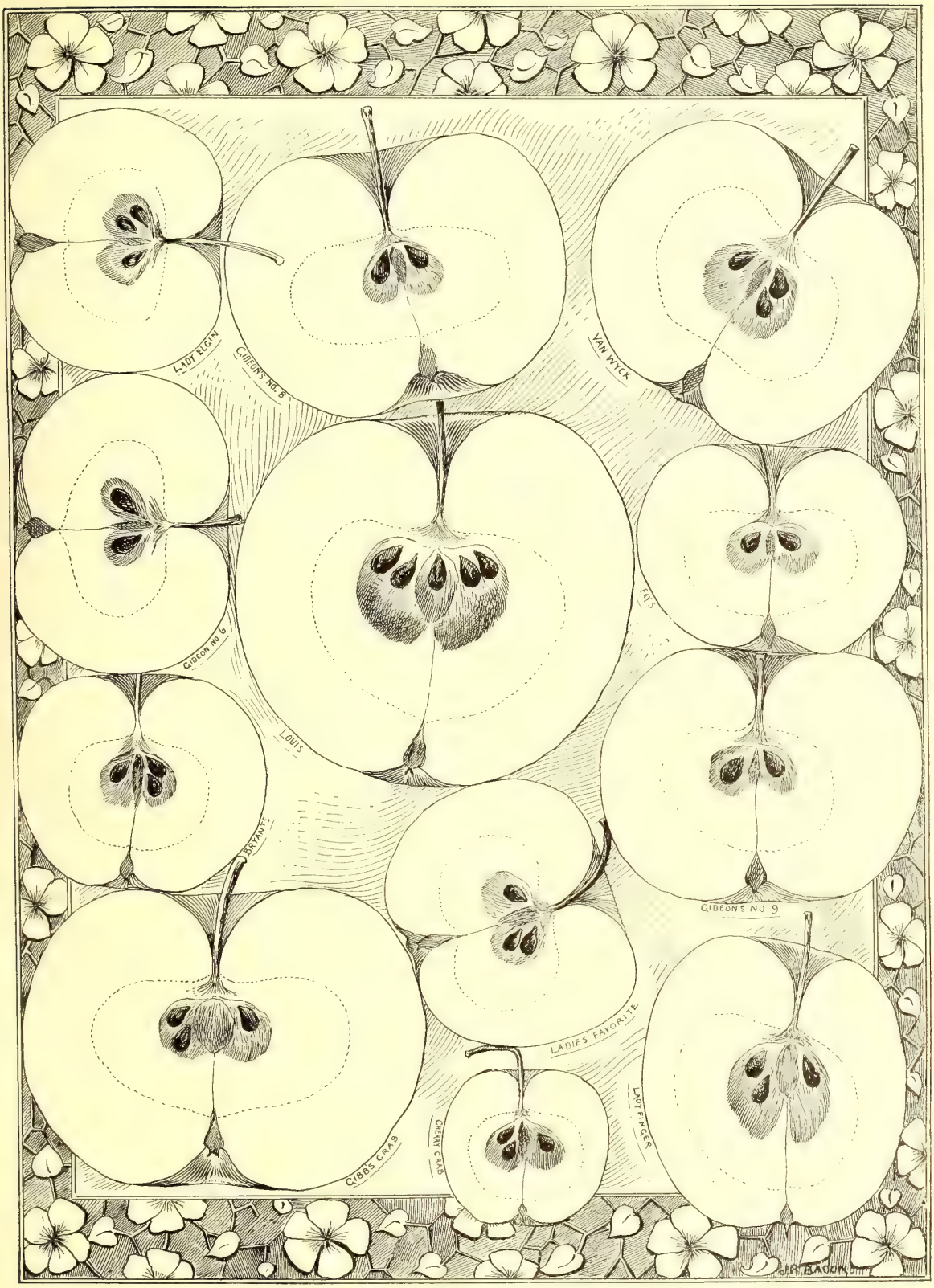
THE APPLE BUYER.

and then, as if to be rid of my company, she pointed to the upper orchard where father and mother were sorting some superior fruit for shipment. Through the long aftermath of crisping clover we went, past a field of raspberry and blackberry canes that gave promise of a rich next summer harvest, and on to a slope of trees laden to the ground with rich, red fruit. And here stood Mr. and Mrs. October, indeed, sorting and packing the ruby beauties, rejecting any that had the slightest blemish. The soft, grey felt hat of the master of the orchard fell over a face at once shrewd and benign. "A Scotchman," was my first thought, which was verified by his tongue. "Ye're verra welcome if Mister Gibb sent you," was his salutation, while his wife, after a cordial bow, went on with her packing, and I found by watching, that it required the closest attention to sort correctly as to size and quality. These apples were the "Fameuse," a staple Canadian fruit, too little known in the American market and something that will surprise us with its white, crisp flesh and ruddy beauty when we have free trade with our sister province. At present the duties preclude all possibility of marketing it in "the States," as the natives there call our mighty republic. "There is no fear but we could compete well with your American fruit," said the owner, with pardonable pride, "if it was not for the duty, because we have just the climate suitable for apple growing. I was at your Centennial in '76 and saw the apples opened up. But there wasn't any could compare with Canada in color and flavor, except Michigan and our own Nova Scotia. We want free trade, sir, and none of this protection." Not being much interested in the national policy, Pomme had walked on, and soon motioned me to another part of the orchard where one of the daughters busily sorted St. Lawrence apples. "A lone packer," she said, as the young girl lifted her blue eyes to us, and quietly went on with her sorting as if such intrusions were of every-day occurrence. The sunlight shone on the white, smooth barrels and glistened on the striped beautiful fruit that was piled high above the chine as the "crusher" or press is put on to screw them firmly in before nailing down the head. Before we left her the "lone packer" became quite friendly, and showed us the two rows of "setters" in the bottom of the barrel that have to be put in with the greatest care and firmness. "And do you work all day at this?" I asked, looking at her slim figure. "Oh, yes," she answered, brightly; "it isn't hard work, only one gets dizzy now and then if 'setting' too steadily." "I should think," said Pomme, "there would be a great deal of dizziness before these thousands of barrels were marketed." Yet we found them all cheerful and helpful, even little Flemish Beauty being able to pick up the fallen fruit and lay it in a heap when it is assorted separately. Near the storing shed a small shaver of ten stood with a tub of paint and a brush. He had just laid down his brand and a streak of black shone on his nose and chin and over his rosy cheek. "How do you do, and what do you do?" I asked; and he answered in rich, resonant tones, "I am the 'brander,'" smearing his brush over the head of a barrel, which afterwards, as if by magic, read: "Choice Fameuse Apples, Grown and Packed by October and Sons, Charmonte, Canada." "How many brothers and sisters have you?" asked Pomme. "Five of each," he answered "proudly, and they're all in the orchard there," with a nod of his sagacious head.

Just then from church and convent pealed forth a

CONSCIENTIOUS PACKING.

cheerful bell, that vibrated on the clear air. We did not know that it was noon, but were soon informed that this daily summons served as clock to all the habitants of the valley, who instantly dropped their work at the last




A Panel of Crab Apples.

stroke, and trusted to its reminder at one to return to their labors. And a few minutes later a very amusing sight met our eyes, for we came upon a party of pickers enjoying their luncheon, which is always taken out of doors during the apple season. The belle of the party, in sailor hat, sat perched on a barrel eating a sandwich ;

At Lunch.

the "lone packer" was social with one of the small boys over some shell oysters, and altogether they seemed as happy as a party of gipsies. Further along were "Pierre" and his mother, typical Canadians, resting after their lunch of pea soup and black bread. The boy excited our sympathy by a limp and one-sided gait, and we learned that he had been gored by a bull, but still persisted in living in spite of a sore that would not heal. "He can't climb much, but he picks low branches and works steady," said Jim, one of the sons, who proved himself the sportsman of the family by his enthusiasm about a flock of wild geese that passed over the orchard, their quacking cry plainly heard. "Oh, if I only had my gun!" he said, with real regret. Mr. October called Pierre to us and inquired how much he would ask to row us down to the village in the flat-bottom boat. After putting a thumb in each vest pocket and thinking profoundly for several momentous seconds, he said, very modestly, "five cents," if the time required was to be allowed from his nooning and not deducted from his wages—a bit of shrewdness that brought him a five-fold fee from Pomme. I remarked on the freedom from insects and diseases, when the owner told me that his boys and girls and the birds looked after that. "We put up boxes to protect the wrens and swallows and all insectivorous birds," he said, "and the children look after the greatest enemy, the tent caterpillar, that lays rings of five hundred eggs on the branches. These the youngsters search for on snow-shoes in winter, and I pay them a cent a dozen for the rings. They don't take long to earn a quarter at it some seasons." He told us Montreal was their chief market, and that the oldest orchard had been planted forty years, still bearing good crops, the only treatment it receives being the grass which is cut in June and left as a mulch. Here the trees are interlocked through and through in many places. Sometimes a giant falls and ends its life as incense on the old-fashioned hearth that boasts brass fire-dogs and fender. We found the odor of the wood pleasantly spicy when a kind hospitality led the way to the quaint dining-room and feasted us on creamy milk, home-made buns and luscious grapes. "We only lunch at noon," he said, "it saves the women-folk trouble." We murmured our thanks as our pockets bulged out with red-cheeked apples, and followed the grinning "Pierre" to the boat, looking back now and then to the sunlit orchard, silent just now in the noonday rest.

K.

# CRAB APPLES.

DESCRIPTIONS AND FIGURES OF SOME OF THE BEST KINDS (*See plate, page* 209).

CHERRY CRAB.—Fruit very small; form roundish ovate-oblate, slightly ribbed; color light yellow, blushed with red; dots small, scattered, light; stem very long, slender; cavity rather narrow, shallow, sometimes russeted; calxy small, closed; segments short, recurved, often wanting; basin narrow, very shallow, slightly furrowed; core large, wide, closed; carpels small, closed; seeds small, ovate, dark brown; flesh yellowish, rather firm, juicy, sprightly, brisk sub-acid, some astringency; quality good; season, August. Tree thrifty, upright, straggling, productive, ornamental. This is one of the best of very small crab apples.

Bryant (*Bryant's Favorite*).—Fruit large for a crab; form roundish ovate; color light waxen yellow, half covered mixed splashed, and faintly striped with crimson with a bloom; very handsome; dots small, scattered, light or yellow; stem long, slender, yellow; cavity rather narrow, shallow, waxen yellow, regular; calyx medium, closed; segments long, erect; basin narrow, shallow, furrowed; core large, roundish oblate, closed; carpels small, scarcely hollow; seeds small, plump, ovate, dark brown; flesh yellowish-white, firm, juicy, sprightly, sub-acid, very slightly astringent; season, August and September. Tree symmetrical, early and abundant bearer; originated with Bryant & Elder, Derby Center, Vermont. This is one of the very best and showy crabs we have, worthy a place in every garden.

Fay (*Fay's Gem*).—Fruit large for a crab; form oblate conic, obscurely ribbed, regular; color rich clear, light yellow, distinctly blushed and obscurely striped with fine rosy red, handsome; dots small, scattered, indis-

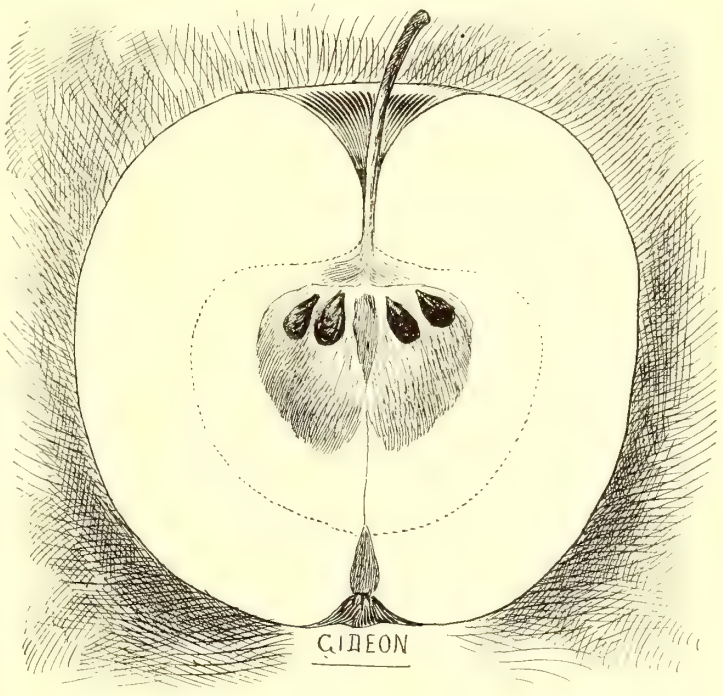
tinct, gray; stem long, slender; cavity wide, deep, some russeted, regular; calyx medium, closed, or half open; segments rather long, recurved; basin rather wide, shallow, furrowed; core wide, closed, heart-shaped; carpels small, closed; seeds small, ovate, very dark; flesh yellow, firm, very juicy, sprightly, brisk sub-acid, slightly astringent; quality very good; season August. Tree strong grower and annually productive; origin unknown. I received it many years ago and it appears to be the same as Transcendent; one of the best for canning.

LADY ELGIN.—Fruit large for a crab; form roundish oblate, truncated, regular; color clear whitish yellow, with a bright rosy red, striped with deeper red, handsome; dots small, scattered, light; stem long, rather stout; cavity narrow, shallow, russeted; calyx small, closed, sometimes half open; segments short, erect; basin wide, very shallow, furrowed; core medium, heart-shaped, closed; carpels small, closed; seeds small, ovate, very dark brown, almost black; flesh clear white, fine, tender, juicy, sprightly, vinous, sub-acid; quality very good; season September to December. Tree hardy, vigorous, upright, very productive; originated by James Forbes, Illinois. This is one of the best crabs we have for canning; valuable.

LADIES' FAVORITE.—Fruit large for a crab; form roundish oblate, slightly conic, squarely ribbed; color clear waxen white, delicately blushed and mixed with rosy red, very handsome; dots small, indistinct, scattered; stem long, slender, green; cavity wide, deep, some grooved, green or slightly russet; calyx small, closed; segments rather long, erect; basin rather wide, shallow, ribbed; core large, wide, closed; carpels large, hollow; seeds small, ovate, plump, dark brown; flesh yellowish-white, firm, tender, juicy, mild pleasant sub-acid, little astringency; quality very good; season August, September; originated with Bryant and Elder, Derby Center, Vermont. Tree hardy, vigorous, upright, very productive. This is one of the best and most handsome crabs we have, and fine for canning and preserving.

LADYFINGER.—Fruit large among crabs; form oblong ovate, ribbed; color light yellow, covered with bright red, handsome; dots small, scattered; stem long, slender; cavity narrow, deep, pink; calyx small, closed; segments short, erect; basin narrow, shallow, ribbed; core large, closed; carpels large, hollow; seeds rather small, plump, dark brown; flesh yellowish, tender, juicy, sprightly, brisk acid; quality very good; season September, November. Tree vigorous, hardy, upright, very productive. This very handsome and fine crab apple originated with the late Dr. W. H. Howsley, of Kansas, from the seed of the Ladyfinger apple, which has all the appearance of a true Siberian crab. Many other crab apples originated from the same common Ladyfinger or Red Winter Pearmain. This is one of the best late varieties for cider, canning and for jelly and preserving.

GIDEON'S No. 6.—Fruit large; form oblate, regular; color light yellow, mostly covered, mixed, splashed and striped with deep dark red, with a heavy blue bloom, handsome; dots small to medium, distinct; scattered, gray or yellow; stem medium, slender; cavity rather narrow, shallow, regular, yellow russeted; calyx large, closed; segments long, recurved; basin wide, shallow, furrowed; core large, wide, closed; carpels small, closed; seeds small, ovate, dark brown; flesh yellow,




firm, fine, tender, juicy, pleasant sub-acid, but little astringency; quality good; season August. Tree very hardy, vigorous and productive; originated with Peter M. Gideon, Excelsior, Minnesota. This is a very handsome and fine crab apple, but more valuable north of this, as it ripens here very early in September, and does not keep long.

GIDEON'S No. 8.—Fruit very large for a crab; form oblate conic, ribbed; color light yellow, covered mixed splashed and indistinctly striped, with deep rich maroon red and carmine, with blue bloom, handsome; dots small, scattered, light; stem rather short, slender; cavity very wide, deep yellowish green; calyx small, closed or slightly open; segments rather long, recurved; basin wide, rather shallow, slightly furrowed; core large, wide, closed; carpels small, hollow; seeds medium, ovate, pointed, dark brown; flesh yellowish white, firm,

juicy, sprightly, sub-acid ; quality good ; season last of July and August. Tree very hardy, vigorous and productive. This is a good apple, but ripens too soon here to be valuable, but north it will prove valuable ; originated with Peter M. Gideon, Minn.

GIDEON'S No. 9.—Fruit large for a crab ; form oblate, slightly conic ; color deep rich yellow, mostly covered, mixed and faintly splashed with deep bright rosy red, with a bloom ; dots large, distinct, numerous, some aureole, yellow or russet ; stem long, slender ; cavity wide, rather shallow, russet, regular ; calyx small, closed ; segments short, erect ; basin wide, very shallow, some furrowed ; core large, wide, closed ; carpels small, closed; seeds large, ovate, dark brown ; flesh yellow, firm, juicy, sprightly, pleasant, sub-acid, no astringency ; quality good ; season August. Tree hardy, vigorous and productive ; originated by Peter M. Gideon, Minn.

LOUIS (*Louis' Favorite.*)—Fruit medium, form roundish, ovate, regular ; color light straw yellow, nearly entirely covered, mixed, splashed, and striped with light and deep crimson red and carmine, very handsome ; dots very small, scattered, indistinct, light ; stem long, very slender ; cavity narrow, rather deep, acute, regular, green, or slightly russet ; calyx small, closed ; segments long, reflexed ; basin narrow, very shallow, furrowed ; core large, heart-shaped, open ; carpels large, long, hollow ; seeds small, numerous, plump, ovate, dark brown ; flesh yellowish white, stained, very tender, juicy, pleasant, sprightly, sub-acid ; quality very good to best ; season August, September. Tree very hardy, vigorous and productive. This seedling originated by Peter M. Gideon, Minn., from the seed of Duchess of Oldenburg, fertilized by a crab apple ; bore when eight years old. This is a very handsome apple, not exactly a crab, but we place it here, as it takes that place for all purposes the crab does. A very valuable seedling.

VAN WYCK.—Fruit large for a crab ; form roundish, slightly conic, regular ; color whitish, shaded and mixed with light red ; dots small, if any ; stem very long, slender ; cavity narrow, rather deep, smooth, russeted; calyx small, closed ; segments short, erect ; basin medium, shallow. slightly furrowed; core small, round, closed ; carpels large, hollow ; seeds medium, ovate, very dark brown ; flesh yellowish, firm, moderately juicy, fine, rather rich, honey sweet ; quality very good ; used for table, kitchen, and cider ; season August, September ; origin, chance seedling on the farm of Miss Caroline Van Wyck, Fishkill, N Y. This crab apple appears to be identical with Brier Sweet in cut, core, seeds, quality and description. Tree vigorous, upright, productive.

GIBB.—Fruit very large ; form oblate, very regular ; color bright shiny rich orange yellow, with a deep orange blush, handsome ; dots small, numerous, indistinct, light ; stem rather short, thick ; cavity wide, deep, regular, yellow ; calyx medium, open ; segments rather short, recurved ; basin very wide, rather shallow, ribbed ; core large, wide closed ; carpels small, nearly closed ; seeds small, angular, ovate, pointed, dark brown ; flesh deep rich yellow, firm, brittle, juicy, sprightly, fragrant, pleasant sub-acid ; quality very best for a crab. A good eating, as well as a fine cooking and canning apple ; season August, September. Tree vigorous, hardy and very productive ; originated by G. P. Peffer, Pewaukee, Wis. This is the richest and finest canning apple we have seen.

GIDEON.—(See cut.) Fruit large ; form roundish oblate, slightly conic ; color light yellow ; dots medium, numerous, not distinct, light ; stem long, slender ; cavity rather narrow, deep, irregular, greenish yellow : calyx medium, closed ; segments long, recurved ; basin narrow, shallow, furrowed ; core large, heart-shaped, slightly open ; carpels large, hollow ; seeds rather small, ovate, chestnut brown ; flesh yellowish white, very tender, juicy, very mild, pleasant sub-acid ; quality very good ; season October, November, in Minnesota until December. Originated with Peter M. Gideon. Excelsior, Minn., from the seed of the crab apple. Tree very hardy, vigorous and productive. This has neither the taste nor appearance of a crab apple, and shows clearly the possibility of producing a new fine hardy race from the crab apple, much better than any Russian apple we have yet seen. It has an unusual number of good qualities, and is very valuable.

*Kansas.* J. STAYMAN.

# DO APPLES PAY ?

TWENTY EXPERT OPINIONS.

I HAVE made a study of orchard management in Maine for 25 years, during several years of which I have owned one of the largest and most productive orchards in Kennebec county, the leading apple producing county in the state, and I know that apples pay. The orchard must be taken care of, the growing of the trees must be made a business, the fruit must be honestly packed, and marketed in the best condition. No. 1 fruit must be No. 1, and the barrels must be new and clean. One hundred barrels to the acre, at so exceptionally low a price as $1.50 per barrel, pays better than any other kind of farming. Fruit growers—orchardists—are the most forehanded class of farmers in Maine. Once in every four years in this state the price of apples at the orchard is not below $2.75 to $3 per barrel. If it pays to grow apples at $1.50 per barrel, as it does, growing them at $3 per barrel is a bonanza.—SAMUEL L. BOARDMAN, *Maine.*

Are American cultivators so stupid as to go on growing crops year after year, for more than a century, at a loss? It might as well be asked if keeping a store, or running a mill, "pays." Some it pays, and some it does not pay. As for apples, they will pay any man to grow them, who is favorably situated, knows how, and intelligently uses that knowledge. Orchard specialists are subject to the competition of farmers who grow more apples than they can use, and sell for what they can get for such fruit as they bring to market. But such competition, though it infringes upon local trade, does not injuriously affect growers who produce standard varieties in sufficient quantities, and pack their fruit honestly. Orcharding as a specialty is, or can be made, more profitable than mixed farming; but the number who can make it profitable is less. It is like "gilt edge" dairying in this respect. Intelligent farming of any sort is not yet so prevalent as to put it upon a non-paying platform. It not only pays now, but will continue to pay as long as men are hungry three times a day.—Dr. T. H. Hoskins, *Northern Vermont.*

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The conditions for the profitable growing of apples are a good strong soil, better on the hills, with partial protection from the winds and reasonable proximity to market. The fertility of the land must be maintained with home-made or artificial fertilizers. The trees and fruit must be protected from insects. Have a good selection of varieties adapted to the soil, climate and market; vigorous and productive varieties, and the individual trees well selected and carefully trained. Gather, handle and market with care, and the apple crop promises to reward the cultivator in the future as in the past, as well as any crop in New England.—T. S. Gold, *Western Connecticut.*

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The apple crop, when put in comparison with potatoes, grain, hay or dairy products for a period of ten years will make a favorable showing. The loss of the apple crop the past year on many farms with only small orchards, in addition to losses on other crops, has been keenly felt. One orchard of full grown trees for fifteen years has netted an average of $125 per acre. The soil must be fertilized annually, fruit must be protected from insect attack, that full value may be obtained for it, while the foliage must be saved from leaf eating insects, that more perfect growth of wood and stronger development of fruit-bud may be obtained. With this care apple culture has been remunerative, and promises well for the future.—George T. Powell, *Eastern New York.*

A Maryland Astrachan Orchard. (See Page 214.)

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To supply my evaporator and to pack for market I have bought large quantities of apples for the past twenty years, and know what owners of many orchards in this locality have received for a series of years for their apple crop, and that no root or grain crop has paid as well. Yes, a fair apple orchard, well cared for, has

rewarded the owner well for all costs.—P. B. CRANDALL, *Central New York.*

No other crop pays as well in western New York as apples, and a failure is not more frequent than that of any other crop that affords a corresponding profit. A fairly good crop in the counties of this State best adapted to apples we think worth more than all the grain crops of the same counties in the same year.—T. G. YEOMANS & SONS, *Western New York.*

The apple crop last year in western New York, owing mainly to fungi, was an entire failure. Two others of the past five years from the same cause were hardly better. Notwithstanding this the apple crop paid me for the average of the five years better than ordinary farming. With the certain return to "old fashioned seasons" we shall have "old fashioned crops" and probably by reason of discoveries in fungicides, even better, and increasing. With no increase in orcharding, and increasing demands from growing cities and regions unfavorable to apples, I consider the prospect for the enterprising and intelligent apple grower extremely favorable.—GEORGE H. ALLEN, *Western New York.*

Do apples pay? Briefly speaking I would say, "that depends." Taking, however, the entire "apple belt" of the states, I feel confident that apple culture pays. In southern Pennsylvania we have learned a valuable lesson as to varieties, and by planting largely York Imperial for winter use, we not only have a hardy vigorous tree, a good bearer, and keeper, but a profitable variety. Other states and localities are rapidly learning, if they have not already learned, the same lesson, and while apples have on the whole been profitable in the past, they will be even more so in the future.—E. B. ENGLE, *Southern Pennsylvania.*

Are you growing a popular fruit of standard variety, especially adapted to your locality, instead of twenty varieties a few of each, which require time and money to gather and store separately with little to recommend them in quality, appearance or as keepers? Do you fertilize the orchard by the use of manure or commermercial fertilizer or by running hogs or sheep on it, at proper seasons? Do you spray for canker worm, codlin moth or scab? Have you proper facilities for keeping fruit? Can you obtain new barrels at reasonable prices?

If you can answer these questions affirmatively, apple growing will pay in the long run, provided you do not force the crop on a glutted market.—W. GORDON MERRICK, *Central Virginia.*

The cultivation of apples will pay, provided you select the best varieties for table and market, adapted to the soil and climate. High clay lands are preferable. Plant thrifty young trees, one or not more than two years from the bud. Cultivate the ground until they begin to bear, and even longer. Put leached ashes about the trees, and fertilize broadcast over the ground after they begin to bear freely.

I had an orchard of some thirty acres at old Fort Miami, seven miles above Toledo, and the year that I sold it, the apple crop was worth nearly four thousand dollars. In order to have apples pay you must select the best kinds, know how to prune the trees, and take the best of care of them.—J. AUSTIN SCOTT, *Southeastern Michigan.*

Apples paid me when I began here years ago, but now there are so many depredators to prey upon the fruit that it is more expensive to raise. Nevertheless I think that it pays to raise apples.—S. M. PEARSALL, *Western Michigan.*

Do apples pay? I must answer both no and yes. No, as the masses treat their orchards; yes, abundantly, when given anything like the intelligent care that makes any other farm crops pay. One of the greatest mistakes is holding on to the starved old orchards too long, instead of planting new.—J. N. STEARNS, *Southwestern Michigan.*

I have gathered a good many statistics in Van Buren and Allegan counties in the past ten years, or more, as to apples consumed at home, sold, grown, evaporated, manufactured into cider, jellies, jams, pickles, etc., etc. From these statistics and observations over the state, I am satisfied that no other fruit or product has brought such large net returns for money invested and time spent as the apple crop.—C. J. MONROE, *Southwestern Michigan.*

Do apples pay? That depends on the locality and the man behind the business. Speaking for the state of Indiana, I can say, Yes. Along the Ohio river and on the highlands many miles out from the river, apples are profitably grown. In the hilly regions in the southwestern portion of the state, apples are a reliable and profitable crop. In the northeastern part of the state, in those counties containing many small lakes, apples succeed as well as in western New York or Michigan, and are more suitable and profitable than farm crops. In the central and more level portions of the state apples do not succeed so well. Yet I think with a proper selection of varieties and the right kind of care, apples may be profitably grown in central Indiana.—C. M. HOBBS, *Central Indiana.*

Apples pay in northern Illinois if proper conditions are observed, but not so well as they did twenty years ago when orchards were younger, insects less numerous, canned, dried and southern fruits less plenty. To make apples pay, the trees must be taken care of, manured when bearing, insects kept in subjection, fruit carefully handled and assorted and put up attractively.

I venture to say that on many farms, the orchard has

been the most profitable part. But old orchards will not pay here as a rule, and frequent planting is necessary.—L. R. BRYANT, *Northern Illinois.*

Yes, apples pay if the right varieties are planted and the proper care given. Each variety is an individual and has its distinct needs.—BENJ. BUCKMAN, *Central Illinois.*

The most of the orchards in this State, as at present set and cultivated, do not pay. I know of some orchards that are paying nicely. If our farmers would confine themselves to a few of our best and most hardy varieties, purchase their stock of reliable men, set the trees upon high land, with somewhat of a northern slope, and then care for them in a proper manner, I have no doubt that orchards in this state would, as a general rule, become profitable. I believe that such will be the case in the near future, and that we shall have apples to sell instead of being obliged to buy more or less every year, as at present.—J. M. SMITH, *Eastern Wisconsin.*

Do apples pay? In Missouri with her wonderful fruit lands, Yes! Yes! Apples pay well if planted in good locations, of proper varieties, well cultivated, well fed, and well protected from the insects.

Plant Jonathan, Rome Beauty, Wine Sap, Willow Twig, York Imperial, Clayton, Ben Davis; in some locations Missouri Pippin, White Western Pippin. Plant on new land, cultivate every year as you would corn, give plenty of manure, good care, and here in Missouri with her great wealth of fruit lands, her glorious climate, and her abundant rainfall, you may be sure it will pay. An instance: an 80-acre orchard near Springfield, Missouri, 8 years old, well cultivated, with no crops on the land, paid last year $7,000. Yes, orcharding in Missouri is a paying investment, and we have room for thousands of good men.—L. A. GOODMAN, *Western Missouri.*

Yes! In Nebraska, Kansas, Colorado, Iowa and Missouri it costs less than $1 per tree to bring the apple into bearing, and when once in bearing, provided the right kinds of apple are planted, the profit is from $60 to $200 per acre. I know of one orchard near here of Ben Davis that paid $700 per acre last season. I would say further that the profit depends largely on the number of varieties planted in an orchard. In our large orchard of 200 acres we have but 6 varieties: Jonathan, Ben Davis, Wine Sap, Janet, York Imperial and Grimes' Golden. Plant these varieties and take good care of them and there is more money in the apple orchard in the territory mentioned than in an orange grove in California or Florida.—G. J. CARPENTER, *Southeastern Nebraska.*

Do apples pay? I answer emphatically, Yes, whenever the orchard has been intelligently managed. By selecting a suitable location, varieties having local adaptation and naturally fruitful, and having a desirable marketable character, the vigor and health of trees have been maintained. With such care there is no product of the land that pays better through a series of years.—G. C. BRACKETT, *Eastern Kansas.*

# A MARYLAND APPLE ORCHARD.

THE illustration on page 213 shows a view in the Red Astrachan orchard of Mrs. William O. Shallcross, in Kent county, Maryland, made from a photograph which we took last October. The orchard comprises four acres, and was planted in the spring of 1876. The trees are set in quincunx fashion, the alternate rows being forty feet apart. The diagram shows the manner of arrangement. The orchard is now in sod. It has had liberal applications of wood ashes and stable manure. The trees are pruned every spring. The orchard is now uniform, thrifty and handsome, and there is probably no better in the state.

In 1885 it produced about five hundred baskets—five-eighths bushel—which brought an average net price in Philadelphia and New York of seventy-five cents. When eleven years old it gave a marketable crop of over one thousand baskets, which sold from seventy-five cents to one dollar. From 1885 to 1890, not counting one or two "off years," the average production was two hundred and fifty baskets. The freight to New York is about twenty cents a basket, and to Philadelphia about twelve cents. The trees are gone over every day in the picking season. Red Astrachan is the most profitable apple in that region, and the only other one that can be relied upon is Smith's Cider.

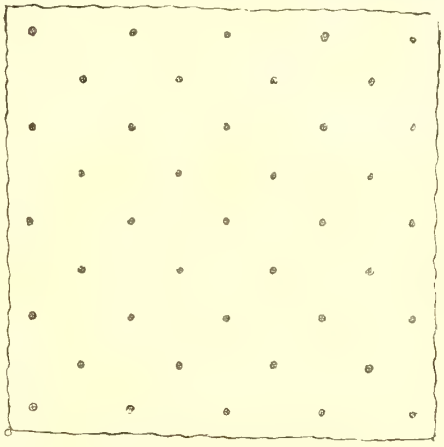


DIAGRAM OF ORCHARD.

# AN APPLE ORCHARD THAT PAYS.

IN THE face of the fact that the apple crop of the country was practically a failure the past season, it will be interesting, and may be instructive, to note the conditions under which a partial exception occurred.

The orchard referred to contains fifty-five bearing trees, which were set in 1854 at a distance of thirty feet apart, and includes six varieties. The soil is a strong, deep loam on a hard-pan bottom, underlaid with gneiss. Since the trees were large enough, they have borne regularly each even year, and produced from five to twenty per cent. of a full crop in the odd years. The treatment for the past five years has been as follows:

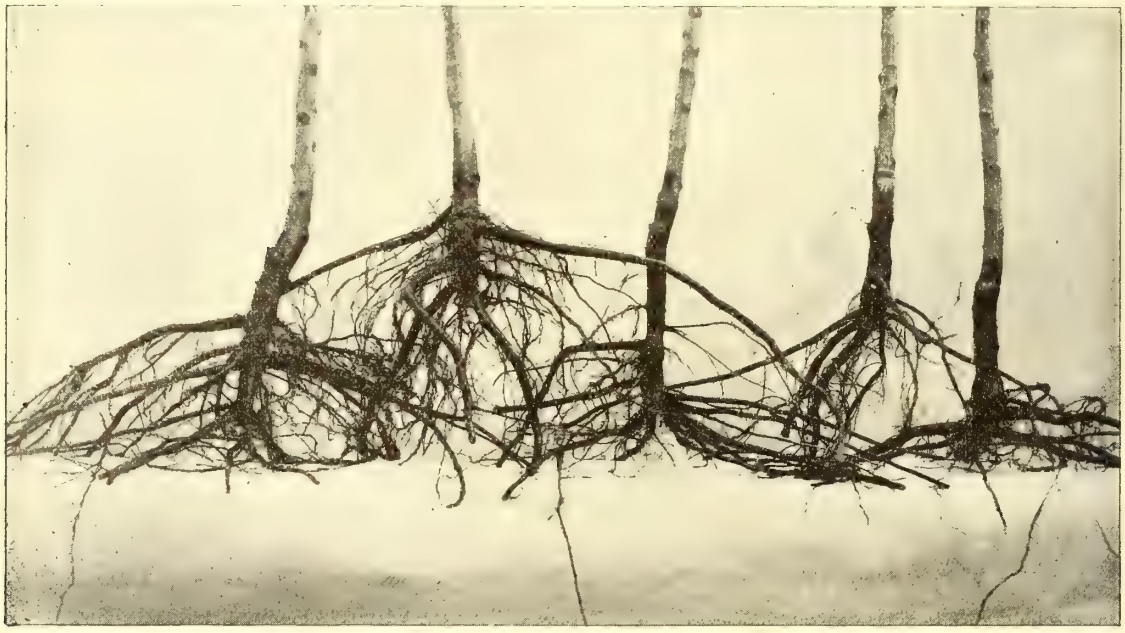


FIG. 1. PIECE-ROOTED TREES. (See page 218.)

The land is in grass, which is mowed as often as it will stand up against the scythe. The grass is never carried off, but is used as a mulch about the trunks, and is spread over as wide a circle as possible, in order to keep out growth underneath the trees. No barn manure is used, but a fertilizer is compounded each spring and spread evenly over the entire surface, except where mulched. It is intended to supply 25 pounds of phosphoric acid, 30 pounds of nitrogen and 75 pounds of potash per acre.

The formula used last spring is here given. For one acre I use 200 lbs. cottonseed meal, 125 lbs. muriate of potash, 75 lbs. plaster, 65 lbs. South Carolina floats, 45 lbs. sulphate of ammonia, 45 lbs. nitrate of soda, 45 lbs. sulphate of magnesia; total, 600 lbs. These ingredients cost $10.50 at the railroad station.

Judging from experience, and from the results of various chemical analyses, I believe that this amount is none too large, and that the proportions for this locality are very nearly as they should be. If the surface were to be kept perfectly cultivated, a part of the fertilizer might be dispensed with, though it is doubtful, inasmuch as every year a larger amount of the three ingredients mentioned above is used by the tree than is applied to the land at the above rate. The soils of New England can hardly be depended upon continuously to supply more than a small fraction of the nourishment that the most profitable crops require. Although the growing grass appropriates some of the constituents of the fertilizing material, it is not removed from the land, but remains as a mulch, and through its decay is fully utilized. In addition to this, when the leaves of the trees drop in autumn, they are held by the stubble and go to enrich the soil instead of being blown away, as is the case in cultivated orchards.

Under this treatment, my trees, notwithstanding their age, still make wood quite freely and bear heavy crops of fair sized apples, which, in the absence of fungous diseases, prove to be unusually good keepers. Most of

the orchards in this region are pastured or mowed for hay, and little or no fertiiization is applied, and not one of these, so far as I know, has this year produced anything like an average crop. They all bloomed very freely, but the failure came in the setting of the fruit, or in its wholesale dropping soon after. The orchard under consideration dropped an unusual proportion of its fruits, but retained enough to make an average of three barrels to the tree, and the quality was finer than has been attained for ten years or more.

In addition to the treatment specified, the trees were sprayed May 28th and 29th, eleven days after full bloom, with the ammoniacal solution of carbonate of copper ; also, a little later on the same dates, with either Paris green or London purple. June 9th and 10th, and again June 27th, the same applications were made, only the ammonia was omitted and the undissolved copper carbonate was used at the same time with the arsenites.

I am aware that there is nothing in all this that will throw any light upon the cause of the general failure of the apple crop. Indeed, the crop in this case was by no means a full one, with the exception of the Gravensteins only. Hubbardstons yielded three-fourths of a crop, Greenings one-half, and Baldwins somewhat less. It is my custom systematically to thin the apples on the trees, but the prospect looked so meagre that I entirely neglected the operation, thereby making a mistake. The thinning was carried to an extreme by nature's forces, but it was not intelligently done.

I can attribute this partial success to nothing else than the fact that the trees had previously been, and were this season, fully supplied with the substances that they needed for fruitfulness. The copper carbonate, by preventing fungous development, might have exerted some influence in the setting of the fruit, yet other orchards that were similarly sprayed yielded no crops. Reason tells us, and hard experience demonstrates, that something cannot come out of nothing, and yet we are apt to go on in a kind of blind way, hoping that we may be able to reverse this condition of things and "reap where we have not sown."

*Northern Mass.* JABEZ FISHER.

# RENOVATING OLD APPLE ORCHARDS.

THE QUESTION is often asked if buildings are worth repairing. Of course, it depends upon the excellence of the structure in question. So the question of rejuvenating individual trees or old orchards depends upon the inherent health, preparation and actual value of the trees in question. An orchard which is composed of ill-shaped, half-decayed or leaning trees is not worth the trouble, labor, time and worry which would be involved in anything like a fair attempt at restoration. An orchard which has been trimmed by sawing off branches six to nine inches in diameter, and where such wounds have gone through the premonitory stages of rapid decay, can never be restored to its full vigor and healthfulness.

Looking at orchard planting from this standpoint, I should make these points :

1st. Plant only the best trees attainable, the cost being a very minor consideration.

2d. Prune so completely at the start, and subsequently, that no large branches will ever need to be sawed out, thus averting the damage resulting from mechanical injuries to the tree, which are greater than ever estimated.

3d. Pursue an even, uniform system of management, which shall secure good, but not excessive growth and development year by year.

Such is my ideal of what an orchard should be, but such orchards are few, and we are obliged to take them as they are. Do not lose time on loose, leaning, or heart-rotten old trees, but dig them out at once. On the other hand, if you find old trees in fair vigor and sound to the core, you may make something of them. After removing worthless trees, scrape and prune the rest, being careful not to saw off too large branches, for decay is quite apt to follow. It is better to suffer some inconveniences than inflict too large wounds upon a tree. After pruning, which is better done in November, so that the wood may be well seared, plow the orchard carefully, so as not to break large roots, and thence on for a time cultivate the ground.

Now comes another question which nearly always confronts us in an old neglected orchard, and, indeed, too often in young orchards—worthless varieties. Therefore, a necessity arises of re-grafting many trees, but do not mistake again by working in novelties ; take varieties suited to the locality, soil and market. In re-grafting, a great deal of judgment is needed. I dislike to graft stocks more than two inches in diameter, and never cut off more than one-third of the top to re-graft in one year. The importance of a skilled grafter will be apparent. If two scions start well in one stock, one should be cut back and eventually sawed off. Remove suckers early, so the scions may have full chance to grow well. Finish grafting the succeeding year, and if fair success has been reached, the tree will now be well re-topped, but do not hesitate to remove strong scions if they promise to be too numerous.

If old trees are at all inclined to be mossy, a thorough scraping will be needed, which may be followed by a wash of soap and lime, using a pint to a quart of soft

soap to each pail of white-wash. I can assure all that this wash is always helpful and not harmful to the trees. Having the soap, it easily disintegrates and in a few months washes off entirely, leaving the bark comparatively smooth and healthy.

Many orchards undoubtedly go into premature decay simply from starvation. Hence it is of the utmost importance that the orchard be regularly and judiciously manured. We are not likely to overdo in this matter, and yet it is occasionally done. Stable manure is excellent for trees, but where, for any reason, this is not readily available, unleached wood ashes, or potash salts, either sulphate or muriate, and some form of available nitrogen to make a complete fertilizer, will answer well. In regard to quantity, use enough to produce a fine crop of corn, and repeat year by year regularly. On most soils a dressing of lime is very beneficial, the quantity used ranging from 30 to 40 bushels per acre, according to the richness of the soil, using more on a deep rich soil than otherwise, and repeating this in three or four years, especially if the effect is favorable.

Let me emphasize systematic, liberal management. For lack of this the most promising beginnings might fail, and having this, many failing orchards might be, in measure, restored to fruitfulness.

P. M. Augur.

*State Pomologist, Conn.*

# PIECE-ROOTS *vs.* WHOLE-ROOTS.

MISFORTUNE appears to follow any discussion of root-grafting. The difficulties enveloping the subject, the pecuniary interests of those who have trees of one kind or another to sell, and the love of controversy for its own sake, render any attempt at solution of the relative merits of root-grafted, crown-grafted and budded trees well nigh useless. And writers themselves have been to blame in setting out without some definite proposition to prove; and as a consequence observations have been restricted and facts have been perverted, even unconsciously. It was with much hesitation that I entered into this disputed field before the Nurserymen's Association last year, but it seemed advisable to undertake a fair discussion of the subject among nurserymen themselves. The immediate result was gratifying, for the nurserymen discussed the matter earnestly and fairly. But so much cannot be said of some of the discussion which the attempt has since provoked. My object was simply to state some points of difference which I thought I had observed between piece-rooted and whole-rooted trees, and there was no attempt to show that one is necessarily better than the other.* It is yet too early to attempt to judge of ultimate merits; we must first establish some common ground of observation and study.

Root-grafting serves two entirely distinct purposes. In the old apple regions it is a means of propagating apple trees cheaply and rapidly, but in the Northern prairie states it is used for the purpose of securing own-rooted trees by the use of a very long scion. With this latter use of root-grafting I am entirely unconcerned in this discussion, for in this case the root serves only as a temporary nurse and the resulting own-rooted trees are not comparable with graft-rooted trees. The general conclusions which I reached concerning piece-rooted trees are simply these:

1. The roots are comparatively weak the first year or two, and the trees make a shorter growth than upon whole roots.

2. The roots are apt to be prongy, one-sided and shallow. Subsequent study has only confirmed these convictions. But there are many who think them erroneous, and I am glad of an opportunity to present a few representative opinions. I have thought it not worth while to repeat any correspondence which is purely controversial in spirit.

*From* G. J. Carpenter, *Nebraska.*—"I send samples of apple trees upon piece-roots. They are simply fair specimens, not selected ones by any means, and in making photographs of them I wish that you would name the variety, as we find a great difference in different varieties of apple roots; for instance, the Ben Davis has nearly twice the amount of root growth that the Wine Sap has, and you will notice that the varieties we send you differ greatly. In digging some thousand trees this fall we have borne in mind the statement that in piece-root grafts the roots are on one side, and we found that it was not true with us, but find that they are evenly balanced, as you will note by the sample sent."

These trees were as fine average specimens of apple trees as I have seen. The roots—which were all from the original root—were symmetrical or very nearly so, strong and numerous, and the trees straight and handsome. They were three years old from the graft. Fig. 1 shows the roots of the trees. The varieties are Maiden's Blush, Fallawater (*Tulpehocken*), Golden Russet, Hubbardston (*Hubbardston's Nonesuch*), and Gravenstein, in the order named. In order to arrive at a basis of comparison I procured the same varieties of average budded trees of the same age from a western

*See the article itself in this magazine for last August.

New York grower. The tops of the trees in the two lots were essentially the same, although the budded trees were a little larger. These budded trees were dug when the ground was frozen, so that the roots are short, but the general character of the roots can be seen in Fig. 2, which shows the varieties in the order named: Maiden's Blush, Fallawater, Golden Russet, Hubbardston and Gravenstein. The difference in the two lots is striking. The piece-rooted trees bear more large, horizontal, stiff roots; while the budded trees have a deeper root system, and show more numerous fine roots.

*From* J. L. BROWN, *Nebraska.*—"We use in our nursery only about one and one-half to two inches of root, and nine inches of graft. I cannot see any difference, in our soil, in the root-growth from roots of different lengths until we make them less than one and one-half inches long, and then we do not secure so strong a growth the first year. We usually get a growth of from two to four feet the first year. I have not succeeded in getting a better growth from buds here than from piece-roots."

*From* D. B. WIER, *California.*—"I was the unfortunate owner in Illinois of two apple orchards of stock-grafted trees; one is now 50 years of age, the other 28. I also had three large orchards of root-grafted trees, and my experience with these causes me to say that if I was planting apple orchards for profit anywhere, especially in prairie states, I would rather pay 25 cents each for root-grafted trees than to take stock-grafted (grafted 4 to 6 inches above the collar or budded, which amounts to the same thing) as a gift. Oh, the misery that a 1,000 stock-grafted orchard gave me in comparison with very nearly the same varieties of root-grafted! They were high headed, such as most people love to plant. They blew over, leaned, suckered at the collar, got sunburnt, out grew the stocks or the stocks out grew them, got full of borers owing to their roughness near the ground, and returned to me about one-fourth the value in fruit that the root-grafted trees did, planted the following year. They were to the end unsymmetrical in growth.

Your engravings [last August] do not do the systems justice. At four to eight years of age the true root system is perfected. In orchards of nearly 20,000 apple trees I never had a root-grafted tree blown or leaned over, while in both stock-grafted orchards many were prostrated by a storm and nearly every tree leaned. The poorest looking lot of trees I ever saw planted (I do not think that one man in ten thousand would have taken them as a gift after the ground was prepared and trees planted!) made the very best orchard for business I ever saw. They were root-grafts run under when two years old with a tree-digger and again when three years old, and planted when four years old. After every tree had been taken from the nursery rows that anyone would have at any price (trees were very scarce at the time), I took the remainder for this orchard. That same orchard took the first prize against 73 others passed upon by an expert committee of the Illinois Horticultural Society eight years after planting, for size of trees, productiveness, size and quality of fruit. But if I were growing trees to sell, I should prefer budded trees. I write thus fully that you may be convinced of the error of your ways."

*New York.* L. H. BAILEY.

# THE FRUIT EXCHANGES—CONCLUDED.

A NEW JERSEY CO-OPERATIVE STORE SYSTEM.

"WE KNOW nothing of the operation of Fruit Exchanges," writes E. R. Sproul, president of the Fruit Growers' Union and Co-Operative Society, limited, "and doubt the success of any such movement except possibly by the peach-growers south of us, who, we understand, are determined to push such an enterprise. We have talked over every scheme which has been suggested as an improvement on our methods of marketing fruit, but thus far have failed to find a safe one with a better promise than our present mode of shipping to commission merchants. But we protest against the custom of these merchants in bunching good and poor fruit together and averaging the price.

"But if we have discovered no way to increase our income from what we have to sell, we have a most successful plan for diminishing our expenditures in what we have to buy, which is the next best thing. The store established for the benefit of our members has been a remarkable success, our sales this year having exceeded $98,000."

The following extracts from addresses of the president and secretary of the Union will give some idea of an organization which is doing a safe business of about $100,000 per year. The Union was organized in 1867, but little was accomplished for many years. "In the the year 1879, and previously, the money for necessary expenses was raised by an assessment on the members. According to the financial report the receipts for that year were $141.70, borrowed, $60, total, $201.70; expenses, $201.47, leaving a balance on hand of 23 cents, and a debt of $60! At the beginning of the year 1880, your officers were confronted with this problem: 'How shall we pay a debt of $60, with a bank account of 23 cents?' It was a problem difficult of solution; expenses were growing constantly, and to meet these expenses assessments on members were increasing from year to year, until, according to the report of the secretary, 'they had become a burden,

against which some of the members were disposed to rebel.'

"In this dilemma, the Board of Directors, at a meeting on February 4th, 1880, appointed a committee to revise the By-Laws, with the hope that some method might be devised, and incorporated in the laws, by which money to meet expenses might be more certainly collected than by the former mode of assessment on members. This committee did its work faithfully, and a transcript of the secretary's minutes for April 7th, 1880, reads thus: 'After considerable discussion, a series of resolutions, prepared in the main by Captain A. Somerby, to enable the Union to pay its own expenses by a percentage on sales of commission merchants, were read, and unanimously recommended by the board.' At a meeting of the members of the Union, at Oakdale school house, April 17th, 1880, these by-laws were adopted. That was a memorable meeting in our history! For on that night the Union stepped out firmly and confidently on the road to independence and prosperity.

"One year of trial, under these laws, without a dollar of assessment on any member, gave us the following figures: Total income, $1,002.45; expenses, $711.19; balance, $291.27. And one item of the expenses was this, 'note and interest, $62.40.' Gentlemen, the debt was paid! The obnoxious assessment was abandoned! The financial problem was solved; and from that date there was good reason for belief that our future prosperity was assured. Nor was this all. For having the capital with which to do something, something was done. A shipping department was organized, and the committee having it in charge were instructed to spare no pains to make its work effective; and for the first time there was order and regularity, in place of confusion and difficulty. Records were kept. Constant communication was sustained with the companies carrying out fruit, and with the merchants who sold it. Daily dispatches were sent and received, and a system was arranged to publish and send to our members, daily, the prices obtained for fruit in the various cities. Sufficient help was employed to load cars more rapidly, and carefully to separate our returned crates. And many details, which cannot here be enumerated, were faithfully attended to, and greatly facilitated our business.

"The work of the agent was increased, and the records of the shipping department were of great assistance to him in providing and settling claims; and all claims for losses have been adjusted with less friction and in a more satisfactory manner than ever before.

"From this time, so confident were our leading members that we were firmly established, so impressed were they with the belief that the Union should now move forward upon a field of greater usefulness to its members, that an agitation was begun in favor of purchasing fertilizers, etc., and in a small way this was attempted. It was a success so far as it went, but the chief value of the experiment was found in the education it gave us as to the possibility of future co-operation in this direction; and the importance of this view was actively canvassed, and was especially championed. by one of our oldest members, L. Montfort, who at an annual meeting, a year before we were prepared to move, introduced and explained the law under which we are now organized. The result of this discussion was, that after much preliminary work on the part of the board of directors, a plan of organization was perfected, and submitted to the members at a meeting called for that purpose at the

FIG. 2. WHOLE-ROOTED (BUDDED) TREES. (See page 218.)

usual place. The ultimate result of the deliberations of that meeting was the re-organization of the Fruit Growers' Union, under the co-operative law of the State of New Jersey, with a capital limited to $50,000, and a paid-up capital of $2,800. Every dollar of this capital had been previously earned by the operations of the Union. The organization was put at once on a working basis, and no member was required to subscribe one cent.

"Land having been purchased, and a warehouse erected, the new enterprise was inaugurated by the purchase and sale of the more bulky articles of merchandise, coal, feed, etc., in which a fair amount of business was done within the short time prior to our last annual meeting, a full report of which was made on that occasion by our secretary.

"For the first year, the method of conducting the business was by a purchasing committee for buying goods, and a salesman in the store, which was kept open but a limited number of hours. The business soon outgrew this method, and your officers found that it was necessary to employ a general superintendent, who, under the supervision of your board of directors, should have full control of the buying and selling of goods.

"How much capital is required to conduct our business is a question which annually arises, the settlement of which determines the mode of paying dividends in the fruit department which owns the plant. This question was seriously discussed last year, and with a full understanding of the situation the majority of the board were of the opinion that our capital ought to be increased by the amount of the year's earnings, and stock covering that sum was issued. This has furnished capital sufficient to conduct our business without embarrassment, and enabled us this year to make a cash dividend, which may be continued unless we increase our plant. But an addition to our store I think is absolutely necessary, as our business should no longer be subjected to the inconvenience entailed by our present lack of accommodation. If this addition is made, stock should be issued to cover the cost if necessary.

"In the very nature of things no individual store rests on as firm a foundation as ours, nor can it be as safe as one whose capital is created and held as ours is. No management can be more conservative and prudent than ours has been, and the result has been gratifying. We have been well rewarded. Our system is so excellent that we cannot get far astray in our business. Bills of all merchandise purchased are verified by a member of the auditing committee and reported to the board monthly. All bills payable are passed upon by the board, while the by-laws say: 'The board of directors may determine from time to time what credit may be given to members, and a monthly report shall be made to the board by the person in charge of the store, showing the amount of business done and the amount of indebtedness, and under no circumstances shall credit be given to any member who is one year in arrears to the Society.' This law is enforced, and while these methods are carefully followed your business will be safely conducted.

"It is not the true policy of any co-operative store to cut regular fair prices, existing in the town where such store is located. It ought not to be necessary to resort to it to obtain the patronage of its members. Prices should be cut only on such articles as are receiving an extravagant profit; and in most stores there are many such articles which you are obliged to buy during the year. Nearly every day some one will say to us that he can buy such an article just as cheap elsewhere. Admitting the fact, could you do so if our store did not exist? Do any of our merchants propose to divide their profits with their customers at the end of the year? If they have made $1,000 over and above all reasonable expenses, allowing a fair salary for themselves, interest on money invested, etc., will they divide the profit, thus made from your trade, with you at the end of the year?

"We cannot expect to make the large percentage on sales as is shown in the reports of co-operative stores in the cities, where they handle goods which bring a good profit, while our business must consist largely in handling feed, fertilizers, and such goods as are handled at a less profit. Yet we believe that, with the experience gained in the past, and careful management by those entrusted with its care, together with the support it ought to receive from our members, the percentage of profit on sales may be largely increased."

The Union has also saved money in the purchase of fruit packages and other articles. The summary of its financial condition for the year ending January 1st, 1890, is as follows:

| | | |
|---|---|---|
| Cash on hand January 1st, 1889 | | $1,427 52 |
| Received during the year | | 110,688 34 |
| | | $112,115 86 |
| Cash paid during the year | $111,720 57 | |
| Balance on hand | 395 29 | |
| | | $112,115 86 |

# A BEGONIA AFTERMATH.

RAKINGS AFTER OUR JANUARY SYMPOSIUM.

THE BEAUTIFUL colored plate of begonias in the January number has one rare merit—it is not exaggerated. So far as mere size is concerned, I have raised seedlings with much larger flowers. The tuberous begonias are admirable plants for bedding on lawns in this climate. A slight cover of cotton-seed hulls over the surface of the beds is sufficient for their winter protection, and they start with a great deal more vigor in spring than tubers that have been lifted in the fall. Our people are almost entirely unacquainted with these, but I hope to attract attention to them by getting the curator of the capitol park to plant a bed or two. I think it is not a good plan anywhere to start the tubers under glass that are intended for bedding out in summer. It is hard to inure the foliage, started inside, to the outer air, and a check to this first growth results in a rather stunted growth for some time after. The bulbs starting in the open ground come with a stronger, darker green, and always make a better display.

The best way I have ever tried for starting any of these delicate seeds is to prepare a light soil of leaf mould and sand, well enriched with fine old sheep dung. Place this in a pan or shallow box, and sift over the surface a very thin layer of dry sphagnum. This sphagnum should be rubbed through a fine sieve and be scattered not more than an eighth of an inch thick on the surface of the soil. Now water the box thoroughly but gently with a fine rose, and at once scatter the seeds over the surface. Now cover the box with a sheet of roofing slate and place in the warmest and sunniest place you have. The slate absorbs the sun heat rapidly and transfers it when it is needed; it also keeps the seed in total darkness, which is quite important in germinating, and also prevents the necessity for watering, which would be almost sure to be fatal. Under these circumstances any good seed will quickly germinate. As soon as the seed germinates remove the slate and substitute a sheet of window glass for it, and place the box in a less sunny place Now take great care to prevent damping off. As soon as the little seedlings have developed roots, lift them on the point of a knife and transplant into a similar box to that in which they were started, omitting the sphagnum cover.—W. F. MASSEY, *North Carolina Agricultural College.*

NOTES OF TREATMENT.—*Varieties.*—I am glad to see that you are taking so much interest in the tuberous begonias. They have not been pushed in this country as much as their merits deserve. I have been growing them in quantity for the past five years. On some points I should take exceptions to the treatment recommended by some of the writers in your January number. Under glass I have found the best temperature to start the tubers in is about 50°; it is always detrimental to attempt to force them. Any extra heat only makes them "leggy" and weak. Always let them "come away" of their own accord. Give them plenty of air, low temperature, set near the glass, and you are sure of success. They need a slight shade as soon as flowering commences, just enough to keep the sun from burning them. I use cheese cloth. The soils recommended are all right; in fact, any soil not too heavy and soggy will answer. The English notion of filling pots one-third full of "broken pots" is all nonsense. In small pots we use nothing, and in five and ten-inch pots simply one piece of broken pot.

During the summer we give all the air possible and keep the temperature down by dampening the walks with *cold* water. Never wet the foliage after they commence flowering, but before that stage syringe freely. When planted in frames it should always be after the bottom heat is "spent." We grow large quantities in this way, using beds after they have been used for growing tomatoes and lettuce.

The tubers or seedlings, after they have first been transplanted into flats, can be planted directly in the soil or set in pots or flats. Keep the glass on till the plants get a good start. I keep it on until the leaves touch the glass, the soil being six or eight inches from it; then I remove the glass entirely. In this way I leave them in full sunshine for the balance of the season, and they are a mass of bloom from July till cut down by frost. I have grown as strong plants in this way as I ever saw.

For bedding always use tubers. Seedlings will not be satisfactory, as they commence flowering so late, and I have yet to see an even bed of seedlings. Tubers for bedding purposes are so cheap that there is no necessity of using seedlings; and here let me say that I think very few amateurs will succeed in growing seedlings satisfactorily. I cannot see the force of Mr. Hallock's advice not to buy seed before January 30th. Just as fresh and good seed can be furnished November 1st as at the date he mentions, and the first sowings should be made in January, as the young seedlings do much better before the sun gets too strong.

He also says to rub the tubers perfectly clean after they become powder dry. I should advise shaking them as clean as possible, but on no account rub them, as it injures the skin, which is very tender, and I believe it a damage to rub off the roots. And strong tubers should be planted at least twelve inches apart instead of six. Mr. Watson speaks of the difficulty of handling during the period of rest. There is no more trouble in keeping them than there is a potato. After they have been dried sufficiently for the flowering stem to separate freely from

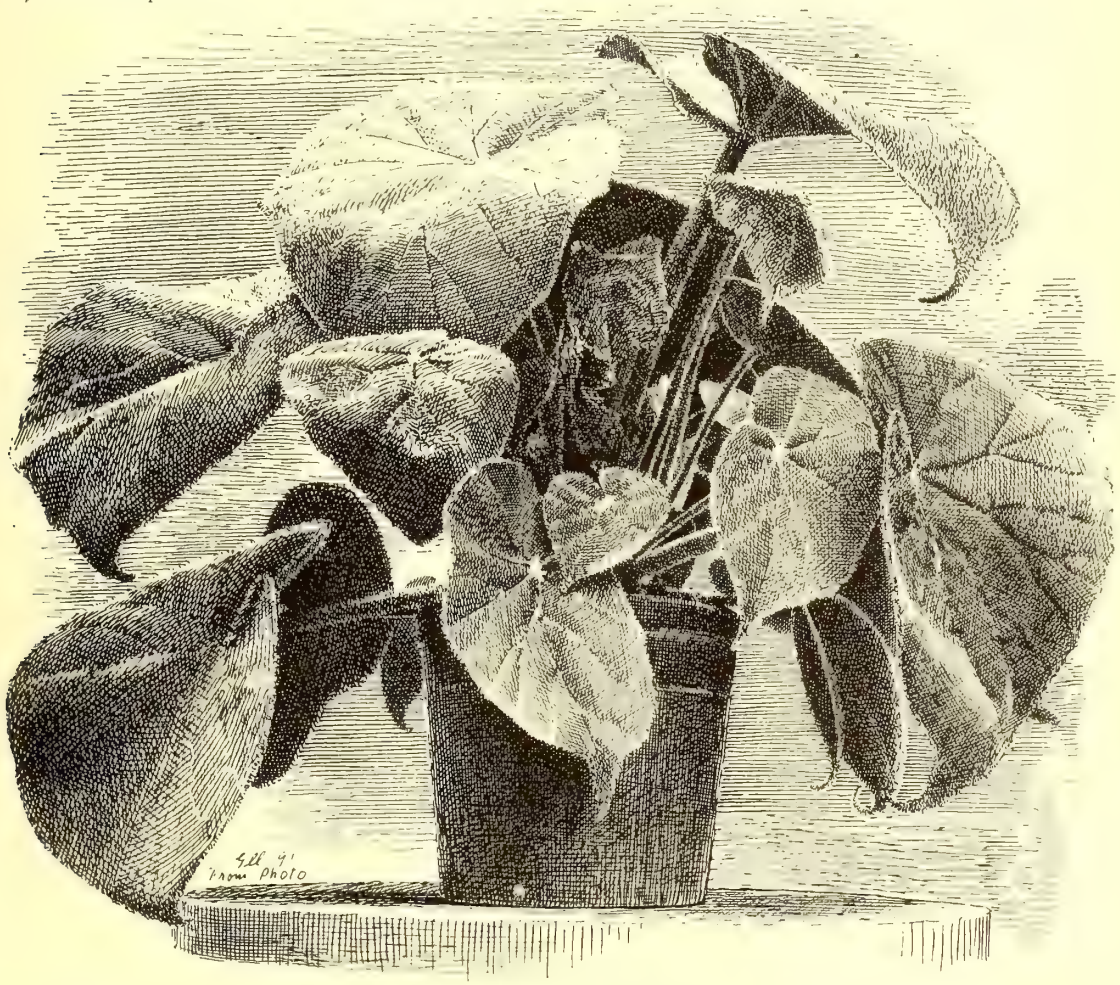
the tuber, shake them out, cover with dry sand and place in a cellar that will keep a potato in good condition, and I guarantee you will not lose one in a hundred.

This class of begonias is increased by cuttings very slowly, as the only good cuttings are those produced from the crown of the tuber. Sometimes there may be a few good shoots for cuttings produced from the axils of the leaves below the flower buds. I have a tuber of Prince of Wales, three years old, four inches in diameter, which has produced but one shoot each year. My practice is to take the cuttings when about three inches long, cut close to the tuber, and put directly into two-inch pots, in sound, leaf-mould and sifted sphagnum in about equal quantities. As soon as the roots fill the pot, shift on as required. Tubers produced from cuttings are very small the first year, but as long as there is the foundation of a tuber the size of a pea it will make a strong plant the second year.

One writer speaks of individual flowers of double varieties being often as large as carnations. Well, when carnations reach the sizes of double begonias, Mr. Thorpe's standard of four inches for the ideal carnation will have been passed! No carnation yet produced equals them in size. None of the writers give any list of named varieties, so I will give a brief description of the best varieties, all of which I have grown and flowered:

*Alba Fimbriata.* (Laing.) Pure white, fully fringed

*Alba Rosea.* (Laing.) Beautiful rose-white center, grand



BEGONIA SCHARFFII, ONE OF THE BEST NEW "FOLIAGE" BEGONIAS.

*Blanche Duval.* (Arnault.) Creamy white, guard petals pink.

*Cardinal Lavigerie.* (Lemoine.) Rose, shaded salmon; have had flowers four inches in diameter.

*Dr. Franz Muller.* (Van Houtte.) Rose; enormous flowers formed of small individual florets.

*Dr. Masters.* (Cannell.) Cream, delicately shaded blush; perfect.

*Felix Crousse.* (Crousse.) Orange scarlet, large flowers.

*Glow.* (Laing.) Bright scarlet; very large, extra.

*Gabrielle Legros.* (Crousse.) Clear sulphur white.

*Ionia.* (Laing.) Salmon scarlet, dark foliage; Davisi type.

*Jubilee.* (Laing.) Crimson, large and full.

*Little Beauty.* (Laing.) Delicate pink.

*Lafayette.* (Lemoine.) Glowing scarlet; deepest color yet produced.

*Lucy Closson.* (Crousse.) White, fine form.

*Lavoisier.* (Lemoine.) Rosy salmon, large globular flowers.

*Lord Randolph.* (Laing.) Crimson scarlet.

*Lord Loughborough.* (Laing.) Bright scarlet.

*Mrs. Plunkett.* (Cannell.) Soft salmon blush; extra.

*Marquis of Stafford.* (Laing.) Deep crimson.

*Mrs. Amy Adcock.* (Laing.) Salmon red, white center; splendid.

*Prince of Battenburgh.* (Van Houtte.) Flowers of largest size, rose-tinted and yellow; a grand variety.

*Terre de Feu.* (Lemoine.) Dark pink; the largest flowered variety in our collection.

*Triomphe de Nancy.* (Crousse.) Clear straw yellow.

The above varieties are quoted in English catalogues for this year, 1891, at from $1.25 to $2.50 each.

Among the older varieties of special merit are the following:

*Andre Chenier.* Brick color, shaded salmon.

*Antoine Guerin.* Pure white.

*Agnes Sorrel.* Light salmon pink.

*Bouton d'Or.* Deep golden yellow.

*Clovis.* Orange scarlet, drooping habit; fine.

*Clemence Denisart.* Clear satin rose; strong grower.

*Dinah Felix.* Dark rose, feathered white.

*Frances Buchner.* Light cherry red.

*Goliath.* Cerise crimson.

*Gluck.* Carmine; good form.

*Jules d'Hoop.* Rose, center shaded yellow.

*John Poe.* Bright rose.

*Louis d'Or.* Yellow, dwarf.

*Louis Bouchet.* Orange scarlet, drooping flowers; upright grower.

*Mad. de Dumast.* Clear rose, flesh center.

*Mad. Arnault.* Rosy salmon.

*Princess de Bearn.* Red, shaded salmon.

*Rosette.* Blush-edged pink.

*Ramonde Tamrinz.* Sulphur yellow.

*Rosamonde.* Rosy pink; large.

*Renan.* Carmine orange; dwarf.

*Suzanna Houchette.* Rosy pink.

*Sultane.* White; a flower of good form and size.

This list ranges from 50 cents to $1 each. Some of the following species are very pretty.

*Natalensis.* Makes pretty bushy plants, covered with pretty fawn-colored flowers.

*Geraniodes.* Velvet surfaced leaves, white flowers.

*Martiana.* Tall grower, producing an immense quantity of beautiful rose-colored flowers.

*Evansiana.* This old species always makes a showy plant.

The two latter species produce bulbels at the axils of the leaves, from which they can be increased very rapidly.

I wish to once more refer to the importance of keeping these plants free from any forcing—do not try to grow them fast. As sure as you do you will have bare, leggy and weak growth and your plant is spoiled for the ear.—F. J. Meech, *Michigan.*

Begonia Semperflorens var. Sieberiana.—This begonia was obtained by Mr. Sieber from seeds of *B. semperflorens* var. *gigantea rosea*, raised by us. The plant deserves the name of semperflorens, for it is in flower all the time. We use it for grouping during the summer and autumn, and in the winter for decorating our temperate greenhouses. This varietywill be as useful and as widely grown as *B. semperflorens* var. *elegans*, which now forms beautiful beds in many public gardens.

Young cuttings produce flowers while still in very small pots, and a strong, branched plant is exceedingly beautiful, for in the axil of every leaf there is a strong, dichotomous peduncle, which is a characteristic feature ofthis begonia. The staminate flowers appear first; they have two very large petals, and sometimes two small lateral ones like *B. semperflorens.* The pistillate flowers, which come later, have five petals, of a soft rose color; the buds are somewhat darker.

This begonia is especially remarkable for its habit, and for the abundance of its flowers, which are produced continnously throughout the year.

The taste for flowering plants appears to be reviving; foliage plants, palms, etc., are yielding to cyclamens, azaleas and begonias. Var. *Sieberiana* is strongly recommended for green-houses and conservatories, as it flowers so well during the winter.—Lemoine & Son, *in Le Jardin.*

An Amateur's Experience.—I have been growing a few tuberous begonias for the last few years, and from seed of my own saving of *B. Sutherlandii* (an old species but possessing many excellent points) I have grown numberless plants. This proves that plants may be grown from seed in the hands of an amateur. I think it would prove the cheapest way of securing a goodly number of tubers. And then who but an ardent and enthusiastic lover of plants can tell how much pleasure there is in growing any choice thing from the seed, up to the fully developed, blooming plant! It is a pleasure I would not forego. So my order shall be for seeds instead of dormant tubers. It is not often that the culture of plants follows me to dreamland, but I confess I was growing tuberous begonias in every conceivable way last night after having read the January nnmber—in the open ground, in immense beds, in pots on the piazza, also in seed pans in the house!

The-bedding out system I fear would be a failure here in Iowa. There are too many hot winds; and a drouthy time in August would use them up. But what could be finer than pots of them on the veranda where the fuchsias and beautiful ferns revel all summer long!

Yes, I shall have tuberous begonias if my dreams prove true!—HYACINTH, *Iowa*.

NOTES FROM ENGLAND.—I am pleased to see you are taking the tuberous begonia in hand. Your readers will find this plant the most accommodating of plants both for greenhouse and flower garden. I grow thousands every year, both double and single. The colors are most variable: white, cream, yellow, apricot, orange, salmon, pink, rose, scarlet, crimson, red and many other shades such as magenta-lake, crimson-scarlet, orange-scarlet, etc. I sow my seed in February (March, April, May is not too late) in pans or shallow boxes well drained. I use rich soil rather light and open, but not too fine. Sow the seed on the surface after watering, and slightly cover with some soil, just sufficient to prevent the seeds from moving when they require watering. Cover the whole with panes of glass, then cover the glass with white paper or newspaper, plunge the pots, pans, etc., or place on warm hot-bed. Great care should be used to see that the seed does not get dry, or failure will be sure to follow. When the plants are strong enough to handle, pick off into pans or boxes, using some soil as for seed. Place the plants about two inches apart; return the pans, etc., to hot-bed. When strong enough, remove to a cooler frame or house. When sufficiently strong plant out in beds, carefully prepared, with light rich soil, mulch the surface with manure, give a good watering, and shade from bright sunshine for a few days; water frequently during dry hot weather. If the above hints are carefully followed, the grower should be rewarded with one of the grandest floral displays ever seen, particularly if he has secured a good strain. My blooms average four to five inches in diameter and stand on stout erect stems, looking you in the face, not ashamed to be seen but pleased at your viewing of them. If grown in pots the tubers should be started into growth during February, and placed in boxes or on a bed, and just covered with rich damp soil and shaded with paper to prevent evaporation. When the growth is about an inch long place the tubers in the flowering pots, using rich open soil. Shade from bright sun, keep warm and comfortable for a few days; then gradually expose to air. About the middle of June the plants will be in full bloom; should be assisted to expand their flowers, with liquid manure, given rather weak but frequently. Artificial manures are dangerous unless the greatest care is used in watering. They are often used too strong, and in the act of watering the liquid is too frequently splashed up the stems and so causes decay or rot in the stems; plenty of air and not too much pot room, moderate amount of shade, generous treatment, and you will be rewarded with a gorgeous display of bloom. After flowering, the tubers should be removed from the pots or beds, dried slightly and placed in boxes with dry soil, sand, cocoa fibre, etc., and then removed to a dry cellar, shed or green house; keep from frost and damp and all will be ready for another season. — ROBERT OWEN, *England*.

BEGONIA SEMPERFLORENS var. SIEBERIANA.

BEGONIA SCHARFFII.*—(See cut, page 223.)—Among the newer ornamental foliage plants, one which I consider especially valuable is *Begonia Scharffii*. It is a magnificent plant and well adapted to window culture, and a grand plant for brackets, where it shows to the best advantage. It is not one of the tuberous-rooted section. It is a plant of robust habit; the leaves are large, ovate, unsymmetrical, hirsute, and crimson beneath. I have some plants twenty-six inches through, grown in eight-inch pots, which are partially hidden from view by the beautiful large leaves. This species has just flowered here. It bears enormous fine heads of flowers, which last a long time in perfection. These plants have been raised from seed. The seeds were sown in March, 1889, in shallow pans in light sandy soil. In sowing such fine seed the soil should be well watered beforehand. Sprinkle the seed evenly over the surface, but do not cover except by laying a piece of paper on the soil to prevent the sur-

* *Begonia Scharffii*, Hooker, is a new species to cultivation, having been first described no longer ago than December, 1888. It is a native of South Brazil, and was introduced to horticulture by Haage and Schmidt, of Erfurt. It was obtained from the Island of St. Catherine. It was first discovered by D. Scharff, for whom it is named. It is one of the noblest species of the genus. The species appears to have been first known in gardens as *B. Haageana*.—ED.

face from drying out. If watering is necessary before the seeds germinate apply it to the paper, using a fine rose. When the plants are large enough, pot off into two-inch pots. I use light sandy soil for the first potting. When re-potted into large pots I use a compost composed of two parts sandy loam, one part leaf-mould, one part decomposed cow manure, in small lumps, some charcoal, and a sprinkle of sharp sand. I may as well state here that I had a mishap with two of the plants. Through some oversight they got too much water after they were re-potted. The plants collapsed. I tried several ways to revive them but all efforts failed. I finally concluded to cut them down, inserted the cuttings in sand, removed all soil from the roots of the plants, and re-potted into small pots. Now all are growing nicely.

Altogether I am well pleased with *Begonia Scharffii*. It is a plant that is greatly admired by those who have seen it here. It is worthy of a place both on account of its ornamental foliage and its flowering qualities, and is sure to earn a place among the standard favorites.—ROBERT SHARE, *Cornell University*.

## NOTES FROM A WOMAN'S GARDEN—APRIL.

IN most ways we work our own way in our cherished garden, but there are a few things we are not allowed to do, beg and plead as we may. One is that we cannot have the garden plowed in April. The captain says that plowing so early is of no use whatever, that the heavy rains beat down the furrows and make the ground hard again. But nevertheless I am set on having peas planted on Fast-day (the first Thursday in April), and unless there is a bad storm they are always planted then.

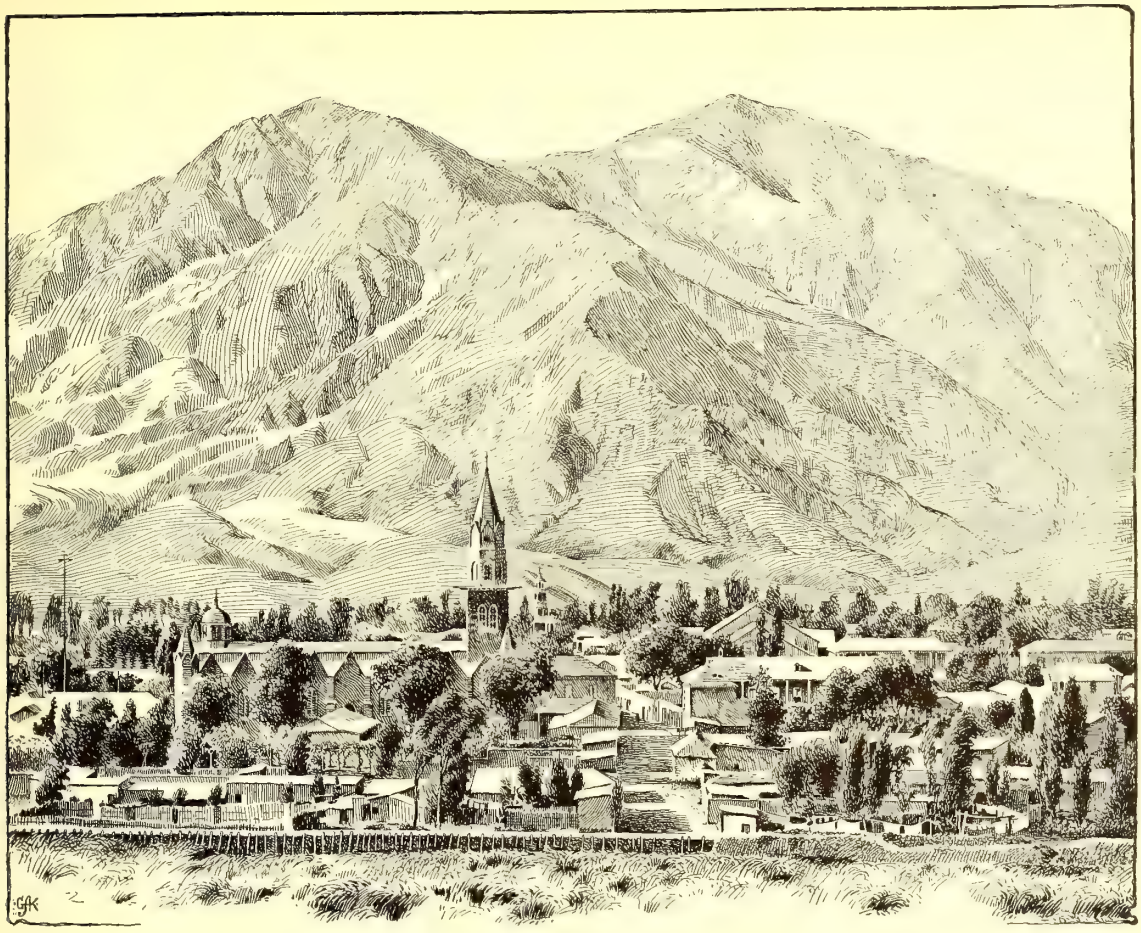
Old Levi is generally ready to do odd jobs, and spades up a bit of ground here, another there, and like the good soul that he is, does just as the "women folks" tell him, though he does think we have a "powerful lot of queer notions." Levi having made the ground "meller" with spading-fork, hoe and rake, digs the trenches, and we put in the peas which, being in a hurry to see something "up," we have soaked over night, and they come up speedily and well. I plant to suit myself, and believe in using a generous amount of seed; once I was a little too free-handed, perhaps, and later when old Levi saw the crowded green rows he exclaimed: "Wall! wall! you did get them peas in pretty thunderin' thick!" I use Little Gem. It is the earliest, sweetest, large wrinkled pea that I have been able to find. It needs no sticks, and in old rich soil like ours grows vigorously without dressing. A second planting is made towards the end of the month.

On Fast-day I begin to uncover the tulips and hyacinths. The crocuses are in full glory and are soon covered by crowds of bees. During the first two weeks of April I uncover the strawberry beds, the vines in the grape house, and later the rose bushes. The cold frames are made ready, and radishes and lettuce planted. Parsley, beets and a few hardy flower seeds are sown in the open ground. The seed planted in boxes in March is growing well, and many other boxes are started now. I sift the earth for my seed boxes and plant the seed with great care, trying to have the little seedlings uncrowded so they can be transplanted later without injury or wasting any plants.

Sweet peas are planted out-doors early in the month; I find that two ounces of good mixed seed, at ten cents per ounce, yield a profusion of lovely flowers which give us more satisfaction in the long run than papers of expensive named varieties. During the last weeks of April I set out gooseberry, currant and rose bushes, raspberry and blackberry canes, also currant and grape cuttings. On the 30th I set out a tree or vine in honor of Arbor day. By the end of the month the crocuses are beginning to fade under the hot sun. The daffodils are well in bloom; also the pansies and daisies kept over winter in cold-frames. If it is a forward season the hyacinths and tulips are blooming I expect the first tulip to bloom sometime between the 20th and 25th of the month, and it seldom disappoints me. In spite of an occasional snow storm or heavy frost I feel sure that spring is once more with us, and that summer must be very near. I felt this most assuredly when we indulged in rhubarb sauce on the 25th of April, made from unforced "pie plant" from our own garden; a "first fruit" surely.

M. E. VIGNERON.

*Plymouth Co., Mass.*



COPIAPO, FROM THE RIVER SIDE.

## HORTICULTURE IN THE COPIAPO VALLEY, CHILI.

THE outlet followed by the river Copiapo to the sea is similar to many others, some smaller, some larger, which run down to the Pacific ocean from the high Cordilleras that stretch along the eastern frontier of northern Chili and the whole of Peru. These streams are formed almost entirely by the melting of the snow deposited in winter upon the summits of the mountains, as there is seldom sufficient rain in any part of this vast territory to cause a river of itself. The snow continues to melt more or less throughout the summer, and thus the water-courses are fed. The waters find their way down among the hills by tortuous and often very narrow and steep channels, on rare occasions, when in sufficient quantity, flooding the banks and sweeping the sand and rocks into the lower levels, where one may see broad basins and scattered boulders lying about. Such an occasion occurred some three years since, in this very valley, the like of which had not been known to the oldest inhabitant. The melting snows, aided by an unusual rainfall, poured down in such torrents that the ordinary banks of the channel were overflowed; Copiapo and its gardens were submerged, the inhabitants being obliged to paddle about portions of the city in boats; the embankments of the railway were washed away in many places, obstructing travel for several months; and the swollen tide rushed through the old mouth of the river into the sea, a sight which no one then living on the coast had ever witnessed before.

Ordinarily, the waters are absorbed by the sandy flats of the coast long before they reach the sea, and the tendency to a smaller amount of snow and rainfall year by year is observable. There can be little doubt that in former ages, such streams as this flood represents used to be the normal condition, and the country was as well watered as it now is in the southern portion of Chili. The numerous dry water courses cut deep into the sandstone hills, and running in all directions and in channels many leagues in length from the Copiapo river-bed, suf-

ficiently indicate this. Indeed, there is abundant surface evidence that all this territory was once covered by the Pacific, for beach rotted stones and pebbles occur all over the lower beds and channels, and the strata of deposits are clearly defined along the hillsides, tilted at various angles. One can hardly doubt that the hills have been raised by volcanic forces, the ocean has receded, the great rivers have dwindled in size century by century, rains have become infrequent, until the only traces left of the ancient aqueous agencies are the scanty streams now existing, too insignificant in volume to traverse the coast desert. This process is apparently a continuous one, and it seems as though the whole of the Pacific slope, from the rain-belt near the northern boundary of Peru, not far from the river Guayaquil, to the straits of Magellan, were doomed at no remote period to become the barrèn waste which is now found in and around the Copiapo valley. A friend in Caldera, who met the celebrated Louis Agassiz when he visited Chili some years ago, tells me that this was the conclusion to which this great naturalist had come. "The entire west coast, clear to Cape Horn," he remarked in conversation, "must inevitably become, in time, just what it is at present around this town."

The valley begins at a point nearly in 27° south latitude, just north of Caldera, from which a broad, flat stretch of sand extends to a distance of 35 miles or more to the south, where lies the real mouth of the river, whenever it has water enough in it to reach the ocean, the place being known as the ancient port of Copiapo. This wide space is seamed with old water channels, and the land gradually rises in elevation, and gradually contracts into a well-marked valley enclosed by sharp, bare, brown peaks of sand-stone, until at Monte Amargo, 41 kilometers by rail from Caldera, there can be made out a veritable river bed, which has glistening pools of water in it here and there, and a scanty vegetation consisting of stunted chañar trees, a few grasses and patches of bright green, composed of a species of suæda. The pools, when investigated, prove to be strongly alkaline, and the surface of the soil is white with an incrustation of soda which bleaches and cracks the leather of one's shoes, dusts the clothes and offends the nostrils. I was informed that this deposit consists of sulphate of soda, and that many attempts had been made to use it as a fertilizer, like the nitrates farther north, but without success. It does affect the vegetation, however, very decidedly, for as the scanty water oozes through the sand, it becomes so strongly impregnated with soda that nothing can live in or near it but saline plants.

Monte Amargo is about 400 feet above the level of the sea, and from this station the valley continues to ascend, until at Copiapo, 50 miles by rail from Caldera, it is about 1,100 feet in elevation, and the bed has narrowed to a breadth of about one-half mile. The channel of the river becomes more and more distinct, and finally a considerable stream of flowing water appears, tumbling down its declivities, the water muddy, to be sure, with the dark clayey soil which it carries, but no longer undrinkable. Then the eye is greeted by cultivated field on either side of the river, succeeded by the most charming gardens; and the traveller stands enthralled with this vision of loveliness, which has so suddenly sprung out of the midst of the desert.

The only thing which serves to mar the beauty of the scene is the high, unsightly mud walls, which most of the garden proprietors within the city limits have erected around their premises. These walls are built of large rectangular blocks of earth, pressed when wet between boards and dried in the sun. They are so lofty that a man on foot cannot see over them, and he feels, when walking between them in the confined streets of Copiapo, as if suffocating with heat and dust. I was obliged to mount upon the roof of the city trams, or to clamber up the neighboring hill, in order to get any clear view of the urban gardens. It is a pity that the owners cannot make use of wire fences or some other enclosure that would enable the public at least to see these vegetable treasures. Where all the environment is so hideous and depressing in its barrenness, it seems cruel to shut the community out from the cheering influences which the bright green, splendid bloom and rich perfumes of these gardens could exert.

Every drop of the little stream which produces these magical effects is precious, and the whole of it is used for irrigation. The river is farmed out by a body of commissioners appointed by the Governor of the district, who determine when and how many hours each cultivator shall have the use of the water. The water is conducted over the land in ditches or small canals, and as each man's turn comes, his workmen spread the life-giving moisture among the plants.

Beyond Copiapo the valley, or rather, the main openings in the valley, which are occupied by a railroad track, continues to rise toward the Andes, and at a distance of 56 miles from Caldera divides into two branches, one curving northwardly toward a place named Puquios, about 90 miles from Caldera and 3,700 feet above the level of the sea, and the other—the principal division—continuing on to Pabellow, where it sends off another branch southwardly to Chañarcillo, and finally terminnates, so far as the railway is concerned, at San Antonio, 100 miles from Caldera and 3,000 feet above the sea level. The valley itself continues on to the Argentine Republic through the Copiapo pass, from 6,000 to 12,000 feet in elevation at its loftiest point. Many good judges regard this as the best of all the Andine passes into the Argentine, and it is hoped that at some day the railroad will be aided by the Chileno government and completed through the mountains. It would undoubtedly prove to be one of the most profitable investments ever made by the government, as a heavy traffic would pour over it, and it would do more to develop both the northern part of the Argentine and northern Chili than any other line that could be built.

It is along this track that the river flows and the line of verdure runs, descending for more than 200 miles from the towering peaks of the Andes, which are from

15,000 to 20,000 feet in height, through the Cordilleras and the foot-hills of the coast, which rise from 500 to 1,000 feet, showing grim and sombre against the sky, gored and gashed by the action of the atmosphere for thousands of ages, and without a speck of green upon their sides.

We might at first thought imagine that the soil of this valley would not be especially fertile, but, on the contrary, it is exceedingly rich, being composed of the black, loamy clay dust which has been swept down from the hills from time immemorial. When irrigated, it is capable of yielding all kinds of semi-tropical vegetables, fruits and flowers.

I saw at various places fine fields of alfalfa, the favorite pasturage of the region, which is greedily devoured either wet or dry by cattle, horses and goats. It grows here dense and heavy, often four and five feet in height, and as many as four crops a year can be raised upon the same fields. Large herds of Argentine cattle are often seen grazing upon the alfalfa pastures in the vicinity of Copiapo. Every year the herders who live in the Provinces of Tucuman and San Juan find it a profitable business to drive their cattle through the passes of the Andes into Chili, and sell them to the people who live in the Copiapo valley. They readily sell for a high price, not only for the valley markets, but also to be taken to Caldera and shipped to ports farther north in Chili and Peru. Of course the herders must hire pasturage for their stock until sold, and the valley farmers thus realize quite a handsome profit, without much trouble to themselves.

Maize and barley are also frequently raised in these fields. The most profitable use, however, to which the land can be put is in its conversion into kitchen gardens. These are numerous, and generally well laid out with a great variety of table vegetables. As the climate permits the land to be used over and over again, there is hardly any season of the year when growth and tillage cease, although it is found there, as elsewhere, that a rotation of crops is much to the advantage of the soil. As might well be imagined, where land is so scarce and vegetables so much in demand, very little fancy farming occurs, but the size and quality of the vegetables, raised as they are entirely without fertilizers, and with the easiest industry, are something surprising. I do not think that the most fertile ranches of California are more prolific. A single field of onions, which I visited, must have covered a dozen acres, and the ground was fairly hidden by the crop, which would have done honor to the best prize examples ever produced in Wethersfield; and could an old Wethersfieldian onion raiser have seen these same onions selling for eight cents (about five cents in our money) apiece in the market, I rather think he would have indulged in a long Yankee whistle. Beets, carrots, parsnips, potatoes and other common garden vegetables are sold singly at eight and ten cents apiece. The people are glad to get them at that, as they have no other resource. Indeed, if you were living at the ports all along this coast, you would find that you must go upon the steamers to find the stalls of the hucksters.

When I came to examine the methods of tilling adopted in this region, nothing astonished me more than the plough, which is used for turning up the soil. The plough-share is nothing but a round straight beam of wood, pointed and shod with iron at the end, having an upright handle fitted into it at the other end, which is grasped with one hand by the ploughman. I was fain to ask the proprietor of one of the largest farms in the valley, a very intelligent man, why he resorted to such a primitive implement, and whether the people were too poor or too ignorant to use the improved agricultural implements of the United States. He replied that neither was the case, but that the wooden plough in use was much the best for their purposes, as the soil was so light and porous that it needed but little disturbance, and as the nourishment of the plants came from the water soaked into the soil from above, and not from any moisture which the roots draw from below. His answer shows how little the conditions of one country can fit the necessities of another.

All the reaping done here is by hand, with a machete—a straight knife something like a butcher's cleaver, or with a sickle. Scythes and mowing-machines are unknown, and would not be used if given gratuitously.

Besides vegetables many different kinds of fruit are grown in this valley. Fig trees, growing variously to thirty and fifty feet in height, bearing both the black and the white fig, are common. The almond, nectarine, olive, peach, pomegranate and quince all grow well and bear abundantly. In many parts of Copiapo I saw the beautiful date palm rearing its stately trunk and loaded with bunches of yellow fruit. Few trees are more striking than this lordly palm. The banana and the orange can be raised, but both are of inferior quality. The cherimoya, or custard apple, is also produced, but it scarcely deserves mention by the side of the same fruit which one enjoys in Peru and Panama.

Vineyards are very common throughout the region. One vineyard through which I walked covered a ten acre lot, and I learned that it yielded annually several thousand bushels of grapes, which sold at a high price. The vines are generally trained upon upright poles about ten feet high, though sometimes run upon trellises. The wine of Chili, made from these grapes, especially that at a town called Pisco, north of Caldera, is famous along the coast.

Here, also, I saw a strawberry of which I have never heard in our own country. The fruit is about two inches in diameter, and perfectly white in color. The flavor is excellent, being of an agreeable acid. It does not seem to be a mere accidental variety, but it is quite common at Copiapo, where it is highly esteemed.

It would not be expected, under the circumstances, that the people would indulge very extensively in ornamental gardening, but the public walks, plazas and front-door yards are not without decorative shrubbery and flowers. The most common shade tree to be seen is that which is known as the "pepper tree" (*Schinus molle*). It is really a beautiful object, often growing

here and at Valparaiso to the height of thirty or forty feet. The leaves have a strong terebinthine odor, which lingers upon the fingers long after they have been handled. The people have a fancy, whether correct or not I cannot say, that when numerous about school buildings or dwelling-houses, these trees are injurious to the health. The *Anarcardiaceæ*, to which it belongs botanically, are a pretty suspicious family, and the popular opinion is very likely to be trne.

The Australian eucalyptus (*E. globulus*) also thrives well in this region, as it does in fact all over the Argentine Republic, on the other side of the Andes. A tree known as the Australian pine, frequently occurs in the gardens of the valley ; it is a striking object with long horizontal branches, which gradually shorten towards the top, giving the tree a conical outline. It grows to an immense height. Several kinds of willows border the banks of the river, one of them known as the *sauce lloron*, with the most lovely drooping, deep green tinted foliage that I ever saw.

The streets are also adorned with the sturdy native algorroba, known as the chañar, which, at the time of my visit, was clothed profusely with its bright yellow flowers, and which can flourish in the sandy soil without difficulty. The *Tamarix Indica* is also one of the few shrubs which can live and thrive in the desert with little or no watering. Strangely enough its leaves seem to be covered with moisture even in the hottest day, and always wet the papers when laid between the driers of the botanist.

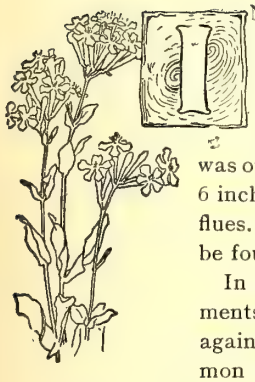
Of flowers everybody in these parts is inordinately fond, and they have good reason for being so, for I have never seen finer specimens in our hot-houses than grow in the open air all the year round in this genial climate. Rose bushes at least fifteen feet high, and loaded with large double flowers, are grown in all the gardens. The purple heliotrope of our northern green-houses forms great bushes higher than a man's head, scenting the air with its delicious perfume. Geraniums and pelargoniums bearing huge trusses of bright hued blossoms dazzle the eye with their brilliancy. Indeed, I never saw their equal anywhere else except at Valparaiso and Lima. Sweet peas of all colors, and bachelor's buttons, five to ten feet tall, and fuchsias, springing into bushy clumps which are covered with bells of pink and blue, daze one with their size and loveliness. Hedges of tall ox-eye daisies and rows of shrubby oleanders, both white and red, are seen enclosing the walks of the principal plaza in Copiapo. Scores of flowers whose popular names I know not, might be seen peeping in tangled bowers over the high mud walls. A lady of my acquaintance, who owned one of these floral labyrinths, handed me the key of her garden gate, and said that I should confer a favor if I would cut off as many flowers as I could carry away, since they grew so luxuriantly that she could hardly keep her garden trimmed. I interpreted her permission so liberally that I could scarcely grasp in my arms the bouquet which I culled. Instead of being offended, she very näively asked my friends if they could not render her a similar service the next day !

To leave these richly-laden fields and gardens and climb a short distance up the appallingly desolate hillsides, which are scarcely a hundred feet away, fairly bewilders the writer, so strange is the contrast. Most of all he wonders at the marvellous transformation which a few drops of water can produce in the natural scenery ; and he earnestly prays that the final drying up of these little Chileno rivers, which appears to be coming nearer year by year, may be delayed for many centuries yet.

*New York.* THOMAS MORONG.

# SOME EXPERIMENTS IN HEATING BY GAS.

BY CHARLES BARNARD.



IN THE October number, 1890, of THE AMERICAN GARDEN, a description was given of a tubular boiler, used to heat a small greenhouse. The boiler was of sheet metal, 27 inches long and 6 inches in diameter, with four 1-inch flues. A diagram of the boiler may be found on page 612, Vol. XI.

In order to make further experiments in heating, this same boiler was again used this last season with common street (water) gas, and the results of these experiments are here presented to THE AMERICAN GARDEN readers in the hope that they may prove of interest to both greenhouse owners and housekeepers. The object of the experiments was to ascertain how far gas fuel could be used to heat two rooms in a dwelling house. One of these rooms is a kitchen, in which gas is used for cooking, and the other room is a chamber. Both rooms are on the northeast corner of the house, the building being a well built wooden house, but standing on top of a high hill, fully exposed to the east wind blowing directly over Long Island Sound; the water being less than a mile distant. As gas is used for cooking, the kitchen is apt to be cold at night and when the stove is not in use. The chamber, immediately over the kitchen was kept warm by a small parlor stove. The object sought was to warm both rooms by means of a gas flame in the cellar.

The matter was laid before an expert in heating by hot water, and two radiators were selected, one of three sections for the kitchen, and one of four sections for the chamber. The upper room contains 890 cubic feet of air space and has one window facing east, giving 15 square feet of glass surface. The two outside or exposed walls gave 147 square feet of wall surface; the other walls did not count, as the next rooms were warmed by the furnace in the cellar, and did not extract heat from the room. The kitchen contained 1224 cubic feet, had 25 feet of glass surface and 200 feet of outside wall. These points have to be considered, because, in estimating the radiating surface needed to warm a room by hot water, it is, first of all, necessary to find out how fast the heat in the room escapes through the outside walls and the windows.

It is precisely the same in a greenhouse at night, and on cloudy days. The glass and all the walls radiate heat, so that, practically, a greenhouse, and in a less degree every building, is itself a radiator giving off heat to the outer air. A stove, furnace, boiler or other appliances within a greenhouse or other building simply acts to supply the continual loss by radiation. This loss through glass and through wooden, stone or brick walls is reckoned in heat units; so many heat units per hour per square foot of surface, according to the difference between outside and inside temperatures.

The two radiators were placed one above the other in the two rooms and connected by wrought-iron pipes, and the boiler was placed in the cellar below. The pipes from the boiler are one-inch pipes. This was a defect. It would have been better to use 1¼-inch pipe. From these pipes upward to the first radiator 1¼-inch pipe was used, and above this radiator ¾-inch pipe. This tended to divide the volume of water in the right proportions for the two radiators. To provide for the expansion of the water an "elbow" was tapped into the upper end of the of the radiator, and this being open (upward) gave an opening to the air. To ascertain the position of the water, two air cocks were put in the radiator; one in the elbow and the other 6 inches lower in the end of the radiator. When in position the apparatus was filled with water, through the elbow, till the lower air-cock showed water. The entire system was thus filled, with an air space or expansion chamber in the top of the upper radiator. It was thought this would all be needed, but in practice only about three inches of space at the top of the radiator was required.

To understand the exact proportions of the plant, it may be mentioned that the boiler had about 5 square feet of heating surface and held 2½ gallons of water. The lower radiator held 2.8 gallons of water and gave 21 square feet of radiating surface. The upper radiator had a capacity of 3.5 gallons, and gave 28 square feet of radiating surface. The flow and return pipes in the kitchen also held water and gave about 5 square feet of surface. The totals were about 9 gallons of water and 54 square feet of available heating surface in the two rooms.

It may be mentioned in passing, that before the apparatus was put in, the use of the gas stove in cooking and ironing was always sufficient to keep the kitchen warm. With gas, all the heat of a cook stove is available at once, and the preparation of breakfast is always sufficient to warm the room. The average time used to prepare breakfast is twenty minutes, except in baking bread or potatoes. The temperature in the room with two burners lighted usually rose a little less than one degree a minute; for instance, the room being 40° at start would be 57° in 20 minutes. The usual temperature of the room in prolonged cooking, roasting, baking, etc., and on ironing days was 70°, and in moderate winter weather often 80°. These points are of interest as showing that an ordinary gas stove (with a hood over it connected with the chimney for removing odors and steam) will keep any room of ordinary size perfectly comfortable while the stove is in use.

In such an experiment as this, the kind of gas burner used was of the utmost importance and a number of burners from different makers were tried, all of them burning twenty feet of gas per hour. The burner finally selected as being the best was a triple burner with three flames, made by the Superheating Gas Company, Chambers street, New York. In this burner the air mixed with the gas is heated by the flame before it is mingled with gas. The result was a kind of imperfect regenerative gas flame of a deep blue color at the bottom and a vivid crimson on top. This burner would easily melt a pot of lead and would heat a quarter-inch bar of iron red hot in a few seconds.

In order to obtain accurate results in the experiments, a thermometer was fixed in the flow pipe near the lower radiator, to give the temperature of the hot water. A thermometer was also placed out of doors on the northeast corner of the building and in each room. The apparatus was usually started late in the afternoon and used till 10 o'clock or all night in severe weather. Occasionally, in in cold storms the apparatus was used all day. The following are some of the results obtained:

Jan. 13. Calm, clear night, started at 4 P. M.; at 9 P. M., outside temperature 18°, kitchen, 70°; chamber, 65°; water, 145°. At 9 o'clock the gas was turned down low and left to burn all night. At 7.30 o'clock next morning, the temperatures were, outside, 20°; kitchen, 58°; chamber, 60°; water, 80°.

Jan. 16. Started at 5 P. M., temperature at 10, P. M., outside, 22°; kitchen, 65°; chamber, 65°; water, 130°. In the night a severe, cold, easterly storm, with snow and sleet, set in. The gas had burned dim all night and was turned on full at 8, A. M., with the following records during the day, the storm being very severe. 2 P. M., outside, 30°; both rooms, 60°; water, 137°. 6 P. M., outside, 30°; kitchen, 80°; chamber, 70°; water, 150°. This higher temperature in the kitchen is partly accounted for by cooking.

Jan. 22. Bad easterly rain-storm. The temperature remained uniform all day. Outside, 30°; kitchen, 65°; chamber, 63°; water, 145°.

Feb. 3. Started at 6 P. M., burned till 11.30 P. M. At that hour the temperatures were, outside, 30°; kitchen, 72°; chamber, 72°; water, 157°.

Feb. 4. Cold, high northwest wind all day. Started at 9 A. M., burned twelve hours. Temperature uniform. Outside, 20°; kitchen, 54°; chamber, 68°; water, 145°. Gas turned down dim at 9 P. M. and the temperatures the next morning were, outside, 10°; both rooms, 52°; water, 100°.

Feb. 5. Started at 5 P. M. At 10.30 P. M. the temperatures were, outside, 28°; kitchen, 72°; chamber, 70°: water, 160°; there being a cold westerly wind.

These results it would be observed, were obtained by a rude, imperfect and wasteful boiler, with no chimney, the products of combustion simply escaping into the cellar. So great was the excess of heat lost through the top of the boiler that the ceiling over the boiler had to be protected with tin to prevent danger from fire. The cellar was also kept at all times uncomfortably warm. The apparatus was used on an average six hours every other day, with occasionally ten or twelve hours with the gas turned more than half off. The cost of the gas at $1.50 per thousand feet, which is an average price in small towns; was three cents per hour for the two rooms, or one cent and a half per room, and about half of this at night when only a moderate temperature was required. The actual amount of gas used in the month of January was about 3,000 feet, it being used nineteen times in thirty-one days, at an average cost of 23¾ cents per day. This is, of course, much more expensive than coal used in two stoves. On the other hand, it is safe to say that with a proper boiler, one quarter part of the gas might have been saved. Then, too, it must be noticed that no kindlings were required, no coal carried upstairs and no ashes carried down. There was absolutely no dust or dirt and no labor beyond the lighting of a match and the turning of a valve. The cost of the apparatus was, of course, far in excess of the cost of stoves, the plant costing about $35. It will, on the other hand, last a great many

years without repair, or as long as the building stands. The heat is soft, pleasant and healthful, and there is no smell of gas, no noise or dust. With a proper boiler the same amount of gas would probably heat one-quarter more radiating surface.

The same radiators in a greenhouse, particularly if the boiler, as described on page 612, Vol. XI, were used, would heat almost 160 square feet of glass ; estimating three square feet of glass one square foot of radiator surface. For ordinary frame walls, one foot of radiator is sufficient for eight feet of wall. For a small greenhouse, "coils" or long groups of pipe would be better and cheaper than radiators. The best size would be 1¼-inch pipe, costing about ten cents a foot. One hundred and thirty feet would be sufficient, and with the fittings and labor, would cost about $30 ; perhaps somewhat less. The best form of boiler for a small house, in using gas, would be one enclosing the flame on all sides, with a tubular boiler over the flame.

Some of the small hot water boilers now in the market would answer by placing one or more burners on the grate bars. The cost of illuminating gas is too high for the continuous use in large apparatus, but for spare rooms in a house, used a portion of the time, and for a small greenhouse, where on sunny days no fire is needed, it will pay, because of the saving in labor and attendance. By the use of a thermostat it can be made perfectly automatic, regulating itself according to the temperature of the air in the greenhouse. Gas for fuel is steadily growing cheaper, and will, before long, become the best fuel for the greenhouse.

The radiators used for these experiments came from Hopson & Chapin Manufacturing Company, New London, Connecticut.

# TWO BITS FROM AN ENGLISH JOURNAL.

From the *London Journal of Horticulture.*

HINTS ABOUT FREESIAS—For some time past, varied opinions have been expressed respecting the culture of the freesia in nearly every gardening periodical, which I have read with interest, as I think many fail to grow this beautiful, sweet scented plant to anything like perfection. Yet, the culture is simple ; at least I have always found it so, and always been able to flower them well. I think where fragrant flowers are required for house decoration, either in a cut state or in pots, the freesias should be one of the first to be had for autumn and winter work, as they stand being placed in the rooms very well, which proves fatal to so many other plants. I generally pot the bulbs in August, placing eight in a 5-inch pot, in a compost of two parts loam and one of leaf soil, with a liberal quantity of sand. They are then placed in a cold-frame and lightly covered to a depth of two inches with cocoa-nut fiber, in which position they remain until their growth is seen. When the pots are well filled with roots, they are placed on a shelf near the glass, where they remain until the plants flower. If a few are required for any special purpose they are placed in heat, always being careful to bring them back again into a cooler house to open their flowers. When the flowers are visible the plants are supplied with weak liquid cow manure at every alternate watering. After they have flowered, they are replaced on the shelf in the full sun, and liberally supplied with liquid manure, so as to plump the bulbs for another season. I think the reason why many fail to flower bulbs of any description after the fruit year is, they forget that they require "feeding" after flowering, to replace the nourishment which has been drawn from the bulbs. I have had equally as good flowers of freesias the third year as I did the first from bulbs treated in the way mentioned.—*O. W. Guy.*

M. MEISSONIER AND HIS GARDENER.—The death of the famous French artist reminds me that the following amusing story may be worth repeating, and possibly it may be fresh to some gardeners. M. Meissonier possessed one of the most beautiful gardens and the most *recherché* collections of plants round Paris ; he was, in fact, a thorough-going enthusiast in all horticultural lore. One of his gardeners possessed a special aptitude for naming all kinds of seeds. M. Meissonier had often endeavored to trip him up, but without success. So one day, when having several gentlemen assembled at his hospitable luncheon table, he unfolded to them a plot of how he would at last humble his gardener by submitting for his inspection some dried herring-roe. Having sent for the man, his employer told him that a gentleman had sent him a packet of seed, of which he asked the name, habitat, how long it would require to germinate, etc. The gardener replied, "The plant from which the seed was gathered was indigenous to the shores of the North Sea, and would require about a fortnight for germination, when he would tell him the name thereof." M. Meissonier handed the packet over, and strictly enjoined the gardener not to fail to let him know when the young plants were fairly growing. This he did about a fortnight afterwards, and at a time when his master had several of his fellow conspirators again at his house. "Now we shall have a lark, Messieurs," he gleefully announced to them, and sallying forth, they followed the gardener to one of the stoves, where, in a propagating frame, about two dozen 3-inch pots were standing close together, each with a herring's head looking out of the center. The hilarity of the great painter's guests was unbounded, but he himself was also equal to the occasion, for he drew a 100-franc note from his pocket and handed it to his gardener.—*N.*

# The Editor's Outlook.

*THE APPLE.*

THE APPLE is the most companionable of fruits. It is a part of the old home. The trees leaned over fences and grew on the hillsides when we first chased over the fields in the red October days; they shook their petals of pink and white over the honeysuckles in the old garden like belated drifts of snow; in their gnarled branches the robin gave the first news of spring, and from the crotches a young brood flew in the early days of June. We cannot remember the time that we first knew the apple tree. Every returning year it has whitened the landscape with its wealth of bloom, and every September the fruits have reddened in the sun. And the memories of the long winter evenings at home are fragrant with the crisp and spicy fruits. So much a part of us has the apple become, that we have ceased to think of it. Like old friends and old places it is inseparable from that compound of experiences which we call ourself.

And yet people are asking if apples pay! Does it pay to live, to eat, to think? Does it ever fail to pay to raise what everyone wants? Yes, there are some people which nothing pays. In these times it never pays to raise common things in common ways. It does not pay to raise apples if apples receive no part of the farmer's care or thought. Where are the orchards that do not pay? You will find them everywhere. You will know them by the thick-topped and yellow trees, the tall grass and weeds, the broken fences. If they receive any attention beyond the knocking off of the wormy fruits in the fall, it is only such spasmodic effort as the farmer now and then finds time to devote to them, when all other work is done. Neglected orchards, like neglected children, are rarely a pleasant heritage; and it is well that it is so.

But even our best orchards fail now and then. Yes; so do wheat, and cotton, and stocks. It is all a question of how often the failures occur and how great the capital invested. Perhaps, on an average, every alternate year brings no profit from the orchard, but what is the outlay when the crop fails?—interest on an investment which is everywhere rated too low, a few odd days of cultivating and pruning, and something for fertilizers. There is no bustle or worry of sowing the crop in the spring, no laborious harvest to find that you have reaped only chaff. The trees are there, and your land is worth from five to twenty times more with the trees on it than without them, even though there is not an apple on them. How many young men look upon an apple orchard as an investment? Land worth twenty dollars to-day will be worth one hundred or two hundred dollars ten years from now, if it has a good orchard. And the cost of the improvement is nothing, for the immediate use of the land in the meantime should at least return all outlay.

Every man who cares for his orchard as he would care for other crops from which he expects to reap a profit knows that apples pay. And they must always pay. Demand is keeping pace with supply; perhaps outstripping it. Good fruit in the right market pays; poor fruit hustled off to the handiest market does not pay, and we are glad that it does not. Intelligent effort is needed for the development of men as well as for the improvement of apples.

But difficulties are increasing. Worms, apple scab, glutted markets, all contribute to the risks of the business; but what then? Shall one soldier put us to flight? The difficulties do not come every year; or if the worms come, rout them! There is no longer any excuse for the loss of a crop from insects. And the scab is coming under our dominion Yes, apples pay; we must make them pay!

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*SUSPICIOUS BULLETINS.*

THE Experiment Stations of three states—Maryland, Tennessee, Georgia—have recently published identical bulletins upon "Potash and Paying Crops." From the introductory matter it appears that the bulletin was prepared by the German Kali Works, of Washington, a firm which deals in potash fertilizers. It was evident that the stations had lent themselves—probably inadvertently—to an advertising scheme, but the exact nature of the transaction has lately been told with the utmost complacency in the annual report of one of the stations concerned. The director of the Tennessee station simply says that "the edition of this was furnished the station by the American agent of the German Kali Works." But the director of the Georgia station makes an extended statement, as follows: "Bulletin No. 9 (special), October, 1890.—An edi-

tion of five thousand copies of a pamphlet of forty-eight pages on 'Potash and Paying Crops,' was offered to me by the German Kali Works, Washington, D. C., for adoption and distribution as a bulletin of this station. After carefully reading a specimen copy furnished me and finding nothing in its pages of an objectionable character; but on the contrary, that it was a well prepared monograph on the subject of potash as a fertilizer, containing much valuable information for the farmer, I accepted the proposition. Whereupon the above firm supplied me, free of all expense, with ten thousand copies of the pamphlet, the title page printed as directed by me, of which a large number were distributed in the usual manner, and several thousand remain on hand."

This is a most remarkable confession. It is probably wholly within the letter of the law to publish such a bulletin as this, for one mission of the stations is "to aid in acquiring and diffusing among the people of the United States useful and practical information on subjects connected with agriculture;" but it is certainly contrary to legitimate experiment station policy to publish wholly gratuitous matter originating outside the experiment stations, and the transaction implies that legitimate bulletin material is scarce. Moreover, all the stations published this bulletin as a "special." We are not informed as to the particular mission of a special bulletin, but it would appear to be one of immediate or unusual importance; such, no doubt, is the common interpretation of the term. And the Georgia station distributed five thousand of these advertisements, while only one thousand to two thousand copies of ordinary bulletins are ordinarily published; "and several thousand remain on hand" for any of our readers who may want a few.

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*SEED WARRANTY.*

SIXTEEN years ago a suit was brought against a New York seed firm to recover damages sustained in using cabbage seeds which proved to have turnip and other seeds mixed with them. The plaintiff obtained judgment, and it was so heavy that the leading seed firms of the city called a meeting to take action upon the matter. This meeting, in which J. M. Thorburn & Co. were probably the chief movers, adopted a statement to be printed upon seed packets to disclaim any liability for the failure of the seeds to grow, or for the failure of the crop. This disclaimer was prepared by a lawyer and was approved by William H. Evarts. It read as follows: "Whilst we exercise the greatest care to have all seeds pure and reliable, it is hereby mutually agreed between ourselves and the purchaser of our seeds, that we do not warrant the same and are not in any respect liable or responsible for seeds sold by us, or for any loss or damage arising from any failure thereof in any respect." This has been variously modified by different seedsmen, and the American Seed Trade Association adopted it last summer in the following form: "While we exercise the greatest care to have all seeds pure and reliable, we do not give any warranty, expressed or implied. If the purchaser does not accept the seeds on these terms and conditions, they must be returned at once, and the money that has been paid for same will be refunded."

The desire of the seedsmen was simply to protect themselves. Seeds are a variable commodity and their value depends upon many conditions, some of which are beyond the seedsman's control, and others are entirely unknown. It is impossible for one to warrant that of which he cannot obtain positive knowledge or the value of which may be determined entirely by the purchaser after it leaves his hands. The uncertainties under which the seedsman labors fall under three categories: (1.) He cannot be sure of the treatment which seeds are to receive in the hands of the purchaser; (2.) He cannot control the conditions of growth when the seeds are being raised, and yet it is known that the character of the season exercises a great influence upon the vitality of seeds; (3.) Seeds do not give external evidence of their quality, and many different species are so near alike that mixture cannot be detected. The uncertainties arising from conditions of planting are well illustrated by a suit brought by a Jerseyman against a New York firm some years ago because of the failure of a half bushel of sweet corn to germinate. Although the field was replanted, none of the seed "came." The dealer contended that the corn was planted too early, while the trucker cited the case of an adjoining field which was planted at the same time and which had a good "stand." The dealer produced the weather reports to show that the weather had been too cold, and also showed that the neighbor's corn was a hard or flint variety, which had grown, while the softer sweet corn had rotted; and the trucker lost his suit. This was before the days of the disclaimer.

The buyers, on the other hand, demand some assurance that they buy what they pay for, although they admit the full force of the seedsman's positions. It all comes, finally, to a question of how much the disclaimer covers. Is it possible for any merchant

to be without responsibility "in any respect," as some seedsmen assert? These are questions which cannot be answered categorically, and the power of the disclaimer has not been tested in court. It is probable, however, that the court would hold that it extends only to the common and unavoidable uncertainties of seed vitality and variation, and does not afford immunity from mixtures of varieties or loss of quality which good care might have prevented. The seedsman would in general be held to the same implied warranty which adheres to other merchants, but with the understanding that failures due to causes entirely beyond his control are not chargeable to him. It is certain that the disclaimer could not cover cases of fraud. Two maxims of law apply here: "A man cannot stipulate against his own fraud," and "*Caveat emptor* never applies to fraud."

Some have doubted if a contract which is made by only one party is binding, but it must be remembered that the purchaser assents to the contract if he keeps the seeds bearing the disclaimer. The disclaimer, however, covers only those packets upon which it is printed. The contract only needs to be brought to the personal knowledge of the purchaser to be binding.

It has been suggested that seedsmen give a warranty of the per cent. which their seeds will test, after the manner of the warranty attached to fertilizers. But the very uncertainties which sustain the disclaimer make this impracticable. A sample may vary in per cent. of test from month to month, and seed testing is not so invariable that absolute results can always be obtained. Before any warranty of this sort could be made, an official and legal method of seed testing must be devised. It is also suggested that seeds should be sold in dated papers, as is now done by D. Landreth & Sons. This is good so far as it goes, but it refers only to age of seeds and does not in the least overcome the common difficulties for which the disclaimer was created. Still others desire that some law should be enacted which should make the seedsman liable for what he sells; but the laws which apply to other merchants also apply, with certain modifications, to him. Definite points will not be covered until some litigation occurs which shall establish precedents; but the purchaser is undoubtedly protected by common law, and any court would probably allow the seedsman the immunity which the disclaimer aims to secure. But the most gratifying phase of the whole subject is the fact that no occasion for litigation has arisen.

*IN SPRING.*

THE year's rewards are half earned when the sowing is done. Half our success lies in the plan which precedes the action. There is a feeling of generalship in the management of a farm. One has a varied host to marshal into the season's activities, and it demands forecast to avoid fatal errors. It is strange that at the very time when agricultural rewards appear to be fewest, the farmer still exercises greater dominion over nature than ever before. There was never a time when insects and diseases and even the elements have been under man's control so completely as now. But greater control is demanded, also, because of the competition in every business and the demand that the farmer shall adapt his policy to the times. The fact is, that only those farmers are succeeding who are exercising every energy to control the uncertainties of the business, and thinking about their work.

So the springtime is more important than the harvest, because the harvest depends upon it. Sowing is more than a merely perfunctory labor of getting the seeds out of the way. We need to learn to sow in the spirit of the season. In the rush and confusion of "getting the crop in," we lose the lesson and love of spring. Nature made the spring last fall, and now she has no other thought than to see it grow. The storms are as essential to it as the sunshine, but to the farmer they seem to be only an unmixed evil. They delay his planting because his planting is not forehanded, and all summer they interfere with his plans, and in the fall they spoil his harvest.

Yet life would scarcely be worth the living were it not for the storms. They sweeten the sunshine, and there is an element of strength and sympathy in them which makes one feel near to nature. If we cannot be afield ourselves, we can still sit in the doorway, like Thoreau, and see the beans grow. It is good for them, and somehow it is good for us too. When it storms the mechanic and the merchant still go to the routine of business, grumbling, perhaps, that business is dull. But the farmer rests and his his business thrives better, perhaps, than it did in the sunshine. Every day's labor is new, and it ought to be inspiring. No man has so great advantage of weather as the farmer! And how much happier will he be, and more content with the great beneficent forces of nature, if he will only look at the weather in this light! Being happier, his work will go easier and better and faster. Then why not be so much of a philosopher, farmer?


*** The American Garden *stands for simplicity, good taste and correctness in names of varieties. In general botanical nomenclature it follows Bentham and Hooker and Nicholson's Dictionary of Gardening. In the names of fruits, it adopts the catalogue of the American Pomological Society, and in vegetables the Horticulturists' revision in Annals of Horticulture. In florists' plants, it follows the determinations of the Nomenclature committee of the Society of American Florists. It opposes trinomial nomenclature, and therefore places a comma or the abbreviation* var. *between the specific and varietal names. It uses capital initials for all specific and varietal Latin names which are derived from proper nouns.*

California has adopted the eschscholtzia as a State flower.

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An excellent illustrated account of olive culture in California appears in the February number of *Farmer and Dealer*.

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Michigan horticulturists are discussing the advisability of asking the legislature to pass a law for the control of the plum knot. Every plum growing state should have such a law.

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The Third Annual Flower Show of the California State Floral Society will be held May 6th, 7th and 8th, in San Francisco. An interesting premium list, comprising sixty-nine schedules, is offered.

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Meehan's Monthly is the name of a journal to be started by Thos. Meehan, of Germantown, Pa., the first of next July. It is to be a sixteen-page magazine, with a colored plate each issue, and is to be devoted particularly to wild flowers.

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Fertilizer for Lawns.—The Bowker Fertilizer Company issues a neat pamphlet opposing the use of stable manure on lawns, as it is disagreeable and unwholesome. It advises the use of odorless chemical fertilizers. W. H. Bowker is the author of the paper on "Yeast of the Soil," abstracted on page 166, last issue, instead of Geo. W. Bowker, as reported.

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"Mum" Show for New York.—At the request of many lovers of chrysanthemums, the Directors of the Madison Square Garden Company have decided to organize a great competitive chrysanthemum show, to be held on or about November 1st, 1891, and to offer special prizes in order to popularize this beautiful flower. A subscription list has been started to further the enterprise. Lloyd M. Mayer, P. O. Box 1189, has immediate charge of the preliminaries.

The Citrus Fair held in Marysville, California, in January, was a phenomenal success. The awarding committee made the following statement: "We found it difficult in many cases to properly award premiums, there being so many in the same class. We very carefully examined the different varieties of citrus fruits displayed, and we can conscientiously state that for fineness of texture, color and general appearance, your Navel oranges are unexcelled by any raised in other portions of the State, and it is our opinion they are superior. Your Mediterranean sweets and seedlings are just approaching perfection, and those raised in Smartville district are the best we have ever seen. The Parson Brown orange we can also recommend as being the finest variety of budded orange we know. In all cases we have endeavored to give the premium for the articles which in our judgment possessed the greatest merit. We think we have never seen a finer display of citrus fruits at any fair than you have made. The arrangement of the exhibits was very artistic and unique."

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Committee on Nomenclature, 1891, of the Society of American Florists—William Falconer, Glen Cove, N., Y., Chairman.

*Sub-Committee on Roses*—John N. May, Summit, N. J., Chairman; Robert Craig, 49th and Market streets, Philadelphia; Ernest Asmus, West Hoboken, N. J.

*Sub-Committee on Carnations*—Edwin Lonsdale, Chestnut Hill, Philadelphia, Chairman; John Thorpe, Pearl River, N. Y.; E. G. Hill, Richmond, Indiana.

*Sub-Committee on Chrysanthemums*—Jno. Thorpe, Pearl River, N. Y., Chairman; Edwin Lonsdale, John N. May.

*Sub-Committee on Bedding Plants*—E. G. Hill, Richmond, Indiana, Chairman; Robert Craig, James D. Reynolds, Riverside, Illinois.

*Sub-Committee on Palms and Ferns*—Charles D. Ball, Holmesburg, Pa., Chairman; William R. Smith, U. S. Botanical Garden, Washington, D. C.; Robert George, Painesville, Ohio.

*Sub-Committee on Miscellaneous Greenhouse Plants*—

Robert Craig, 49th and Market streets, Philadelphia, Chairman; I. Forsterman, Newtown, L. I.; Charles D. Ball.

*Sub-Committee on Bulbous Plants*—Ernest Asmus, West Hoboken N. J., Chairman; I. Forsterman, A. B. Scott, 10th and Catherine streets, Philadelphia.

*Sub-Committee on Hardy Plants*—William R. Smith, U. S. Botanic Garden, Washington, D. C., Chairman; Robert George, A. B. Scott.

The Nomenclature Committee will meet in session at the Queens Hotel, Toronto, at 9 A. M., the day before the Florists' Convention takes pläce in that city August next.

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CHESAPEAKE HORTICULTURISTS.—The Peninsular Horticultural Society of Delaware, Maryland, and the two lower counties of Virginia, held its first annual meeting at Easton, Md., January 20th to 23d. The meeting was, without doubt, the largest and best attended one ever held. The president's address reviewed the events of the past year. It was largely devoted to packing fruit and peach yellows. In regard to the former, he said that the west, particularly the Pacific States, was teaching us how to pack fruit. We should take pains with it, especially the double extra and extra goods. Wrap in paper and pack in small baskets, if possible. The fruits grown on the Peninsula are second to none; California grows large, handsome specimens, but often poor in quality. In regard to yellows, he stated that he believed it was largely due to using unhealthy stock to begin with; start with healthy seed and use buds from healthy trees, and when you see a sick tree dig it up at once and burn it.

A. W. Slaymaker, of Camden, Del., spoke of small fruits. Among other things he mentioned the Cuthbert raspberry, which, he said, was brought to notice and given its popularity by J G. Brown, of Wyoming, Del. In speaking of strawberries, he said the past season had been favorable to some and unfavorable to other varieties. Among those that had done well he mentioned Warfield and Bubach. From an acre of the latter a man near him had cleared $500, while he only cleared $125 from an acre of Crescents. Warfield is a good grower, a good bearer, early, and a good shipper; had brought 50 cents per quart the past season. Gipsy had not done so well as in former seasons. Small fruits generally had been a short crop, but had paid well owing to the high prices.

Professor T. L. Brunk, of the Maryland station, spoke of "Home Adornment," and showed by the blackboard and stereopticon how such changes might be made, gentle curves taking the place of stiff straight walks, and where the different varieties of trees and shrubs should be planted to the best advantage.

Colonel E. L. Martin, of Seaford, Del., chairman of the committee on transportation and marketing, advocated the exchange system for handling fruit, and said that the growers had never received better prices nor the buyers better packed fruit than during the days of the Delaware Fruit Exchange. When asked what he thought of the Fruit Exchange operated a few years ago in Baltimore, the speaker said it might do, but he preferred to sell his own fruit at his own station. "It's a mighty good feeling to get the money in your pocket as soon as your fruit is sold at the station. I always like to stop at the bank on my way home and leave my deposit."

Dr. A. F. Neale, Director of the New Jersey station, read the report of the committee on "Registration of Fruits." He advocated the plan of having the name and description of all fruits sold on the Peninsula registered with the Society, so that it should be a guide to the planters. Any nurseryman, or dealer, who was not willing to have his varieties so registered should not be patronized by members of the Society.

Dr. Erwin F. Smith, peach yellow specialist of the United States Department of Agriculture, gave the results of his experiments in the orchards of Delaware and Maryland the past season. Upwards of forty acres were under treatment in various sections, and all kinds of fertilizers had been tried; he had no faith in fertilizers either as a preventive or cure for yellows. Some of them gave the tree a good growth, but had no effect as a cure or preventive of the yellows. Nurserymen were not to blame for the yellows. He had watched this and had found that trees from one nursery took the disease as badly as they did from another. The only remedy he could suggest was to dig up and burn the tree as soon as it was found to be affected, and this should be done by all. The destruction must be complete.

Experiments with grape rot, pear blight and potato scab were illustrated by the stereopticon, by Professor F. D. Chester, of the Delaware Experiment Station. The experiments proved that these diseases may be kept under control by the use of copper compounds.

"Plum Culture" was a paper by J. W. Kerr, of Denton, Maryland. Mr. Kerr has been very successful in growing plums of the Chickasaw type. He says it is the most profitable crop he can grow. He recommended the following list for the Peninsula: Wild Goose, Newman, Marianna, Purple Yosemite and Botan. He said most of the Japan plums were doing well and promised to become valuable acquisitions here.

Professor Brunk thought the Japan pear seedlings make decidedly the best stocks for the pear.

The Society will meet the third Tuesday in January, 1892, at Dover, Del. The following officers were elected: Colonel E. L. Martin, of Seaford, Del., was elected president; J. S. Harris, of Still Pond, Md., first vice-president; Professor Wesley Webb, of Dover Del., secretary, and A. L. Hudson, of Smyrna, Del., treasurer.

CHARLES WRIGHT.

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THE ORCHID SHOW.—The fifth annual orchid show, under the auspices of Siebrecht & Wadley, was held at the Madison Square Garden Amphitheatre, New York, from March 4 to 12. Although the chief attraction was the display of orchids, many other classes of plants

were well represented. Palms and spring bulbs were displayed in profusion, over 40,000 tulips, hyacinths, narcissus, etc., being on exhibition in the borders and parterres. The whole collection comprised about 75,000 plants.

The exhibitors, aside from Siebrecht & Wadley, were: William S. Kimball, of Rochester, who exhibited a fine collection of orchids, among which was a good plant of *Cypripedium argus* var. *maxima*, the only one in this country, and whose collection was awarded the Madison Square Garden prize of $150; Mrs. Goodridge, of Riverdale, N. Y., to whom was given the Siebrecht & Wadley prize; Hicks Arnold, N. Y.; Charles J. Carpenter, New Brunswick, N. J.; Essex Heights Floral Co., Belleville, N. J., and collections from William Mathews, Utica, N. Y., and John Eyerman, Easton, Pa.

AT THE ORCHID SHOW.

The arrangement of the exhibits was under the direction of N. F. Barrett, of Rochelle Park. The visitor was introduced through a maze of topiary work and was conducted among parterres of bulbs, ericas, marguerites, lilies of the valley, azaleas and cinerarias; amongst banks of odd and blazing orchids, to an Italian terrace and pavilion at the farther end, where, from out the evergreen, a waterfall fell into a tank of *Pontederia crassipes* and papyrus. The orchids were in their full glory. *Cattleya Trianæ* was probably the most important single contributor to the display. The plants were numerous and in good condition. An interesting port of this species was exhibited by Siebrecht & Wadley, but was bought by Mr. Kimball. It is somewhat intermediate between the species and var. *Backhouseana*, but instead of having the stripe of that variety it bears a red blotch upon the end of the petal. Mr. Arnold exhibited a white variety of *C. Trianæ*. *Oncidium splendens* attracted much attention; as did also *Miltonia Rœzlii* and *Epidendrum Stamfordianum*. If one were asked for the best twelve classes of orchids for general purposes, this exhibition would seem to answer the question in about the following order: Phalænopsis, cattleya, cypripedium, odontoglossum, dendrobium, oncidium, lælia, cœlogyne, lycaste, miltonia, cymbidium and vanda. The Essex Heights Floral Co. exhibited a couple dozen varieties of carnations, some of them new. Among them was a pure white Grace Wilder, and a new mottled pink called G. C. Tyler.

A good many specimen plants were unusually interesting, especially among the palms, in which Siebrecht & Wadley are probably the largest dealers in the country. A number of large specimens of Florida plants were transported for the occasion. The cocoanut palm was in fruit. *Sabal macrocarpa* was represented by large specimens. A fine plant of *Zamia pungens*, fifty or sixty years old, stood near the center of the hall. A good pair of *Pritchardia grandis*, one of them from the Morgan collection, was particularly conspicuous. *Ravenala Mada-*

*gascariensis* or traveler's tree, *Martinezia erosa*, *Cycas Lehmani*, valued at $15; *C. Rumphii*, *Pritchardia Pacifica*, *Ptychosperma Alexandræ*, *Thrinax elegans* and *Astrocaryum argenteum* were shown in fine specimens.

This was probably the most important orchid show yet held in the country, and it reflects credit upon the industry and enterprise of the promoters. It is apparent that if flower shows continue to increase in extent and frequency, a horticultural hall will be needed; for while the present amphitheatre is elegant and commodious it is too high and has too little top light for the proper display of plants. L. H. B.

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STATE HORTICULTURAL ASSOCIATION OF PENNSYLVANIA.—The thirty-second annual meeting of the State Horticultural Association of Pennsylvania was held in Lancaster, Pa., on January 21 and 22. It was one of the best attended meetings ever held by the Society.

President Snavely, in his annual address, called attention to the presence of a number of the original members who assisted in the organization of the association in Lancaster in 1860. Of the forty-five founders only fifteen are living. What changes have been wrought since this first meeting! Fruits which were rarely seen on the farmer's table are to-day common everywhere. Fruit growing cannot be overdone if well done. We must not confine ourselves to a single crop, but to many crops. Instruction in plant life should be given in the public schools.

William M. Benninger, of Lehigh county, said that peach trees should be set out when one year old, and the planting should always be done in the spring. Original peach stocks are commonly used for budding. Prune the trees every year, and while the trees are in bloom. Casper Hiller, of Lancaster county, denounced pruning fruit trees when in leaf, and said that trees are ruined in that way. Joseph W. Thomas, of Chester county, preferred spring planting of peaches, the trees to be two years old. William H. Moon, of Bucks county, said that some of the most successful trees ever set out were planted in the fall. Henry M. Engle, of Lancaster county, said a good word in behalf of fall planting. E. C. Brinser, of Dauphin county, explained Mr. Hale's method of pruning the trees during the blossoming period. S. B. Heiges, of York, had the best results from pruning in the fall. Professor Heiges said that he made two applications of unleached hickory ashes to his peach trees every year. He gave a formula for making a complete peach food: Muriate of potash, nitrate of soda and sulphate of ammonia each one part; mix with twenty-two parts of ground bone. Apply from four to five pounds of this mixture to each tree. Mr. Hiller said that South Carolina rock would give the above in a cheaper and simpler form.

Henry W. Comfort, of Bucks county, read a paper on "Chestnut Culture." He described several varieties of chestnuts grown by him, and advised grafting altogether. Seedlings ripen at different times, which is inconvenient. As to whether chestnut culture will pay depends on circumstances. Casper Hiller said budding chestnut trees is uncertain work, but those that grow do better than those that are grafted.

The proceedings of the second day opened with the presentation of the annual report of Cyrus T. Fox, Chairman of the General Fruit Committee. The apple and peach crops were a failure in almost every county.

Peaches, usually a failure in Pennsylvania for some years, save in several districts, were conspicuously absent this year. Never was there such a dearth of peaches in our markets. Some beautiful specimens of seedling peaches were exhibited at the York county fair. Plums are not grown to any extent in this state. The crop was a total failure. The quince crop was below the average and inferior, although there was some good fruit here and there. Of cherries there was only a partial crop of fair fruit. The sweet varieties yielded best. In some localities there were abundant crops of grapes, and in others no fruit at all. Mildew and rot affected this crop badly. Small fruits give better returns than anything else in the general list. It was almost too wet for strawberries, and the season was short. The fruit was of fine size and quality. Raspberries, blackberries, gooseberries and currants were very good.

Half an hour was devoted to a reunion of the original members of the Association. Of the fifteen survivors the following were present: Henry M. Engle, Casper Hiller, Levi S. Reist, William P. Brinton, Charles Dingee, Christian Musser and Dr. S. S. Rathvon. Thomas Meehan, who was present on the previous day, could not remain for these exercises. Letters were read from Samuel Miller, of Missouri; George J. Hughes, of New Jersey; and Dr. J. K. Eshleman, John Rutter, Josiah Hoopes and J. C. Ludweiler, of Pa. charter members.

"Shall we renew our strawberry beds?" was answered by Mr. Brinser in the affirmative.

Concord, Clinton, Worden, Moore's Early and Ives' were mentioned as good grapes for Pennsylvania.

The steps to be taken for counteracting "yellows" in the peach were referred to the Committee on Legislation.

It was agreed to hold the next meeting in York, Pa., on January 20 and 21, 1892.

The committee to audit the treasurer's account reported a balance of $323.23 in the treasury.

A resolution was adopted commending the efforts that were being made to secure a fine horticultural display at the World's Columbian Exposition, and pledging the Association to do its full share.

The officers for 1891 are as follows: president, William H. Moon; vice-presidents, Henry M. Engle, Josiah Hoopes, J. F. Smith; secretary, E. B. Engle; corresponding secretary, William P. Brinton; treasurer, J. Hibbard Bartram; librarian, Thomas J. Edge; professor of Botany, Thomas Meehan, Philadelphia; professor of Entomology, S. S. Rathvon, Lancaster; professor of Chemistry, S. B. Heiges York; professor of Ornithology, Dr. B. H. Warren, West Chester; chairman of General Fruit Committee, Cyrus T. Fox, Reading.

CYRUS T. FOX.

# FOREIGN NOTES.

A MUCILAGE similar to gum arabic is now manufactured from the gum obtained from the cherry.

THE WAGES of the workmen in the Kew gardens range from $4.50 to $5 per week, the men working eleven hours a day.

THE FLORA OF FRANCE.—Gaston Bounier and M. de Layens have undertaken the publication of a Flora of France. Cuts of all the native species will be given in the work.

BROCCOLI, VIOLETTE NAVIDAD.—This is an excellent early variety, having large, smoth leaves, and a firm and compact head. It is the earliest and most tender variety yet grown.—*Gartenflora.*

EUROPEAN ORCHIDS.—The Dutch Orchid Club has published a valuable catalogue of the species, varieties and hybrids of orchids found in the European collections. About 4,000 sorts are enumerated.

THE SEVERE WEATHER which prevailed in England during December and January past, also caused considerable losses in France. It has been estimated that the rose growers in the vicinity of Paris alone will lose about $200,000 worth of roses.

OBITUARY.—John Dominy died February 12, aged 75 years. He commenced hybridizing orchids and nepenthes in 1846, and had remarkable success in this work. Among his most valuable hybrids may be mentioned *Cattleya Exoniensis*, *Calantha Veitchi* and *Lælia Domini*.

A THRIVING EXPERIMENT STATION exists at Libreville, Gabon-Congo, Africa. The rubber tree of Para, probably *Hevea Guyanensis*, is being propagated very rapidly, and the directors hope to distribute 200,000 of these plants in the colony within the next two years. Similar work is also carried on with other tropical plants.—*Revue Horticole.*

AN INTERESTING PLANT in the cactus house at Kew is the epiphyllum grafted on a specimen of pereskia that runs up one of the rafters. The epiphyllum is grafted on at various points, and the bunches of leaves and flowers hang down like a cluster of mistletoe from an old gnarled apple tree. The effect is very pretty when the epiphyllum is in full bloom.—*The Garden.*

THE MEMBERS OF THE ASSOCIATION FOR THE EXTERMINATION OF SPARROWS held their annual reunion at Borssele, Zéland. Their report states that 424,472 sparrows were killed during the year. F. Van Duyne was the champion, as he destroyed 502, this being the greatest number killed by one person. In consequence he is exempt from taxation for one year and is given the position of accountant, with an annual salary of about $100.—*Bulletin d' Arboriculture, de Floriculture, etc.*

THE ENGLISH GOVERNMENT has recently passed an act providing for an official examination of all weighing instruments used in England. All such instruments must be stamped by an inspector within twelve months from the passage of the act, and all persons violating any of the clauses will be subject to a fine not exceeding $10. Repeated offenses are still more severely dealt with.

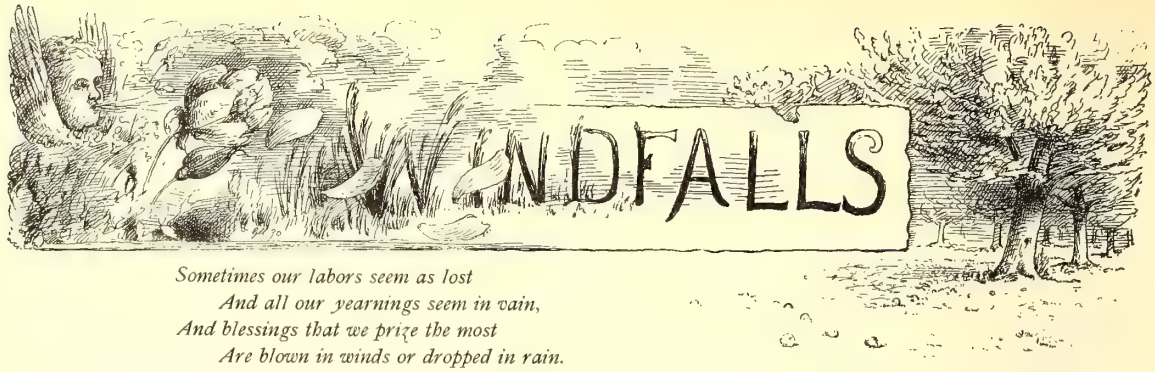
AMERICAN WEEDS ABROAD.—*Elodea Canadensis*, which was introduced into France some time ago, and which has also proved a curse in England, has obtained such a foothold in many of the rivers of Europe that they have become seriously obstructed by this plant. *Azolla Caroliniana* threatens to do likewise. These plants are particularly troublesome in the canals of Belgium.—*Revue Horticole.*

THE FIRST HYBRID STANHOPEA—The first hybrid in this genus has been effected by a German orchidist, Herr Weber von Spindlersfeld. It was obtained by a cross between *S. osculata* and *S. tigrina*, and has been described under the name of *S. Spindlerania*. The first seedling flowered the fourth year after the germination of the seed, and the flowers, as to color, were exactly intermediate between the parents.—*The Gardening World.*

NEW HYBRID VERBENA "NORDLICHT."—This variety was obtained by A. Matz, of Breslau, from the seed of Defiance. The flowers are so large that at first sight they look like pelargoniums. They are almost an inch in diameter and bright orange-scarlet in color; the clusters are produced from the beginning of May to the end of October. Another valuable characteristic is its vigorous and compact growth, the plant being only seven or eight inches in height.—*Gartenflora.*

MANURE FOR ORCHIDS.—Every night the floors, paths, and all available spaces were damped with strong manure water direct from the tanks. This caused the houses to be filled for several hours with a damp, ammoniacal moisture. Several growers have remarked on the healthy appearance of the plants and of the absence of red spider. I find that plants on blocks or in baskets, where a circulation of air passes freely through the roots, do even better than plants in pots.—*O. W. Guy, in The Garden.*

THE ROYAL DUBLIN SOCIETY has just made an important departure in connection with agricultural education in Ireland. The sum of $2,000 has been allotted for the purpose of establishing a system of itinerant practical teaching and example farms, to each of which instructors will be appointed. These will go among the strong holders and instruct them in better systems of farm practice, including fruit and potato culture, which will also be shown in operation on the example farms.—*The Gardeners' Magazine.*




*Sometimes our labors seem as lost*
*And all our yearnings seem in vain,*
*And blessings that we prize the most*
*Are blown in winds or dropped in rain.*

**Planting Grapes at Night.**—According to the *California Fruit Grower*, hundreds of men are engaged in planting vineyards by lantern light in Fresno county in the planting season. It is said that the stakes can be set straighter by the use of lanterns than in daylight, and that the men do more work.

**Yellows, Peaches and Grapes in the South.**—Procrastination has been the cause of the great spread of the yellows in Kent county, Maryland. (See page 20, January issue.) The disease was getting hold there as far back as 1870, and perhaps earlier. In 1872 I had a nursery of peach trees in Kent county. One spring an old gentleman came to me for advice as to what varieties to plant. I gave him a list of good sorts. He looked at it carefully a little while, and said, "I don't see any of the Prematures down here; I have always noticed that Prematures bring a good price, and I want to plant a good many of them." The old gentleman really imagined that the prematurely ripened peaches, the precursor of the yellows, were a distinct variety of peaches. The neglect to remove these diseased trees in the early days gave the disease a stronghold, and will, ere long, drive the peach culture off the peninsula. Years hence, the peach district of the south will be the Piedmont country of Western Maryland, Virginia and North Carolina.

In North Carolina the vast region of high, rolling, sandy hill country, lying along the line of the Raleigh & Augusta R. R., between the Peedee and the Cape Fear rivers, now mainly occupied by a vast forest of long-leaf pines, which the turpentine gatherers and the saw-mill men are now rapidly using up, is coming into notice as a grape and peach growing section. The balmy climate of this region is attracting crowds of health seekers from the north, and the settlement at Southern Pines is rapidly becoming a second Vineland. The grape and the peach are found to flourish wonderfully here. Bearing vineyards here, last summer paid their owners over $100 per acre, clear of freights and commissions, from land that costs but a few dollars per acre. No yellows, as yet, exist in North Carolina, and if our nurserymen and orchardists exercise ordinary care, it may never appear. Grapes are shipped from this region the first week in July, and of course have the market pretty much to themselves.—W. F. Massey, *North Carolina Experiment Station.*

**Spraying Apples.**—Spray as soon as the last blossoms fall. It is best to repeat the operation in a week, or even sooner if a very heavy rain should follow just after the first application. Apply the liquid forcibly in a very fine spray. Do the work thoroughly. When the foliage begins to drip, pass on to the next tree. Send to pump dealers for circulars and prices; or ask dealers in agricultural implements for them. The experiment stations of Ohio (Columbus) and Michigan (Agricultural College P. O.) and some others have published bulletins describing various pumps, but more direct information can be obtained from the manufacturers. Use a weak mixture. Both Paris green and London purple are good. Use a pound to 200 or 250 gallons of water. When applied in this strength and not needlessly thrown upon the grass, stock can be pastured in the orchard. Keep the poison well stirred.

**Wild Apple.**—The most important work now to do, in my opinion, in apple culture, is the improvement of *Pyrus coronaria*, our western native apple, which alone is able to stand the excessive heat and droughts and cold winters that destroy all apples of European origin in these places. The Russian "iron-clads" have been looked to for the orchards of these peculiar regions, but there are many sections where these are a failure. In some of these sections coronaria offers the only hope, and it is high time our enthusiasts took hold of this species and improved it. Enthusiasts always lead the van in all new enterprises, and this is a case of special need of them.

It seems to me extraordinary that this very promising native species of the apple has had little consideration so far. It has produced the several seedlings of as large size and much better quality than the average fruit produced by seedling apples of the European species, after thousands of years of cultivation. It seems probable that it is capable of developing individuals with good-sized fruits, by a very short course of high culture and selection; and a good-sized apple of fair quality, raised from seed of the Coronaria without any hybridizing whatever, would be worth millions of dollars to certain sections that now are unable to grow any apples whatever.

*Pyrus coronaria* has an aroma which distinguishes it from all other apples, and will, when this species shall have been developed, give our people apples of a far more aromatic flavor than those now in use. One caution I think absolutely necessary in this matter. No hybridizing of this species with any other apple must be

done, if we desire to have, in the new and improved varieties apple trees with all the hardiness of the parent species. Let the new race of apples be pure American. —F. L. TEMPLE, *Mass.*

**Double Apples.**—Double apples are occasionally found. They are formed by the union of two flowers. Some varieties have a tendency towards such monstrosity. Fig. 1 shows a double apple, half size, of very common occurrence upon a certain old seedling tree, which bears fruit much like the Autumn Swaar. In some years twenty such apples could be found upon this tree. It is not common that double apples are so symmetrical as this. One part usually far outgrows the other, as in Fig. 2, the drawing for which was sent me by a correspondent in California.—L. H. BAILEY.

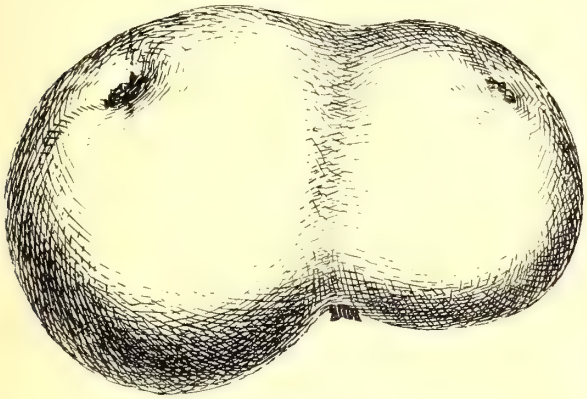


FIG. 1. A DOUBLE APPLE.

**Onions from Sets.**—After reading Mr. Crawford's experience in growing onions (see page 33, Jan. issue), I thought I would give our plan of growing them, and if it did not do him any good, it might perhaps help someone else. We sow the seed in a hot-bed in February. We use a bed fourteen feet long by eight inches wide. We drill the seed in rows three inches apart in the bed. Two beds this size will raise enough sets or plants to set one-eighth of an acre. These, in a good season, will raise from sixty to seventy-five bushels of onions. Of course, the richer your land is the larger your onions will grow, and the more bushels they will make.

We have been growing them for a good many years on the same ground. We manure it heavily in the fall, and plow under; then stir the land in the spring as soon as good and dry. You need be in no great hurry, for your plants are growing in the hot-bed. Work the ground as fine as possible. A very good tool for this purpose is a drag or boat made like the roof of a house, that is, one board laps over the other. We have one three feet long, for one horse. We can get around easily with this, on a small piece of ground. We now take a marker like a cross, the stem of the cross being the handle to pull by. Make the cross stick forty inches long; put a pin in each end of the cross stick, and one in the middle; stretch a line at one side to start with. Take the handle of your marker, place one pin against the line, walk backward and draw the marker after you; this will make three marks. In returning, let the end pin run in the last mark; you will then make four marks twenty inches apart at each round. We then take a small plow that a boy can pull. One boy pulls and one holds the handles. This makes a furrow about right to set the plants in. Set them about three or four inches apart in the row. Now it is no more trouble to set out these plants (which will be about as large as peas) than to put out sets, and everyone will make a large onion if the land is good. There will be no hand-pulling of grass or weeds, for you can go right to howing or plowing them with a hand plow. None of them will go to seed, and they are much sweeter than when grown by sets. We grow the Yellow Danvers altogether; they are far the best keeper of any we have grown. We can make money by growing them this way at fifty cents per bushel.—J. W. SIMMONS, *in Ohio Farmer.*

**How to promote Fruitfulness.**—It is not generally understood, even by men of more than average intelligence, that the fruit-buds for a crop of apples, pears, peaches, cherries and currants, must be developed and matured one season in advance of the crop. If no fruit-buds are matured this season on an apple tree, there will be no apples next year. So it is with currant bushes. If the worms are permitted to destroy all the leaves, the fruit-buds cannot be developed and matured, consequently there will be no fruit the succeeding year. During an absence in the summer of 1888, the currant worms destroyed nearly every leaf on the bushes. The crop of currants the next year was a complete failure. I am now preparing the bushes for a bountiful crop next season. An eye is kept on the bushes, to see if any worms have appeared. A pail, containing a weak solution of London purple, is kept hanging on a hook in the cellar, where no children or

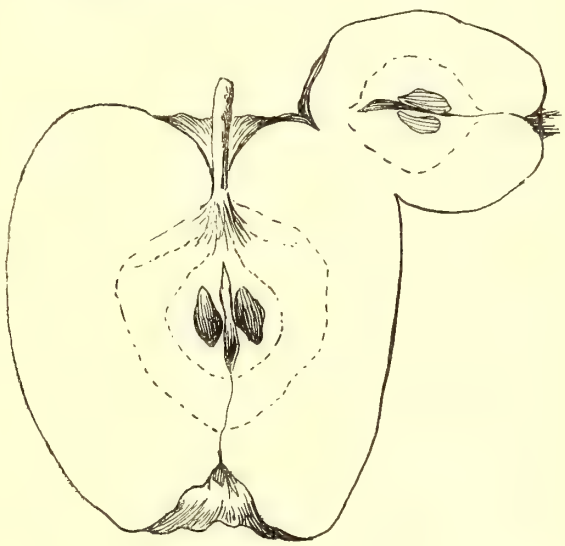


FIG. 2. DOUBLE APPLE.

animal can come to it. As soon as any worms appear on the bushes, a little of the solution is sprinkled on the leaves. The bushes are growing luxuriantly. I pass along the rows every few days and pinch off the terminal buds of all the shoots that have attained a growth of five or six inches in length. Six inches in length of new wood is sufficient for producing all the fruit that can be matured. If the growth starts up again, the terminal buds are pinched again. By pinching off the terminal buds the sap that would make an excess of wood, in long and slender stems, will be diverted to the development and maturity of fruit-buds for the crop next season. There is no advantage in allowing twigs to grow long and slender, and having on them many weak and feeble fruit-buds. A short, stocky twig full of strong and well developed buds will produce twice as much fruit as a long and slender twig, whether the twigs be apple, pear or other tree.

Many apple and pear trees are allowed to use up nearly all the vital energies of the tree, by way of producing an excessive growth of long and slender twigs. I have a light pruner at the end of a long pole, with which the long twigs at the tops of trees can be clipped. I attend to this cutting back and pinching off in every month during the growing season. Sometimes a second growth will start up late in autumn. I always pinch this, and direct the upstart to go to developing fruit-buds. Last season my peach trees seemed determined to make an unnecessary length of twigs; but I pinched and cut off the terminal buds, and continued to repeat the operation until the trees ceased to grow. The twigs thickened and the fruit-buds developed admirably—full, large and strong—so that the intense cold of winter did not damage them; and at the present writing the trees are literally loaded with fruit. Pruning and pinching for growth of twigs or for fruit-buds must be done when the trees are growing. The reason why some apple trees will bear fruit only every alternate year, is that the energies of the tree can not produce a large crop of fruit and a crop of buds in one season. If half the fruit could be plucked off when it is small, the tree would bear every season. To prove this assertion, let the young fruit be all plucked off of one side of a tree top and allowed to mature on the other side, and it will be seen that the side of the top from which the young fruit was plucked will be filled, the next season, with fruit. By this means, a fruit tree can be made to produce fruit on one side one year, and on the opposite side the next season.—Ess. E. Tee.

**As to spraying** apple trees with the arsenites, to destroy the codlin moth, I am satisfied from the testimony of those who have tried it, and the common sense there is in it, that we all shall have to practice it, either voluntarily or by statutory compulsion. I think it is settled beyond question that spraying apples in early spring destroys codlin moth.—A. J. Bracelin, *Michigan.*

**The Shiawassee** apple was brought from Shiawassee county, Michigan, from a seedling of the Fameuse, thirty years ago. The fact that so many orchards of the Fameuse were grown in the vicinity where it originated, gives a supposition that it originated from seedlings of that variety. It has not been extensively planted, but is an excellent apple.—T. T. Lyon, *Michigan.*

**For a permanent orchard** of 1,000, I would set the following varieties: 5 Astrachans, 25 Chenango, 50 Hubbardston, 50 Twenty-Ounce and Fall Pippin, 100 each of Greening, Spy and Jonathan, 500 Baldwin. I would set a few Seek-no-Further for those who believe it to be the best eating apple on earth. The remainder I would set to new varieties, as an educational feature. —A. J. Bracelin, *Michigan.*

### A Wild Bouquet.

Clover-blooms and buttercups
Gathered in the meadow,
Ferns, whose tender fronds of green
Graced the woodland's shadow;
Daisies white and starry too,
Show their happy faces,
Trailing vines and grasses wild
Add their pretty graces;—
Columbine, whose drooping head
Nodded in a corner,
Meadow lilies, deep and red
Lend their color warmer;—
Sweet wild roses, fair and pink,
Found beside the river,
Kissed by breezes from the south—
How they sway and quiver!

Dear wild flowers! I adore thee
More than garden's graces,
More than stately lilies tall,
More than pansies' faces!
Children of the field and wood,
Gipsy-flowers and cheery,
Ye are friends that come to me
When the hours are dreary.
Ye bring messages of peace
From the wood's deep arches;
Hope and courage from the fields
And the meadow-marches.
For I know that He whose hand
Tends thee in the forest,
Comes to me in tenderness
When my need is sorest;
And I know that He whose love
Guards the fragile blossom,
Will most surely comfort me,
Resting on His bosom.

—Harriet F. Crocker.

**Honest Packages.**—The fruit-growers of South Haven (Michigan) seem united now in the desire to have not only honest measure, but honest packing as well. At a late meeting of the Pomological society, they voted unanimously to use only the full peck basket for peaches and branded "full peck." Then they propose to go still further and unite, with a trade-mark and grower's name on the basket, to establish a home market, with a view eventually to have all fruit sold in Michigan. They have sent invitations to the fruit-growers north and south to join with them, and think it only a matter of time when growers will see it to be to their interest to handle their fruit at home, in this manner, and not, like the Arab, with each man's hand against his brother.—*Allegan Gazette.*

**Apples in Nova Scotia.**—It is often asked if apple growing pays. From a Nova Scotia standpoint, I say Yes! Take for example, the net sales for the last four seasons of the following growers, who regularly ship their own apples to London:

| | *Crop of 1887,* | *1888,* | *1889,* | *1890.* | *Av'ge total shipments.* |
|---|---|---|---|---|---|
| Mr. A. averaged | . . . . $3.76 | $2.48 | $4.25 | $4.20 | $3.83 |
| Mr. B. " | . . . . 3.24 | 2.49 | 3.06 | 3.62 | 3.43 |
| Mr. C. " | . . . . 3.44 | 1.63 | 3.31 | 3.70 | 3.21 |
| Mr. D. " | . . . . 3.13 | 1.72 | 3.20 | 3.21 | 2.85 |

Many others, showing equally good averages, could be cited, and infinitely more added, if other growers would exercise the same care and honesty in packing. It is generally conceded that it pays in this country to grow apples at $1 per barrel. Admitting this, the above averages are, I think, sufficient to warrant my reply.—C. R. H. STARR, *Nova Scotia.*

APPLE TREE IN MAINE AT 250 YEARS OF AGE.

**Tomato Experiences.**—I find it very difficult to shorten the time of securing fruit from this plant. It seems it requires nearly four months from the time the seed is sown before we can expect ripened fruit. Extra soil or cultivation may increase the size of the fruit or increase the productiveness of the vines, but give them the very best of soil and cultivation and the fruit will ripen but a short time earlier than if planted on thinner soil. Some varieties, of course, ripen some days earlier than others. But taken as a whole, I find that one hundred and twenty days is the average. I have had Perfection ripened perfectly for the table within one hundred and ten days from the time of sowing the seed. Last year I had a variety of plants, and gave them as nearly as possible an equal chance. I manured part with one kind of fertilizer and others with something different. The principal result obtained was more fruit and a better quality with some than with others.

Of the different manures used, the best results were obtained by using a complete fertilizer. I used poultry manure, liquid manure, night soil, ashes and lime each separately, and Fuller's complete manure. The soil was light prairie loam plowed up in the fall and a good dressing of stable manure applied soon after. A good plowing was again given in the spring, and before sowing the seed care was taken to thoroughly prepare the land in the best condition possible. With these plants I sowed the seed where the plants were to grow, as more firmness is given to each plant than when they are transplanted. Each kind of manure was applied in the hill around the plants after they had made a good start to grow. A number of plants were treated with each kind of fertilizer and the same cultivation was given. Of Perfection the first ripened fruit was one hundred and ten days from planting; the seeds and the plants were manured with Fuller's complete fertilizer. Next to this, two days later, were those manured with poultry manure; then those with night soil and liquid manure ripened at about the same time, followed by those to which ashes were applied, and then lime last, in about one hundred and twenty days. The principal gain, however, was in the size and quantity of the fruit on each vine. The result was in the order given and was sufficient to convince me that it paid to use the fertilizer.

I find that when the seed is sown in the open ground it is best to sow in hills the proper distance apart, give them good cultivation, and let them grow where the seed was planted, thinning out to one plant in each hill after they have made a good start. And especially is this the case when testing the different varieties with different kinds of fertilizers.—N. J. SHEPHERD, *Mo.*

**Potato Queries.**—How do Mr. Terry and others keep down the bugs on large potato fields? In planting potatoes on clover sod, can the clover be left to grow until time to plant? If so, what is the best width and depth to plow, on sandy loam?—W. H. C., *Ontario.*

**Latitude and Potatoes.**—All my potatoes are northern grown. From years of experience I have found that northern stock is far superior to southern in vigor and yielding qualities. This is more apparent in the early varieties than in the late ones, because of the fact that the early dug tubers pass the line of maturity and are on the down grade to decay before the planting time comes in spring.—T. C. DAVENPORT, *Phila.*

**Liquid Manure.**—I have considerable faith in liquid manure, especially with that class of plants which require considerable moisture, such as tomatoes, cucumbers and melons. It is often the case with these plants that in order to maintain a thrifty, vigorous growth it is necessary to supply more or less water, and by using liquid manure a thriftier, stronger growth can readily be secured. I prefer to use weaker solutions and use them every time it is necessary to water, rather than to have stronger, and apply less frequently. During the early part of the season last year we had a drouth that damaged the earlier gardens considerably; and tomatoes and cabbages, kale, cucumbers, and melons were

kept growing only by watering regularly. This is the third time I have tried liquid manure in this way, with excellent results.—N. J. SHEPHERD, *Mo.*

**Record of Sales.**—Can you inform me of a simple method of keeping a record of the sales of each variety of vegetables and fruits, so that at the end of the season we can tell the amount of each sold and prices received for it?—J. C. GROSSMAN.

*Answered by Professor L. R. Taft.*—In order to make such a record it will be necessary to keep a careful memorandum of the daily sales of each fruit and vegetable. This can easily be done in a pocket note-book if desired, in a sort of day-book form, the entries being something as follows:

JULY 1, 1890.

GREEN, WEEKS & CO., Dr.

| | | | |
|---|---|---|---|
| To 120 Quarts Strawberries | @ | $0 10 | $12 00 |
| " 2 Dozen Lettuce | @ | 30 | 60 |
| " 5 " Radishes | @ | 50 | 2 50 |

Cash, Dr.

| | | | |
|---|---|---|---|
| To 50 Quarts Strawberries | @ | 10 | $ 5 00 |
| " 1 Bushel Peas | @ | | 2 00 |

And so on through the day and month.

Each of the items being entered in something of this form, it will be a simple matter to transfer them to the record. A common record book will answer for this, if ruled in double columns, the entries being as follows:

RECORD OF SALES OF FRUITS AND VEGETABLES, JULY 1890.

| Day of Month. | Strawberries. | | Lettuce. | | Radishes. | | Peas. | | Beets. | | Sweet Corn. | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Qts. | Amt. | Doz. | Amt. | Doz. | Amt. | Bush's | Amt. | Doz. | Amt. | Doz. | Amt. |
| 1 | 2 50 | $25 00 | 10 | $3 00 | 30 | $15 00 | 3 | $6 00 | 10 | $4 75 | | $ |
| 2 | 3 00 | 28 60 | 11 | 3 25 | 25 | 10 75 | 5 | 7 75 | 15 | 6 50 | | |
| 3 | 2 75 | 28 00 | 15 | 3 75 | 35 | 14 25 | 8 | 12 00 | 18 | 7 60 | | |
| 4 | | | | | | | | | | | | |
| 27 | | | 5 | 1 20 | 10 | 3 00 | 6 | 5 80 | 25 | 10 00 | 40 | 5 00 |
| 28 | | | 7 | 1 60 | 12 | 3 25 | 5½ | 4 40 | 20 | 8 00 | 60 | 6 00 |
| 29 | | | 4 | 95 | 15 | 4 25 | 6½ | 6 00 | 15 | 6 00 | 50 | 5 25 |
| 30 | | | 6 | 1 40 | 9 | 2 60 | 3 | 3 00 | 17 | 6 50 | 55 | 5 45 |
| 31 | | | 2 | 50 | 7 | 2 00 | 3¾ | 3 75 | 20 | 7 75 | 35 | 3 25 |
| Total | 5,357 | $450 00 | 301 | $62 50 | 776 | $241 50 | 145 | $152 50 | 5,732 | $223 75 | 545 | $55 25 |

By using two pages, from twelve to eighteen fruits or vegetables can be thus recorded so as to show the sales for each day, and the total for the month. If it is desired to compare the profits from two varieties of fruits, for instance, the record can be kept in the same way, giving a double column to each variety.

**Treatment of Manure.**—I have a manure pit, mostly above ground, entirely protected from the weather, but on two sides are doors which can be opened to admit air and one is always kept open. The bottom of the pit is 18 inches below the level of the ground and is cemented to hold the water which drains into it. During warm weather fermentation takes place, generating a peculiar sickening odor, and to correct this is the object of my inquiry.

Last summer my gardener stated that the earth he put on the manure dried and injured it. I have been informed that earth used in earth closets is not improved by the use, and I have thought, may not the earth have the same effect upon stable manure. If earth is not desirable what effect will land plaster have?—JOHN T. MORRIS.

[Dust will not injure the manure if care is exercised. Apply only enough to destroy most of the odor. It should not be applied so abundantly that it remains entirely dry on top. Keep the door shut. Plaster is better. Less of it is required to destroy the odor, and the nitrogen is more completely conserved.]

**Chrysanthemums in Minnesota.**—The first Annual exhibition of the Minnesota florists, was the best display of chrysanthemums ever shown in the northwest, and I cannot believe that there has been anywhere a better exhibition as regards variety, size of plant, and flower. I never before realized what are the possibilities of the chrysanthemum. There were many shades of pink and red, delicate lavenders, yellows, maroons, white, and parti-colored hues and all perfectly beautiful. I noticed among choicest yellows the Golden Rod, White Larina, then a lovely quilled flesh, large and full, marked Lilian Bird. Of the parti-colored ones I liked C. H. Wheeler; of the pink, La Favorite; of the white, Puritan, and so on indefinitely. Some of the exhibitors told me that all their plants were grown from cuttings, none from seed. I said when I went into the rooms, "Can anything be more lovely?" When I came away I said, "What a pity that so much beauty must so quickly fade, for surely 'beauty is a fading flower.'"

What is the object of flower shows? I will tell you the effect it had on my scraggy chrysanthemums that I have been holding over from year to year: they disappeared from mortal sight within an hour after I got home, for all time, and an announcement was made to the family that next year they will see chrysanthemums that will astonish them, *and they believed it*, which will give you an idea of the effect of the exhibition on myself. So let the good work go on until we amateurs will not be satisfied with anything short of the best.—MIRIAM PARKER.

**My Madame Salleroi.**—My plant shelf is by a window twelve feet long, and I wanted an edging. My grocery man gave me half a dozen long narrow boxes. I filled these with earth, and having several plants of Madame Salleroi geranium, I pulled them apart and filled my boxes. The plant is very easy to slip, and

looks well from the first. The boxes made a good border for my shelf, and madame being very accommodating, did not even ask for much sunshine. The leaves are very pretty, some being pure white, others green and white mixed. In the spring I carried out my boxes, pulled the plants apart, and had enough to border a bed thirty feet long. This bed was composed of low growing things, phlox, mignonette, sweet alyssum, dianthus, pinks, and a few dwarf marigolds. The effect was very pretty. I put a few of my Sallerois in pots; they make nice ornaments for the table mixed with other plants, and as they do well in winter, when blossoms are scarce, they are invaluable for the plant shelf. Another good point, they can be grown in very small pots or boxes.—SISTER GRACIOUS.

RHAMNUS PURSHIANA

**Rhamnus Purshiana** is a very low, pretty shrub, with bright scarlet berries, handsome light green deciduous leaves and cinnamon-colored stems. The tiny greenish-white flowers have four or five petals and stamens.—K. P. S. BOYD, *California.*

**Kalmia latifolia.**—I was very much interested in the article on rhododendrons in the October number of The AMERICAN GARDEN. I visited a small lot of almost half an acre in Wilton last June when they were in bud. I picked some and put them in water at home and they blossomed nicely. I also have heard that there are several acres of them in another town, Mason I think. But the most beautiful show of wild flowers I have ever seen is along the road from Wilton to Greenville. The flowers are *Kalmia latifolia.* and they line the side of the road in the woods and in the pastures to an extent that makes the drive perfectly beautiful in the season when they are in bloom.—DAVID PUTNAM, *New Hampshire.*

**Plant Notes.**—Fuchsia Storm King still holds its own as the leading dwarf double white. It is probably the earliest flowering variety there is among the double ones. Being a variety which flowers when the plants are quite small, the first flower buds should be picked off, and the plants kept growing until they are strong and in condition to support a good many of the large blossoms. If small plants are allowed to mature flowers, the result is a plant so weakened that it scarcely recuperates sufficiently to make a good specimen. Hence the necessity of picking off the buds until the plant is large.

Fuchsia E. G. Hill is another double white variety. It is undoubtedly a fine variety. The habit of the plant is almost identical with the strong growing variety Phenomenal; erect in growth, and compact, the foliage having a leathery texture; the flowers are of large size and free flowering. In order to gain success in the culture of fuchsias, they require a rapid growth which can be given by having considerable leaf mold or thoroughly rotted spent hops in the soil, strict attention to watering at the roots, frequent syringing, and a minimum temperature of 50°.

*Echeveria Hoveyi* is one of the prettiest varigated-leaved bedding plants in cultivation. When young it is of similar habit to *E. glauca;* the coloring of the leaves is exquisite green, yellowish white, suffused with pink. I have not yet seen it in large quantities for bedding purposes, but as soon as sufficient stock of it can be secured it is destined to be largely used.

Sweet Alyssum Little Gem, is a perfect little beauty, growing only about four inches high, spreading considerably and completely covered with its small white flowers.—MANSFIELD MILTON, *Ohio.*

**Chinese Sacred Lily.**—I would like to know what to do with the bulbs of the Chinese Sacred Lily after they have bloomed?—E. C. FRACE.

*Answered by B. M. Watson, Jr.*—The bulbs of the Chinese Lily, *Narcissus Tazetta* var., are of no use after blooming; they should be thrown away.

The plant is not hardy here, otherwise the sometimes numerous bulblets, which are found after the bloom is past, might be planted in the open ground, and from each a blooming bulb would be obtained in from three to five years. This could be done in a milder climate, as Florida or California, out-of-doors, but is manifestly too expensive a method to attempt under glass while the price of the plant is so little.

**Starting the Moonflower.**—For several years I have planted the seed of the moonflower as a means of securing an abundant supply of plants for my own garden. I have never succeeded in rooting cuttings, as others do. In these years if I obtained from 20 to 50 plants from one-half pound of seed, I congratulated myself. I tried, in

vain, different times for planting, different soil and treatment to secure a better result, but with no effect; not one-tenth of the seed would germinate. Long ago one of my neighbors told me that they were directed "to cut the seed before planting." I tried this and got no plants, Last March I planted one-half pound of seed, and so far but one plant has made its appearance.

Finally I ordered some plants from an extensive grower. Through some mistake he sent me two varieties of seeds instead of the plants. With these seeds came a printed slip advising the "cutting off of the end of each seed and then soaking over night in hot water followed by planting in rich loamy soil next day thereafter." Despairing of getting plants, unless by purchase, I concluded as a last resort to try the cutting process again. Mr. Smith, the florist, had kindly and thoughtfully cut a few to show me how much to cut off. Only very little is taken from the seed. I began and cut over one hundred seeds, leaving about twenty uncut to test the method. I carefully followed the directions, but planted the cut and uncut seeds in different places.

It was not three days before the cut seed showed vigorous germination, and ere two weeks elapsed I think the whole number planted were in vigorous growth. Of the uncut seeds not one has sprouted and they show no sign whatever of doing so. To me this cutting of the seed is a new idea, but not the soaking in hot water.—Mrs. J. S. R. Thompson, *S. C.*

**The Storm Queen.**

The fairy of the storms one day
Put on her robes to have some play;
A sportive elf, on mischief bent,
For fun her very soul intent.

A wreath of hailstones was her crown,
A snow-drift pure her royal gown,
An icicle her scepter nice,
And slippers wore she, formed of ice.

She paused on window-panes to trace
Rare ferns and flowers of wondrous grace;
The water-fall she made a home,
Palatial for the wandering gnome.

The spruce trees somber, decked by her,
Wore garments of the costliest fur;
Incased in pearls the clothes-line hung;
Above the electric wires sung.

But, wearying of this active play,
She rested near the close of day,
And laid her on the moss to sleep
Where soon arbutus buds will peep.

Amidst the slumbering flowers she lies,
To take her nap till summer dies,
And winter calls her once again
To riot in the snow and rain.

—*W. W. Bailey*, in N. Y. *Independent.*

**Hardy Gaillardias.**—I have a passion for hardy plants. I think there are many readers of the magazines, who, like myself, place confidence in the reccomendation of a plant from one of ourselves who has really grown and tried it when we would not trust the nurseryman. True, we may not all possess the same tastes, but one can easily determine, if a good description is given, whether a certain plant will be liked or not. I like these hardy gaillardias very much. I have three varieties: Superba, crimson bordered with yellow; Perfection, a dwarf variety, bright scarlet with a margin of yellow; Templei, orange, crimson and red, intermingling, but still having rings, and a brown center. The flowers are large, perhaps two and a half to three inches across and the stems are at least eighteen inches high. They are all perfectly hardy, but of course everything with us at the north should have some slight protection.—Hyacinth, *Iowa.*

**Is Charcoal Good for Orchids?**—I do not hesitate to say that charcoal is not beneficial to orchids. I have always noticed that the roots prefer other drainage and avoid the charcoal, which causes them to turn black and rot.—*J. Van Lansberger.*

Many times I have observed that orchids which had drainage of potsherds and moss were healthier than those with which charcoal had been used either in the compost or as drainage. I have also noticed that the sphagnum in pots is much sooner killed if charcoal is present.—*Otto Ballif.*

I have entirely stopped using charcoal in growing orchids. A free circulation of air about the roots of the plants is essential, and this can be obtained much better with other drainage than charcoal, which becomes sodden with water and then does not permit the passage of air.—*G. Miteau.*

A serious objection to the use of charcoal in growing orchids is the manner in which it retains water, causing the roots to rot. That phalænopsis does well on a charred block of wood, I think is due to the thinness of the layer of charcoal. Water is not retained in quantities sufficient to injure the plant.—*P. Silner.*

The growth of my orchids is equally vigorous if charcoal is used or not.—*A. Blew.*

If charcoal is not better than potsherds, at least it is no worse if properly employed. It is lighter and the plants can fasten their roots to it more easily than to other materials.—*Mas de Villia.*

The conclusion to be drawn from these and many other letters which we have received, is decidedly unfavorable to the use of charcoal in growing orchids.—*Adapted from the Journal des Orchidées.*

**Treatment for Amaryllis.**—Two months ago I obtained six dry bulbs of amaryllis. I potted at once in leaf mold and loam and a little rotted cow dung, placed the pots in a temperature of about 60° and kept the earth a little moist, not wet. The bulbs, though round and healthy, have not made a sign of growth, not even a speck of green at the top. Can you tell wherein the treatment was wrong?—H. M. T.

*Answered by B. M. Watson, Jr.*—Your correspondent need not worry about his amaryllis bulbs, so long as they are free from decay, and firm to the touch; good growth is bound to come in due time, with the treatment described. The soil required for the plants should

always be well drained; sand should form about one fourth part, and it is a good plan to add some bits of charcoal, not only to help the drainage, but also because it seems to have a good effect in checking decay. The temperature named, 60°, is full high; 50° would be better, or even less. See to it that the soil is moist, not only on the surface, but throughout.

**California Notes.**—The Washington orange has a little bunch of yellow skin inside, and care should be taken in citrus culture lest all our oranges turn outside in. Occasionally I cut one that has a tiny wretched orange, skin and all, inside the nice five cent one. You probably have them in the New York markets.

The wild, low honeysuckle, *Lonicera involucrata*, charmed me in June, with its large, wavy, carmine bracts, on long red stems holding forth the shining black berries. Its flowers are small, yellowish and rounded; the white and green bracts tipped with brightest pink turning into deepest carmine striped with black, as the berries ripen, the large green leaves apparently being covered with red butterflies.

Our weather in San Francisco has been charming for months, sunny and warm, not a cloud in the sky, no wind to raise the dust, no chilling fogs. The full moon has risen red and golden as in harvest time, the morning skies always rose hued; mercury generally 50° at sunrise and 65° at noon in the shade.—Mrs. K. P. S. Boyd, *San Francisco*.

Southern Types.—View in a Florida Garden.

**Costa Rica Orchids.**—The following orchids have been introduced by Richard Pfau, San Jose, Costa Rica, Central America. They are natives of that country.

*Odontoglossum Schröderianum*, Rehb. fil.—This splendid variety I discovered last year and sent the few plants I found to Europe, for the species is very rare. A single specimen was accidentally introduced here some years ago, and Professor Reichenbach supposed it to be a mule between *O. Pescatorei* and *O. tripudians*, of Columbian origin. But it is a true species, and is native to Costa Rica. Williams' Orchid Album, t. 382, represents this truly grand odontoglossum.

*Odontoglossum Warsewiczi*.—This is another excellent orchid from the high mountains of Costa Rica. Although it was considered a bad traveller, it can now be safely sent by express to New York or even to Europe. It is closely allied to *O.* (*Miltonia*) *Roezli*, but is superior on account of its extra free flowering habit, each shoot producing two spikes, with numerous large, snow-white flowers, blotched with red.

*Trichopilia Turrialbae*.—The only plant I found was sent to Mr. Orgies, Zurich, Germany.

*Sobralia, species nova*.—Flowers as large as Fenzliana, and pure white; the large lip is white, with a magnificent lilac wreath.

*Fregea amabilis*.—This charming plant is dwarf and compact in habit like sobralia. Flowers rich pink, differing from sobralia by having the lip flat and open.

*Odontoglossum Krameri*.—I discovered this charming species in 1880, and the following year put it in charge

of Stevens Hammer, in London. Recently I found it again, in a locality some 200 miles from the place where I first discovered it. The color is dark blue.

*Cattleya Skinneri*, var. *alba*.—Pure white. This form has almost been exterminated, and is now in the hands of the natives only. They sell the plants for their weight of gold.

*Masdevallia Gaskelliana*.—This is an interesting novelty for the hairy and long tailed section. Rare.

*Trichocentrum Pfaui*.—Illustrated in Gardeners' Chronicle, 1882.

**Fertilizer for Orchids.**—In order to obtain the best results with orchids one should use the following fertilizer:

| | | |
|---|---|---|
| 40 | grammes | Carbonate of Ammonia. |
| 30 | " | Azotate of Ammonia. |
| 40 | " | Biphosphate of Ammonia. |
| 10 | " | Azotate of Potassium. |

Mix thoroughly and use one gramme to a quart of water. Never water the plant with anything but this liquid. For other potted plants besides orchids the solution may be made two or three times as strong.—*L' Orchidophile*.

**The Peanut Crop of Virginia** for the year 1890 is estimated at 2,700,000 bushels, worth to the producers $2,000,000. The greatest item of expense in raising this crop, as well as many of the market garden crops, is the labor bills. Immense sums of money are paid out weekly to the laborers. This brings prosperity and keeps money in circulation all the time. The peanut crop is a profitable one. It is one of the South's special crops.—CORNUCOPIA.

**A Little Path in the Mountains.**—It seemed at one time to be the ruling passion to make as many graceful curves in the roads and walks of our larger parks and pleasure grounds as possible. Trees, shrubs and flowers were crowded in, giving one the idea that the flowers and shrubs were a secondary matter in the landscape. How different is Nature's way! We once ran across a little path, a charming one in its way, which wound through a giant forest up a mountain side. There were mossy rocks and graceful ferns on either hand, and higher up among the cliffs, we passed a bank of alpine plants. Then breaking away to the right we passed around a huge boulder, with little patches of polypodium growing along its surface. Then the path leads us on to the edge of the cliff, where we get a glimpse of the beautiful country below and see the cheilanthes fern in its home, growing in great clumps, along the face of the wall of rock, in open sunshine. One more turn, and we are under a great shelving rock or projection of a cliff and here stand in the presence of the rare and beautiful *Asplenium parvulum*, sheltered from the sun and storms. The dark ebony stipes and little green fronds are shown to the best advantage against the natural background of fine, light colored rock masses. We then pass out and over the cliff. The scene changes, and we find ourselves on the border of one of the great rhododendron gardens of the southern Alleghanies, but the path turns abruptly, leaving this great patch of perpetual green, and leads us down through a hollow, across a little rivulet that goes singing down over the mossy rocks, and whose course we follow to the valley below. This little path which we have followed in its windings was not a costly one. It had not been sanded and graveled, and probably never heard the rattle of the lawn mower; yet it was evident that in every turn or angle along its way, there was a purpose: some obstruction, a tree, clump of shrubs, a gorge, or rocks, to pass. The scenery changed at every turn, but the path we had hardly noticed. It was not a prominent feature in this landscape, and this was the secret of its charm. It was an accommodating feature rather than one of display. If this principle were more fully demonstrated in some of the great art gardens, they would better represent nature's landscape, which is supposed to have been taken as a pattern.—EDWARD GILLET, *Mass.*

**Bryant and the Yellow Violet.**—How have we hypercritical sticklers for truth stumbled upon that shy "yellow violet" of Bryant's verse!

He apostrophizes it as the *avant-courier* of spring:

> "Of all its train the hands of Spring
> First plant thee in the watery mould."

No; of all her train the first flower that is planted in the watery mould by the hands of spring is the skunk-cabbage, and the bees know it and gather sweets from it even though the poets do not. But if the too fastidious must needs rule out this plebeian of the bog simply because he does not appear to advantage in a buttonhole, what then? What a brood of wood blooms stand ready to look down on him as they usurp his place! The incomparable arbutus, darling of the mould; the airy rue-anemone; the wind-flower, with its pink and white saucers or drooping bells; the rock-flower—a tiny white *boutonniere* in itself; the liverwort; the downy dwarf everlasting; the bloodroot, with ruddy pulse; the squirrel-corn, redolent of hyacinth; the coltsfoot, with its ginger roots, and the pale spring beauty, to say nothing of the whitler-flower and dandelion. Which one shall wear the stolen pennant? What change of heart has now come over our beloved poet of the violet? What is the testimony of his later years in his "Winter Piece" as he seeks for the first heralds of spring?

> "Lodged in a sunny cleft
> Where the cold breezes come not, blooms alone
> The little *wind-flower*, whose just opened eye
> Is blue as the spring heaven it gazes at—
> Startling the loiterer in the naked groves
> With unexpected beauty, for the time
> Of blossoms and green leaves is yet afar."

There is no "yellow violet" here; but as the "wind-flower" is never "blue," and the hepatica often is, it was of course the latter flower that really "blossomed alone" amid these lingering snows.—*William Hamilton Gibson*, in *Harper's Magazine*.

**Thirteen Acres Enough.**—Peter Henderson said "ten acres is enough." One of our old Norfolk county citizens has come very near endorsing Peter's statement.

He has thirteen acres, but thirteen in his case has been a lucky number. Being unable to read or write, his own sturdy good sense and the excellent quality of Norfolk county soil has enabled him to make a splendid showing. While he has not quite thirteen children he has enough hands in his own family to attend to his thirteen acres, and raises thereon from two to three, and sometimes, four crops a year. So in fact his thirteen acres becomes twenty-six, or thirty-nine, and sometimes fifty-two acres. He has sold as high as $1,100 from one acre in lettuce, doing his work without employing outside help, and counting his fertilizer and seed bill $100 (a liberal estimate), he cleared $1,000 from that one acre in one crop.

As fast as his boys become of age he buys them a snug little $3,000 to $5,000 farm. He has money to loan and a snug bank deposit for that "rainy day," and although getting well along in years, is still bright and cheerful and happy. The secret of his success is good sense, a willingness to work, sticking close to business and covering a small farm in a thorough manner. The whole truth compels us to add that he has one and a half acres of oyster ground adjoining his thirteen acres, and at odd times has a few hundred bushels to sell and help swell his income.—CORNUCOPIA, *Norfolk, Va.*

**Broiled Tomatoes.**—The tomato broiled is grateful and invigorating beyond almost any other dish of our climate. The fruit itself is the most easily produced from the soil, most plentiful and cheap; and the method of preparation is the very simplest form of cookery. Select from your garden or market basket a proper number of perfectly ripe and sound tomatoes, taking care that the skin is not broken. After wiping them clean, cut off a thin slice from the "stem end" of each, and take out the hard core from the center. Then set them close together on the wire broiler, keeping the cut side level on top; cover the cut side with salt and pepper, and place the broiler over a hot fire of live coals. Do not close the lid of the broiler upon them. Now let them cook steadily until thoroughly done—occupying about twenty minutes. The salt and pepper are absorbed by the juice; which assumes a fine reddish brown color and exhales a flavor of unequaled quality. Remove them from the broiler with a broad fork, passing the prongs under, so as to avoid breaking or overturning. They may be served either in the skins or with the latter removed. With any form of meat, vegetable, or bread there is no sauce, foreign or home made, which can be compared with this simple, inexpensive dish.

**Various Recipes.**—*Tomato Catchup.*—Perfectly ripe tomatoes, one-half bushel, wash clean and break in pieces, then put over the fire and let them come to a boil, and remove them the fire; when they are sufficiently cool to allow your hands in them, rub through a wire sieve; and to what goes through, add salt two teacups, allspice and cloves, ground, one teacup each; best vinegar one quart. Put on the fire and cook one hour, stirring carefully to avoid burning. Bottle and seal for use.

*Currant Catchup.*—Nice fully ripe currants, four pounds; sugar, one and one-half pounds; ground cinnamon, one tablespoon; salt, ground cloves and pepper one teaspoon each; vinegar, one pint. Stew the currants and sugar until quite thick, then add the other ingredients, and bottle for use.

*To Dry Currants in Sugar.*—Take fully ripe currants, stemmed, five pounds; sugar, one pound; put into a brass kettle, stirring at first, then as the currants boil to the top, skim them off; boil down the syrup until quite thick, and pour over the currants, mixing well; spread on flat dishes, and dry in a shallow box covered with mosquito net to keep off flies.

*Preserved Watermelon Rinds.*—Cut the rind in long, thin strips after peeling, and preserve in equal weights of sugar, cook down the syrup thick enough so that it will crystalize. This is an excellent substitute for citron in cakes.

*French Mustard.*—Flour of mustard and wheat flour equal parts, a pinch of bay salt and cayenne pepper; vinegar to mix.

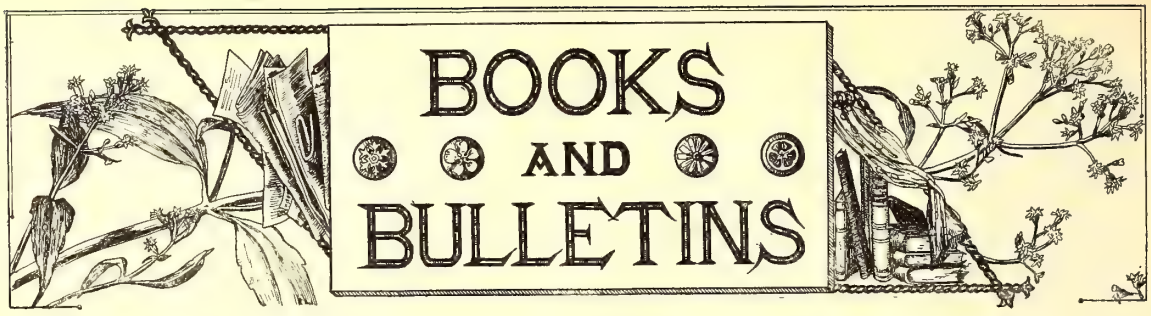
*Fig Candy.*—One pound sugar and one pint water; set over a slow fire. When done add a few drops of vinegar and a lump of butter; boil a moment and pour into a dish in which split figs have been laid. Mark and break in squares.—HENRY HOLMES.

**White Chrysanthemums.**—To obtain pure white chrysanthemums, cut the plants when in bud, and hang them in a wash-room in the dark. Boil water in the coppers; this raises the temperature sufficiently to cause the flowers to open in five or six days, if the water is continuously boiled—*Le Jardin.*

**New Race of Dwarf Dahlias.**—T. W. Girdlestone, secretary of the National Dahlia Society, has succeeded in obtaining a dwarf race of dahlias. The plants are not more than twelve inches high, and are very bushy, spreading, and free in flowering. There are only twelve varieties at present. The blooms are of medium size, and the colors are distinct and rich, more particularly the scarlet and crimson shades, which can be employed to immense advantage in the flower garden, where their effect is showy and novel.—*The Gardeners' Magazine.*

**A New Begonia.**—*Begonia Credueri* is a new hybrid, obtained from *B. Scharffii* and *B. metallica.* Its habit is like the latter, but the flowers and the color of the foliage resemble *B. Scharffii.* The plant is twenty to thirty inches in height; it has an abundance of ornamental foliage, and is exceedingly vigorous. The upper side of the leaves is deep metallic green, while the under side is dark red. This variety is particularly valuable for decorative purposes. It is propagated principally by cuttings, as good seed is rarely produced.—*Revue de l' Horticulture Belge.*

**Copper in Wine.**—A French chemist has discovered a process for removing all traces of copper from wines which are made from grapes treated with fungicides containing this metal. The quality of the wine is in no way injured.—*L' Agriculteur François.*




On the Longevity of Apple Trees. *Pp. 6. By L. H. Bailey.* This first philosophical attempt to account for the lessening longevity of apple trees—reprinted by the author from the transactions of the Kansas Horticultural Society, to which it was presented last December—sums up the question as follows:

"Apple orchards appear, as a rule, to fail sooner now than they did formerly, but much of the opinion to this effect is exaggerated, because of fallacious observation.

"This lessening age is not a degeneracy due to culture, but it appears to be incidental to methods of cultivation and extensions of apple culture over great areas.

"The chief particular causes appear to be lack of adaptability of varieties to regions and conditions, climates unfitted to the best development of the species, and lack of fertility of soil."

The author first discusses the probability of the decadence or running out of varieties due to culture—a proposition which is styled "cultural degeneracy"—but finds that "No proofs are advanced in support of this proposition, and from our present knowledge, I do not see that it can be sustained. It is an easy matter to find highly improved varieties which are tenderer or weaker in constitution than seedlings; but this proves nothing. It only compares one variety with another, for all varieties were originally seedlings, and they owe their dissemination to the fact that they chanced to be worthy of dissemination. And those that chanced to be unworthy of dissemination—for which we particularly reserve the word *seedling*—differ as much among themselves in hardiness and vigor, as named varieties differ from seedlings. The seedlings which have survived in waysides and old plantations have been able to do so, no doubt, because they were constitutionally fitted to survive. No one knows how many seedlings have perished because of weakness, and it is certainly not fair to compare those varieties which we chance to cultivate, with those wild or half-spontaneous individuals which have chanced to be able to endure all vicissitudes. We are fond of saying that the farther the species departs from its original or wild type the weaker it becomes, but we have no proof for such statement." Thereafter the subject is divided into two parts: extra-cultural causes, including change in climate, greater abundauce of insects and fungi; and cultural causes, comprising lack of adaptation of varieties to conditions, forceful methods of culture, lack of fertility and neglect, methods of propagation, pruning. The supposition that methods of propagation cause a lessening of vitality and longevity is handled in this manner:

**Longevity of Apple Trees.**

"Much is said concerning the devitalizing influence of the common methods of propagation, but I have yet to find any proof that they have such effect. There are two features of propagation in particular which appear to be held accountable for much mischief: growing stocks from pomace seeds, and grafting.

"Domestic apple seeds are obtained indiscriminately from pomace, and imported seeds are procured in essentially the same manner from the crab stocks of Europe. This promiscuous seed-growing is supposed by some to tend towards the deterioration of the constitution of the species, but there are no facts in support of the assumption. Others contend that by this means we obtain an uneven and variable basis upon which to propagate our orchard trees, and this is certainly true. Seedlings vary much among themselves in constitution, and we practice little elimination of the tenderer or least adaptable ones. But I do not see that this unevenness of stock should exercise greater influence upon the vitality of orchards now than it did in former generations. We have observed that the old seedling orchards were usually uneven, from the very fact that the weak individuals could not persist. At the present time, our even and symmetrical orchards are proofs that this unevenness of stock has less marked effects than formerly, probably from the fact that the seedling root is dominated by the grafted top, or that it has disappeared altogether, the cion having rooted from itself. Promiscuous stocks probably influence the character of our orchards, but, as I have stated, the same influence was present in former generations as now, for everywhere and always promiscuous seedlings, whether grafted or not, have formed the basis of orchards.

"The last year or two has witnessed a renewed activity of the old assumption that grafting or budding tends to weaken the individual. In the first place, much of the discussion upon this point is misdirected, because graftage is necessary to success, and to discard it means, practically, to discard apple culture itself. There is no other easy and practicable means of perpetuating varieties of apples.

"Some contend that graftage is necessarily mischievous, because it is unnatural. This reasoning here, as elsewhere, is puerile. All cultivation is itself unnatural, as is also all domestication in this sense; and if we propose to perform all operations just as nature performs them, we must at once abandon all domestication and betake ourselves to barbarism.

"No doubt much of the graftage is mischievous, because not well done; but these instances were no doubt relatively just as common generations ago as they are now. In fact, I should look for worse results from the old careless methods of top-grafting than from recent methods, where the union is protected by the soil, and where every effort is made to heal the wound quickly. In general, I know of no evidence to show that graftage is necessarily a weakening process.

"It is still an open question as to whether or not root grafting tends to shorten the life of the apple tree. It may be that in certain cases it does, as in particular varieties which do not readily strike root from the cion, or in particular ways of performing the operation. Yet, I am inclined to think that root grafting is not a general cause of lessening of longevity, from the fact that the budded orchards, which are abundant everywhere in the east, appear to fail as soon as grafted ones."

I have nothing to add on the subject of the longevity of apple trees, nor can I demur at any of the conclusions. Many orchards fail early from various causes, but this fact does not touch the main question closely, when we consider the many evident special causes for these failures. It is absurd to compare the old seedling orchards of our cider-drinking forefathers with modern orchards, in which varieties from all over the world are brought together by grafting. Natural selection takes care of the seedlings of the forest. Human selection, on much the same lines, took care of the old seedling orchards. The more vigorous seedlings were naturally chosen, and with the careless culture which followed, only the elite of these constituted the orchards of this class upon which our judgment is founded.

Mere long life is not the important factor in orchard trees. We are continually consigning trees to the brush heap which are quite sound and thrifty. Wealthy, Yellow Transparent and Oldenburgh trees, which come young into bearing, fruit freely and yield a readily salable crop, pay far better, even if they all die within twenty years, than those old veterans of the cider orchard could do. If long life for the tree is put first in order, we must not manure too freely, we must not plant closely, we must not ask early or free productiveness, nor must we plant any variety, however excellent, that is not perfectly adapted to our locality. But if we thus limit ourselves, we must not hope for a great deal of profit.

——— T. H. Hoskins.

Insect Life, for Januaay, 1891, contains papers read before the recent meeting of Economic Entomologists, at Champaign, Illinois, in November, 1890. It seems to have been one of the most successful meetings ever held in this country, or for that matter, in the world, as there were over thirty members in attendence, all earnest workers and full of enthusiasm. The president, Professor Riley, in his address, discusses many subjects of interest: The hydrocyanic-acid gas treatment against scale insects has, to a certain extent, superseded the use of washes against the red scale. Recent experiments have reduced the expense one-third. Repeated importation of injurious scales from Florida to the Pacific coast has caused much alarm. No great danger is yet apparent, but a quarantine is needed. E. S. Goff, of the Wisconsin Station, has modified the Nixon pump by adding a tube, through which kerosene may be drawn from one receptacle while soap suds is drawn from another, forming a mechanical mixture in the act of spraying. The method is believed to have no superiority over the ordinary emulsion. The hop aphis has been found in Oregon and Washington, and the entomologist of the experiment station of the former state believes that it differs in its habits there, as compared with the eastern states, in that it has not yet been found upon plums. But Professor Riley expresses confidence that full research will show it to have the same habits in the northwest country that prevail elsewhere, viz: that hibernation takes place in the winter on species of prunus or plum. Carbon-bisulphide, as a remedy against insects attacking stored grain, is poured on a ball of tow, tied to a stick, which is then forced into the middle of the vessel or bin of grain, the opening then being closed as tightly as possible. One ounce should be applied to 100 pounds of grain. A new and distinct type of insecticide machine has been invented by G. F. Strawson, in England, and is called the "Strawsonizer." It is a pneumatic or air-blast distributor, which may be used not only for the distribution of dry or liquid insecticides, but for fertilizers, or disinfectants in cities, or for the broadcast sowing of grain. Professor Riley has some telling remarks on the value of the kerosene emulsion properly made, and upon the frequency with which mere temporary mixtures are recommended in the name of the emulsion.

**Economic Entomologists.**

The address contains some interesting statements in reference to the grape phylloxera, showing its spread and giving many interesting particulars as to the best resistant American stocks. He shows that even in such regions as that around Bordeaux, where, by virtue of the rich alluvial soil and the ease with which the chief vineyards can be submerged, the phylloxera has made slower headway, and the opposition to the use of American resistant stocks has been greatest; yet they have finally vanquished prejudice, and are rapidly coming into general use. Even where the phylloxera has not entirely destroyed the French vines, the American stocks at once give greater vigor of growth, increase in healthfulness and yield of fruit. The most important varieties are—of the Æstivalis—the Jaquez, Herbemont, Black July and Cunningham; and of the Riparia, the most important are the Solonis, Clinton and Taylor, and the wild species. The most important of the hybrids are Elvira, Noah and Viola. Professor Riley shows conclusively, among the direct remedies, the value of the kerosene emulsion, which is not properly realized in France on account of the high price of petroleum, and also gives a new remedy which promises very well. It is the use of resin soap, made by 5 pounds of caustic

**The Grape Phylloxera.**

soda (77 per ct.), 40 pounds of resin and water to make 50 gallons of the mixture. To this, water may be added at the rate of 9 gallons to 1, making 500 gallons of the dilute compound, sufficient for 100 large vines, at a cost of only 84 cents, or less than one cent per vine.

In the account of the introduction of parasites and predaceous species, the striking success of the experiment with *Vedalia cardinalis* is referred to, and excellent advice is given as to the care necessary in making a simple experiment with a view of success. Here again Professor Riley uses some plain language in referring to the employment of incompetent persons in working this character. He alludes more particularly to the much-advertised efforts of one who was commissioned last summer to visit the east, and who took back with him certain ladybirds which he found right under the windows of the Department of Agriculture, and with which he intended to experiment upon the woolly aphis. The species referred to not only occurs in California, but feeds over nearly the whole extent of the United States; and "all such efforts as this, carried on by persons unfit, from want of any special knowledge, for the mission, must invariably do harm, not only because of the negative results which follow, but because of the lack of confidence in such work which they will engender in the minds of our legislators."

**Incompetent Experimenters.**

Under the heading of "Fertilizers as Insecticides," J. B. Smith strongly recommends the use of potash salts for fertilizers on ground infested with cut-worms or wire-worms, and they are also effective for root-lice and other insects. He has found the plum curculio infesting the half-grown fruit of the June or Service-berry. In his experiments he has reached the conclusion that the curculio rarely matures in apples. Mr. Smith also recounts an experience with rose-beetles. The season of 1890 in New Jersey witnessed the total destruction by these beetles of nearly everything green. Larkspur only seemed exempt. All sorts of insecticides were tried except the arsenites, and without avail. Mr. Smith has found the clover leaf beetle injurious in New Jersey the past season. The larvæ had appeared in great numbers, but what promised to be a serious invasion was happily stamped out by a disease (*Eupusa sphærosperma*), which exterminated the larvæ.

A. J. Cook urges the importance in the experiment stations of practical work; of not attempting too much, but by careful labor bringing out valuable results; and lastly, the importance of a wise use of the funds which have been appropriated for promoting the welfare of the state. The farmer should be kept informed of new or injurious insects occurring in his state. That life-histories should be studied does not need to be stated. Direct experimentations should be made with all kinds of chemicals for insecticides, generalizations must be drawn, the work must be practical, and mutual aid and suggestions can be obtained from workers in other stations. C. P. Gillette records observations made on the plum curculio and gouger. A pair of beetles of the latter, during the period of oviposition, being supplied with fresh plums, made 1,266 punctures in which were deposited 450 eggs, leaving the balance as punctures made for food.

**Importance of Practical Work.**

The period was 20 days—June 2d to 22d. About as many eggs were laid at night as during the day. A single female of the plum curculio that had doubtless already deposited many eggs, was captured June 7th, and up to the 17th, laid 167 eggs and made 426 punctures. In experiments made on plum trees with London purple, the latter was found to be of very slight benefit in combatting the beetles. Mr. Bruner presented a list of 64 species of insects that he has already found to injure the sugar beet industry in Nebraska. Mr. Fletcher spoke on the injurious insects of the year in Canada. Cutworms and cabbage worms had been locally abundant. Besides the Hessian fly, the wheat bulb-worm and the wheat oscinis had infested the wheat crop.

**Plum Curculio and Gouger.**

A. S. Forbes gives a summary history of the corn-root aphis. The eggs of this aphis are assiduously gathered and harbored over winter by a small brown ant (*Lasius brunneus*, var. *alienus*), the louse therefore hibernating in the egg state, and so far as known, only in the nests of this ant, which is host and constant companion throughout the year not only to this louse, but equally to the grass-root louse (*Schizoneura Corni*). The nests of this ant are most frequently to be found in old corn hills. The eggs of the lice hatch in spring, about a week before corn planting, and the young subsist on the roots of the smart weed or other plants until the corn roots are large enough to support them. Professor Forbes brought out, by abont the first of June, five generations of the louse, but its subsequent history was not followed through the season in detail. The roots of almost any plant seems to support these lice, at least temporarily. The last viviparous generation and the oviparous female following, have been found in autumn on dock, fleabane, mustard, sorrel and plantain. The bisexual generation makes its appearance in corn fields as early as October, and pairs and deposits eggs throughout the month. The oviparous female has been found only in the burrows of the ants, and it is doubtless there that the eggs are laid. The ants extend their burrows about the roots of any plant within their reach, so as to allow the support of the lice. It has been attempted to connect the ærial corn louse with the root form, but positive results have not yet been reached. It would pay to thoroughly stir the soil so as to destroy any weeds which appear before the corn is up, in order to starve the newly hatched root-lice in the spring, as experiments show that they will perish in five days if deprived of food. The louse takes its start in spring only in fields infested the year before. Rotation of crops, however, would hardly afford relief, since the early evolution of a partly winged brood provides for a general dispersal in the early part of the season. The most promising exped-

**Corn-Root Aphis.**

ient, perhaps, would be November plowing of field, to expose the ants' nests containing the eggs, the occupants of the nests being then torpid. This might be followed by harrowing, to obtain more complete results.

**White Grubs.**

The second article gives a history of white grubs, and shows that the beetles mature mostly the third autumn, and not the third spring. Therefore, ground containing full-grown, destructive grubs in fall cannot be planted the following spring with safety to crops not grub-proof, as these grubs will not pupate until late in summer, and become beetles in fall. However, if the ground contains full-grown grubs in spring, the farmer may expect to see it deserted practically by July, or even late June, and may consequently plant some time previous to that, without fear of harm. R.

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HOME FLORICULTURE. *A Familiar Guide to the Treatment of Flowering and other Ornamental Plants in the House and Garden. By Eben E. Rexford. Pp. 226. Illustrated. James Vick, Rochester, N. Y.* This is an attractive book by an attractive author. It is heterogeneous in its arrangement, but copious contents and index remedy any defect in this direction. The style is familiar and entertaining. The directions are clear and good, and they are full enough to answer most of the questions which are apt to puzzle amateurs. The book is particularly full and useful in instructions for culture of plants in the house. There are several chapters upon plants which are little known to window gardeners, but which we are glad to see brought forward; and all the old favorites are treated fully. The illustrations all have a trade look.

**Book of Flowers.**

A CATALOGUE OF THE ANTHOPHYTA AND PTERIDOPHYTA OF AMES, IOWA. *By A. S. Hitchcock. Pp. 45.* This is a catalogue the plants growing without cultivation in the vicinity of the Iowa Agricultural College. Every educational center, and particularly every agricultural college, should possess a flora, if for no other reason than that it enables future observers to study the changes in the species of the region. The prairie flora about Ames is rapidly disappearing before the plow, and "in a very few years none will be found except along the roadsides and railways." One is struck with the few species of ferns and conifers reported in the catalogue. In fact, the juniper is the only representative of the great pine and spruce family, and that does not appear to be common.

**An Iowa Flora.**

ORANGE CULTURE. *The Orange from Seed to Grove. By B. M. Lelong. Pp. 19. 5 plates and wood cuts. Published by the State Board of Horticulture, San Francisco.* This is essentially a bulletin of instructions to intending orange planters in California. The varieties recommended are as follows, and "their prominence is about in the order named": Washington Navel, Valencia Late, Joppa, Mediterranean Sweet, Maltese Blood, Paper Rind St. Michael, Azorean St. Michael, Wolfskill's Best, Konah, Rio, Tangierine or Kid Glove, King, Satsuma, Kumquat. Pomelo and Shaddock are classed as ornamental sorts. Views are given of exhibits at the Oroville and Los Angeles citrus fairs.

**Oranges.**

LES PLANTES POTAGERES. *Description et Culture des principaux légumes des climats tempérés. Deuxième édition. Par Vilmorin-Andrieux et Cie. Pp. 730. Illustrated. Paris, 1891.* We are glad to welcome a new edition of this work, for it is far the most important book upon garden vegetables ever written. The first edition has become familiar to English readers through Robinson's translation, "The Vegetable Garden." The present edition includes the pine-apple and some other additions, but it is particularly distinguished by the insertion of the new varieties of vegetables, and amplifications of text here and there. The book must long remain the authority upon the plants of which it treats.

**Les Plantes Potageres.**

ASPARAGUS, AND TRANSPLANTING ONIONS. *Bulletin No. 9, Vol. III, Ohio Experiment Station. By W. J. Green. Pp. 11. Illustrated.* Mr. Green made some observations to determine the relative differences in yield between male and female, or berry-bearing asparagus plants. The observations were made during two seasons. The male plants gave an average of about 50 per cent. more yield than the female, and the shoots were also larger, and the crop earlier. The differences in yield were greater in the early part of the season than in the latter part. Male plants can be secured by division of old plants, or better by the selection from two-year-old seedlings of such as do not bear seed. Growers have asserted for some time that there is a difference between the two kinds of plants in profitableness, and Mr. Green has done well to give us the exact figures.

**Male and Female Asparagus.**

Experiments have also been made upon the use of rubber bands in the bunching of asparagus, and it is found that they are cheaper than string, when the saving of labor is considered, and they hold the stalks together better and make a neater bunch. The tops of the stalks are placed in a large, straight, handleless tea-cup, and the bands are slipped over the cup onto the bunch, while the butts are cut off square. This gives an attractive rounded form to the top of the bunch. The size of band required costs $2 per pound, of 2,000 bands. Two bands are used to a bunch. Rubber bands have been used by at least one commercial grower, for a number of years.

**Rubber Bands for Asparagus.**

Mr. Green's experiments in transplanting onions give essentially the same results as those obtained by T. Greiner, and discussed in the last issue (page 188). In every case, transplanted onions yielded better than those handled in similar soil in the ordinary way, and with the late foreign varieties the gain was about 100 per cent. The test has been continued for two seasons.

**Transplanting Onions.**

The seed was sown in flats in the greenhouse late in February, or about six weeks before time for sowing out-doors. The gain due to transplanting is threefold: it gives the plants a longer season in which to grow, enables them to grow during the cool and moist weather of spring, and it gives more uniform results. Mr. Green thinks that upon mucky soils, in years when all conditions are favorable, the transplanting would not produce much marked differences, particularly with such sorts as Danvers. But the interesting point about the whole operation is the fact that it costs less per bushel to grow onions by transplanting them than by the ordinary method! This is due to the fact that the yields are greater, and the extra cost of transplanting is fully offset by the saving of labor in weeding and thinning. And green bunch onions can probably be obtained, with a little extra care, as early as from sets.

TESTS OF VARIETIES OF VEGETABLES FOR 1890. *Bulletin No. 14, Pennsylvania Experiment Station. By George C. Butz. Pp. 15.* Reports are made upon many vegetables, but no summaries or comparative statements are given. For market gardeners the following early cabbages are recommended: Early Wakefield, Succession, All Seasons, Henderson's Summer, Early Flat Dutch.

**Vegetable Tests.**

The Iron King seed drill will not work satisfactorily upon heavy soils, but it is recommended for looser land. Legget's Powder Gun, for applying dry insecticides, is a good implement. The Victor spraying outfit, made by Field's Force Pump Co., is a good device for orchards. Plant bed cloth is serviceable for late hotbeds. "It cannot take the place of glass in early spring."

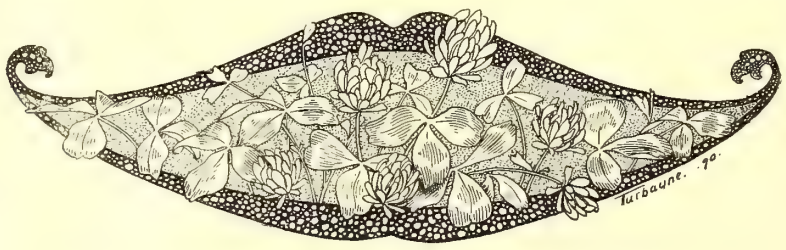
**Implement Tests.**

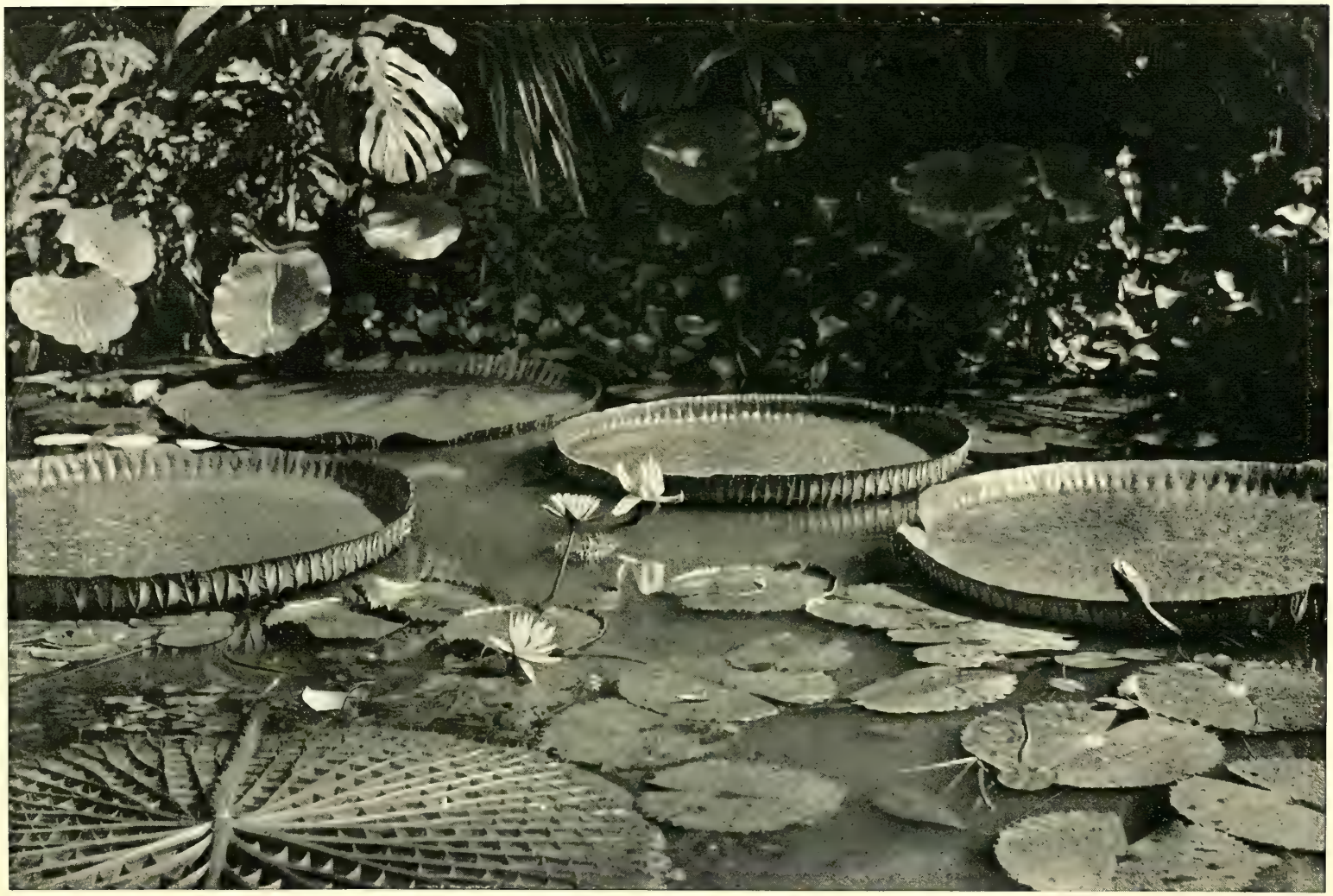
BLACK KNOT ON PLUMS. A FEW ORNAMENTAL PLANTS. *Bulletin No. 13, Pennsylvania Experiment Station. By George C. Butz. Pp. 8. Illustrated.* Professor Butz calls attention to the prevalence and destructiveness of black knot, and urges everyone to destroy it. It attacks the wild choke-cherry, and this tree must therefore be looked after. Cut off and burn the diseased portions in early winter. "Every piece of wood in which the fungus occurs should be collected and burned at once, as the winter spores are known to have ripened in severed branches. Burning the material is, therefore, an essential part of the remedy. Every trace of the disease should be destroyed, not only from one orchard, but from neighboring orchards." Ten large knots which appeared low down on large branches were sliced off, and only two of them reappeared.

**Black Knot.**

Professor Butz calls attention to the reintroduction of old plants, and warns planters to be cautious in buying novelties. "Many plants regarded as new in cultivation, and often advertised as such, treat us with surprises when we find in records that they were introduced to cultivation fifty or one hundred years ago. Many persons interested in flowering plants will remember their disappointment in the last three years in growing the much-made-of novelty from Mexico, *Mina lobata*, advertised and illustrated as a thing of beauty, flowering profusely; but greater was that disappointment upon learning that the plant was known to cultivation fifty years ago, and was soon discarded for the same reason that will cause it to be dropped now, namely, its failure to blossom with ordinary cultivation." He recommends for out-door culture *Arundo Donax*, *Bocconia cordata*, *Stachys lanata*, *Aster Novæ-Angliæ* and *Œnothera Missouriensis*. These plants are found to be hardy in Pennsylvania, and the list is a good one so far as it goes; but there is not enough of it to be of much use, and the information is by no means new. Grevilleas are recommended for indoor culture, and *G. robusta* is figured. It is stated that "an original plant [of a given species] may be acclimated, produce healthy leaves, perfect flowers and fruit, but the succeeding generations from seed or cutting may struggle for years before the species is truly acclimatized." This is new teaching, and in the interest of science it ought to be amplified, and further information obtained. L. H. B.

**Ornamentals.**





A New Orleans Lily Pond. (See page 279.)

# The American Garden.

*Vol. XII.* *MAY, 1891.* *No. 5.*

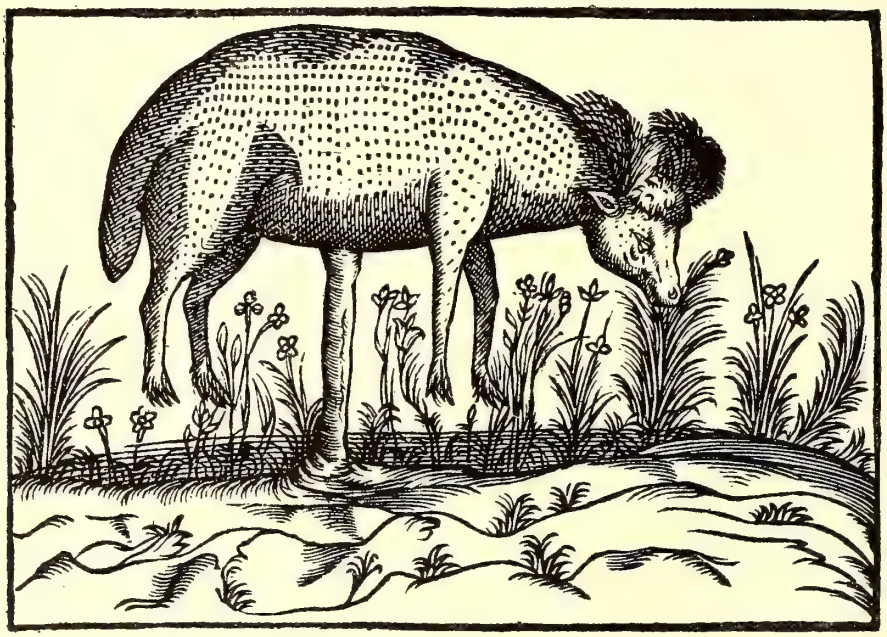
## GLIMPSES OF OLD HERBALS.

OLD SUPERSTITIONS—THE BEGINNINGS OF BOTANICAL SCIENCE—FAC SIMILES OF OLD ENGRAVINGS.

STRANGE things were believed in the old days. The mystery and the fascination which hang over unknown regions breed in the minds of men ideas of romance and fable even in the present age, and how much more so when, as in times past, the unexplored held such a large place as compared to the known, and appealed so strongly to the imagination! Indeed, in the earlier periods of human history, to believe was more natural than to doubt, and credulity seemed rather the general than the exceptional condition. It was scarcely out of harmony with the times that Pliny in the first century treats as history the "wonderful forms of different nations," and reports among other matters, tribes of dog-headed people, the Monocoli or one-legged race, who leap, notwithstanding, with surprising agility, and who were also called Sciapodæ, because they used their one foot as a shade from the sun! These lived near the Troglodytes, who were without necks, and had eyes in their shoulders. To those who are willing to believe, nothing seems impossible, and hence travelers' tales often found ready credit. But perhaps the strangest of all these superstitions was that of the Barometz or Scythian lamb, which was reputed to feed on the salt plains west of the Volga. I have selected for illustration the figure of Claude Duret, in his *Historie Admirable des Plantes*, 1605. A differing, but equally correct figure appears in Jonstonus' Dendrologia, editions of 1662 and 1779. Other figures are given by Kirkerus preceding 1660, and De la Croix, 1791. This wonderful plant, on the faith of the testimony of "many distinguished men" as J. Bauhin writes in 1650, had wool, flesh and blood, and a root attached to the navel. We learn that the plant resembled a lamb in every respect, but grew on a stalk about a yard high, and turning about and bending to the herbage, consumed the forage within reach, and then pined away with the failure of the food until it died. Wolves sought it and eat it as if a true lamb. Skeptics existed, however, then as now, and Cardanus in 1556 calls it a fabulous animal, "animal fabulosum." More credence was given, however, by later writers, and it occurs in the botanical works of the period, being tabulated in the Pinax of Caspar Bauhin, 1623 and 1671. It is described also, in similar terms, by Matthiolus, 1570; Dalechampius, 1587; J. Bauhin, 1650; Jonstonus, 1662; Kæmpfer, 1712; and a dozen or more authors besides. Mentzelius, in 1682, names it among melons on account of the form of its seed, apparently. Porta, 1591, prefaces his account with the doubtful phrase "I hear of." In 1725, Dr. Breyne, of Dantzig, declared that the *Agnus Scythicus* or *Barometz*, was but the root of a large fern covered with its natural yellow down, and accompanied by some of its stems, which had been placed in museums in an inverted position the better to represent the appearance of the legs and horns of a quadruped. This fern is now the *Polypodium Barometz* of Linnaeus and Loureiro, the *Cibotium Barometz* of later authors. So in the name of the fern is preserved a reference to one of the most remarkable superstitions the world has known.

It was formerly believed that there grew on the British Islands a tree that produced fruit which

was capable of developing into fishes and birds. The fact was corroborated by many travelers, whose stories on the whole, agreed. One account says that the tree grew along the rivers of Scotland, and that its fruit was rather long and cylindrical. It fell just before ripening, and the fruits which fell upon the land rotted, while those which fell into the water swam about, received wings and feathers, and appeared like birds in every respect. Another traveller said that the same tree grew on the island of Pomonia, near Scotland. The birds were called tree-birds (Oyson d'Arbre). Italian voyagers also believed in the existence of this tree, and said it grew on the Hebrides Islands, by the sea shore. An old English story about the tree runs as follows :



THE WONDERFUL BAROMETZ OR SCYTHIAN LAMB.

Several high officials of England say that in Hibernia (Ireland) there grows on the sea shore a certain tree which becomes fertilized in the spring. Small buds grow from it, and in due time these become flying birds. Certain men of England and Scotland who have seen the trees say that the fruits which fall from this tree into the water become fishes, and those falling upon the land become birds covered with many colored feathers. Some said that the birds were about as large as pheasants, and pure white in color. An Italian naturalist succeeded in obtaining a few specimens and exhibited them for some time in Venice. All these stories are intimately connected with the formation of barnacles upon ships and old logs, and which were supposed to be transformed fruits fallen from overhanging trees. These barnacles eventually, it was thought, developed into geese, a superstition still recorded in the name barnacle geese. Gerarde and many others describe this goose-tree at length and in full confidence.

Modern systematic botany dates its birth with Linnæus' *Systema Naturæ*, 1735, wherein the definitions proposed made it possible to describe plants in such a manner as to secure identification. The sexual system of Linnaeus was, however, outlined in his *Florula Lapponicæ* as early as 1732 and 1733. In 1737 appeared the *Genera Plantarum* and the *Critica Botanica*, in which the modern system of generic and specific names received particular attention and botanical laws were promulgated. In 1753 his crowning work, *Species Plantarum*, appeared. At the present time botany commences its nomenclature with the *Genera Plantarum*, 1737, for genera, and the *Species Plantarum* 1753, for species.

There were a host of writers on plants, however, before Linnæus. In 1552 Tragus cites the names of nearly 150 Greek writers on plants, but the majority of these scarcely deserve enumeration as botanists. Sprengel, in his *History of Botany*, enumerates two hundred botanists preceding the year 1600. The earliest writings on plants, such as those of Theophrastus, Dioscorides, Pliny, etc., contain but vague, short and insufficient descriptions, and more space was devoted to recording uses, especially in medicine, than to identification of species. In the middle ages the earlier writings were mainly of commentators on the ancient works, and were often more learned than correct. In the sixteenth century appeared works based on the cultivation of plants and observations of them in the fields, and the earliest and foremost of these authors are Brunfelsius, 1530; Fuchsius, 1542, and Bock, 1546. In these herbals the inadequacy of the descriptions are

supplemented by wood cuts, usually accurate and often excellent representations of plants, and which can in most cases be readily identified with our modern species and varieties.

We learn from Pliny that paintings of plants were extant in the first century, and we hear of illustrated manuscripts of Dioscorides more than a thousand years old, but these illustrations were probably of little value if we judge by those copied in Dodonæus Pemptades, 1583, from the *Codex Cæsareus* in the imperial library of Vienna, ascribed to the year 492. The wood cut of Arction is an example of this. The first illustrated botanical work after the invention of printing is said to be German, *The Book of Nature*, published at Augsburg between the years 1475 and 1478, in which 176 plants are noticed and many figured. This was followed by the *Herbarius Maguntae* 1484, the *Herbarius Patavicæ* 1486, and about the same period the *Ortus Sanitatis*.

THE TREE WHICH PRODUCED SWIMMING FISHES AND FLYING BIRDS. DURET, 1605.

Among noteworthy books, without whose mention even a sketch of early botany would be incomplete, is the book of agriculture of Ibn-al-awam, a Moorish Spaniard of the twelfth century, in which we find a chapter on the cultivation of spinage, which he calls *rais al bouquol*, the prince of vegetables. Albertus Magnus' (born 1193, died 1280) *De Vegetabilum*, in which we find mention of the white flower of Cucurbita, which identifies the cucurbit of his time with the common bottle gourd, *Lagenaria*. Among books which throw side light on the history of vegetables are the cook-book of Apicius Cœleus, of the Roman period, and the *Forme of Cury*, a cook-book compiled in England in 1390 for the use of the court of "kyng Richard the Secunde kyng of .ngland aftir the conquest; the which was accounted the best and ryallest vyand of alle csten .iynges." We find here "spynoches," which seems to dispute the assertion of DeCandolle that spinage was new to Europe in the sixteenth century. Of course among noteworthy publications it is unnecessary to mention the well-known Pliny, Columella, Palladius, etc., among the Romans, the Geoponica, Dioscorides, Theophrastus, etc., among the Greeks, or Crescentius, 1235-1320, whose *Opus Ruralium*, 1474, is now before me. Nor is it within the present scheme to consider the non-illustrated works.

My earliest herbal is the *Herbarius Maguntæ*, printed in 1484. It is a small folio, unpaged, containing 150 chapters and wood-cuts, each occupying a single leaf, the language Latin, the type black letter, the arrangement alphabetical, the descriptions scarcely any, the medicinal uses quite fully given. The wood-cuts are simply atrocious, in many cases not recognizable; in other cases they can be determined only through the assistance afforded by the names. The figure of the lettuce here reproduced will give an idea of the rudeness of the design and execution of

these old pictures. The *Ortus Sanitatis* is another book of the fifteenth century, but my edition bears date 1511. It is printed in black letter Latin, and is unpaged. There are 530 chapters in the plant portion, and an equal bulk devoted to animals. There is no work in my library which affords more interest to visitors, who seem never to tire of examining the mermen and mermaids, the human-headed snakes, the griffins, harpies, and other fabled animals of antiquity. The plant portion is less grotesque. The wood-cuts are rude, usually unrecognizable, yet some can be made out through the aid afforded by the names. A few of the interesting illustrations are here reproduced. The *Arbor vel lignum vitæ paradisii*, the tree of Paradise, is apparently considered to be the orange, yet a subsequent page gives a different figure, *Zwa sive musa*, perhaps the banana. "The serpent did tempt me and I did eat." We might hope to settle from these old books the meaning of some old words, as the *Phaseoli* of Charlemagne's Capitularies, about which there has been so much dispute. But the *faseolus* of Dodonæus is *Vicia Narbonensis*; the *phasiolus* of Tragus is the pea; the *faselen* of Fuchsius is a bean; but what is the *faseolus* of the Ortus Sanitatis? The Mandragora or Mandrake illustrates the superstition of the times rather better than the plant. Narcissus is another of these curious figures, which, as it is certainly new to our flora, we will invite the editor of THE AMERICAN GARDEN to name. All in all, however, this work is but of little interest.

LETTUCE. 1484.

We now come to a new era, where caricature as a rule ceases, and where honest attempt is at once evident, and the drawings made from the living plant. The first herbal I shall mention is the *Herbarium vivæ eicones* of Oth. Brunfelsius. I have two editions of the first volume, the first dated 1530, with 84 wood-cuts; the second dated 1537, and containing 82 wood-cuts, some few being different from the first edition. Volumes two and three are dated 1536. One feature of this work is the prevalence of a short nomenclature, the omission to label figures, and a number of repetitions. The figures and descriptions of some do not agree. The wood-cuts are well designed and executed, and in those cases where I have compared with herbarium specimens I find are correctly delineated. As a rule, Greek, Latin and German names are given.

The *Historia Stirpium* of Fuchsius, 1542, is a large folio volume of 896 pages, with full page illustrations. In my judgment, it excels all other herbals in accuracy of delineation. In the frontispiece is a figure of the author with a branch in his hand, evidently studying from nature; in the back of the book are two draughtsmen working with a plant in a vase before them. The wood-cuts, reduced in scale, appear in various smaller editions, and are found copied more or less correctly in many succeeding authors. The figures are very rarely inaccurate. One peculiarity is the extensive use of a single name or binomial in nomenclature. In Fuchsius we find the first certain figures of the pumpkin extant. It is for this author that the fuchsia of our conservatories was named.

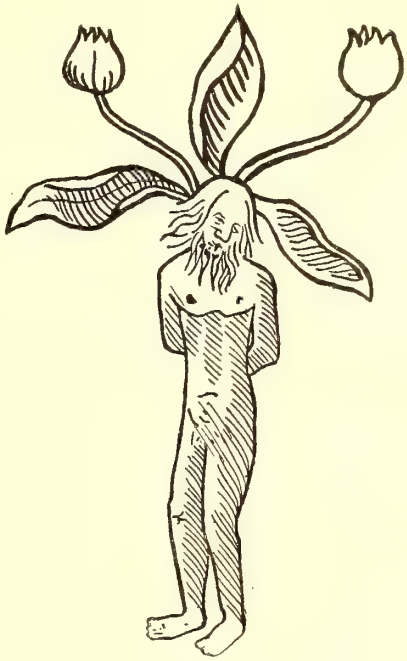
THE TREE OF PARADISE.

The *Kreuter Buch* of Bock is in German, and dated 1546. The same work translated into Latin becomes *De Stirpium*, and Bock takes the Latin form of Tragus, the date 1552. In the frontispiece Tragus is represented with a flower in his hand, evidently lecturing from nature, and his illustrations bear out the inference. My edition of Bock has colored figures, but whether cotemporaneous with publication I cannot say. The wood-cuts are characteristic, and I find no difficulty in recognizing those plants that I ought to know. The synonymy is extensive, if not always correct, and there is oftentimes a confusion through different names being used for the figures than those used on the margins or in the text.

Of a different character are the two following herbals, which I have hence grouped together. The *Botanicon* of Dorstenius, 1540, deals more particularly with the simples of medicine than with botany. The figures are often on a reduced scale, and are frequently of a different plant than that treated of in the text. They are often recognizable even when doing double duty. Thus a young cabbage plant does duty under Beta and Olus. The illustration of the lettuce is excellent from a gardener's standpoint. The *Kreuterbuch* of Eucharius Roszlin, 1550, may be classed with the preceding,

Narcissus. Fifteenth Century.

from which many, if not most of the figures are copied. The picture of the cabbage shows plainly that hard heading cabbages were known in his time.



Mandragora or Mandrake.

We have now arrived at 1550, the date which I had set for the conclusion of this article. From Brunfelsius to this date we have noted the beginnings of a botany based on identification, and we have found nothing figured that we could burlesque. The Scythian lamb appeared later, and not until 1605 do we find the portrait of the tree whose leaves falling on land became flying birds, and in the water swimming fishes. The beginnings of botany were earnest and truthful, and it is with a high respect that we rise from the examination of these books so scantily treated, and we cannot but deplore the lack of recognition by modern botanical science, as the logic of the modern reform in nomenclature must ultimately lead us to recognize the pre-Linnæan systems. Linnæus' system replaced figures to a large extent, and secured identification through description. The natural system now in vogue is, however, dependent on herbarium specimens or figures to a large extent. If identification is one of the leading aims of systematic botany, then there is no valid logical reason why specific nomenclature should begin with Linnæus, rather than to date from the earliest certain separation and illustration of a species. These old books will yet have their innings.

*Massachusetts.* E. Lewis Sturtevant.

# THE GINKGO.

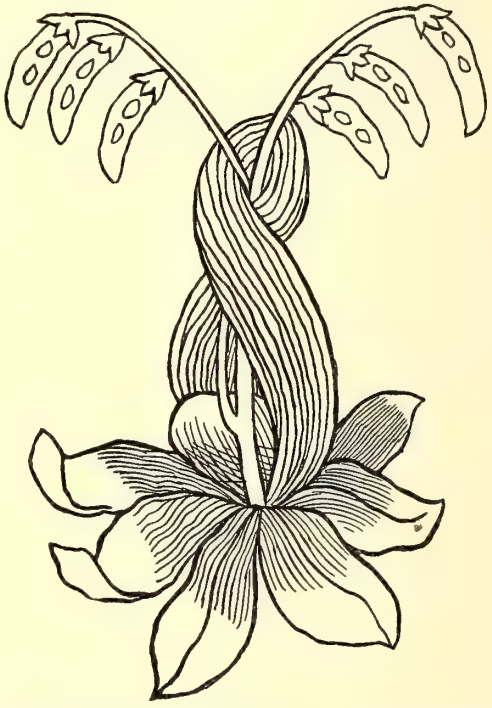
*See illustration, page 271.*

THE GINKGO is well known in this country as an ornamental tree, but few have ever looked upon it as possessing any possibilities as a fruit-bearing tree. Professor Georgeson's account of the use of the fruit of it in Japan, on a succeeding page, calls attention to it in a forcible manner. The first one in this country to call attention to its possibilities as a fruit tree, so far as we know, was Professor Sargent, who wrote in 1877 (Gardener's Monthly, xix, 358) that "the cultivation of the Ginkgo for its fruit is one of the possibilities of American horticulture, and is, perhaps, worth consideration." At that time but one tree apparently had borne in this country, and this had been planted about twenty years before upon the grounds of the Kentucky Military Institute at Farmdale, Kentucky. Fruiting specimens are now of frequent occurrence. The illustration, page 271, is made from specimens obtained from a large tree growing upon the grounds of Ellwanger & Barry. This tree was planted about 1860. It is now fifty feet high, and has a circumference at the base of six feet. It began bearing about three years ago, and has averaged about a peck of fruit each year since. The tree stands alone, and it therefore appears that the specimens must be monœcious or polygamous, rather than diœcious as described in the books. The fruit has been long known in France, and twenty-five years ago the seed was coming to this country.

The fruit has a strong resemblance to a small greenish-yellow plum, even to the stone. The detached fruits in the engraving and the separate stone are full size. This stone has a hard and smooth shell, and is filled with a pleasant and nutty meat. The pistillate catkins are two-flowered, but usually only one fruit develops. The projection upon the peduncle indicates the position of the aborted fruit. The fruit spurs are well illustrated in this engraving. The specimen figured by Professor Georgeson (page 268) is a portion of a young and vigorous shoot.

The leaves in Professor Georgeson's figure are also different from those on the fruiting specimen, being cleft in the middle and bearing erose and crenate borders and a more spreading base. This is the difference between the leaves of young shoots and those of the old and fruit-bearing ones. This variation in leaf characters recalls the geologic history of the ginkgo, for it appears to be true that leaves upon the young and vigorous shoots of trees are more like their ancestors than are the leaves upon old plants or less vigorous shoots, as if there is some such genealogical record in leaves as there is in the development of embryos in animals. At any rate, it appears that the early ginkgos had distinctly lobed or even much-cut leaves. Ginkgos were once a numerous tribe, and they grew plentifully in North America, but the type is now reduced to this one survivor in Eastern Asia. Our ginkgo is a remnant of an early type of vegetation, and we always look upon it with a feeling akin to reverence and sadness. It is an isolated monument of the grotesque vegetation of the Mesozoic time.

For ornamental use, the tree is most desirable; its capacities for fruiting remain to be shown. The noble beauty it possesses can only be the more in its favor if it proves to be valuable economically in fruit bearing.



A FICTITIOUS PLANT. THE FASEOLUS OF THE ORTUS SANITATIS. (See page 260.)

# FALLS OF MINNEHAHA.

Six miles to the west of St. Paul, between the castled rocks at Fort Snelling and the Falls of St. Anthony, is

> "Where the Falls of Minnehaha
> Flash and gleam among the oak trees,
> Laugh and leap into the valley."

The song of Hiawatha has endeared the Laughing Water. With that song passing in my mind, I started in quest of the falls where the ancient arrow maker made his arrow heads of "flint and chalcedony." A small party of Sioux sat in the same coach with me. One squaw, whose long dishevelled hair was turning into gray, and whose uncouth dark features gleamed with a sort of subtle wildness, particularly hastened the train of my thought. She had not assumed, as indeed had not the others, the dress of white women. Her head was bare, unless the twisted, cord-like bandana tied tightly about her forehead may be called a covering; her gown was neither dress nor blanket, and she wore the primitive moccasin. A large piece of black calico thrown about the shoulders answered the purpose of the traditional blanket. What passed before the mind of this old squaw as she was hurried along by a steam horse between high brick walls and over great iron bridges! She had seen the incoming of the white man; she had heard the whistle of the first locomotive; she had seen nature, wild and grand, transformed into the bustle of cities and the naked acres of farms. She had seen the Indian disappear, to live again only in memory and the names of white men's cities. Did she long for the end when she should join her race, or had the memory of her kin been swallowed up in the encroachments of a busy civilization? Surely she must have looked upon the face of nature as one gazes at the portrait of a loved one long since dead; the very reminders of former days must be reminders of sorrow that could never know a healing. None of the Indians whom we see about our settlements possess any expression of independence or ambition. A hopelessness and a shiftlessness give evidence that the spirit is crushed under the inevitable progress of the white man.

Minnehaha! Laughing Water! sheet of mist in frame of tree-tops! The fall reminds me of long and thin fleeces of finely broken and snowy woo dropped down the air, turning suddenly into water as they strike the rock; then they ripple away in a deep and rocky glen with a resonant laughter. The unbroken line of the bed of the stream against the sky and the seeming suddenness with which the water breaks over the edge, suggest at once a temporary and almost artificial overflow over an ordinary cliff. And it was some time before I could dispel this idea. If the water had fallen there for ages, why had it not worn off the sharp edge of the cliff? I afterwards waded across the shallow stream above, almost on the very brink of the plunge, and gathered little plants which were caught in quantities in the slimy algæ on the rock floor, and broke fruiting specimens from bushes of the false indigo which lay over the farther edge. Upon approaching nearer the fall from my original point of view from below, the idea of the laughing water gave place to one of roaring water. In fact, the loudness of the roar disturbed me, although the volume of water then falling was perhaps at the minimum.

Midway up the precipice is a horizontal groove in the rock, in which one may walk entirely around

ANOTHER TREE OF LIFE—THE *Zwa sine musa*. 15TH CENTURY. (See page 260.)

behind the fall. The glen below the fall is about half a mile long, wooded with American elm, bass-

wood, white ash and butternut. At its lower extremity it leads the winding stream into the Mississippi. It is only from the upper ground that the falls now "flash and gleam among the oak trees," and even there the fringe of oaks is scanty. The open banks of the glen near the fall have grown up thickly to nettles, which give a weedy and neglected aspect to the place. These, although native plants, spring up and flourish under the indirect protection of the white man. Along the glen grow the choke-cherry, paper birch, river-bank grape, iron wood, the pretty blue harebell, white berried cohosh and other old friends, while the crest of the bank is beautifully festooned with Virginia creeper.

*"Where the falls of Minnehaha*
*Flash and gleam among the oak trees."*

Upon the nearer side of the glen a photographer, with more love for trade than appreciation of the charms of nature, has built a little hovel. In front of the hovel a small platform is built out from the bank, and upon it the silly tourist sits with his family to have his picture taken, with the waterfall for a background! A contrivance similar to this I have seen at Niagara. Verily, the highest appreciation which some possess of scenery is to serve as a background for their own vanity!

Minnehaha brook is an unpretentious stream some thirty feet wide. The height of the fall is sixty feet. The name of the stream is Sioux, but the ground adjacent was not the undisputed possession of that tribe. It is said that the brook was the boundary line between the Sioux and the Chippewas, and the scene of many ancient conflicts. A hotel and post office once flourished at the place, but they have now given way to ruins of fences and shed-like ice cream stands. And it seems proper that it should be so. The tribes who are associated with the place are also a ruin. They are but a memory at Minnehaha. Day by day in loneliness the little waterfall sings the songs of a wild and ancient passion, and as it plunges in eager abandon down the glen to the Father of Waters, it typifies the precipitate end of the Red Man.

The Sioux term *Minne* signifies "water." Minnesota is the "slightly clouded water"; Minnetonka, "great water"; Minneota, "much water"; Minneiska, "white water," while Minneapolis, "water city," is an unclassical hybrid of Sioux and Greek.

There are many handsomer waterfalls than Minnehaha, but there are no sweeter poems than Hiawatha. Here have met the folk-lore of the savage and inspiration of the white man! L. H. B.

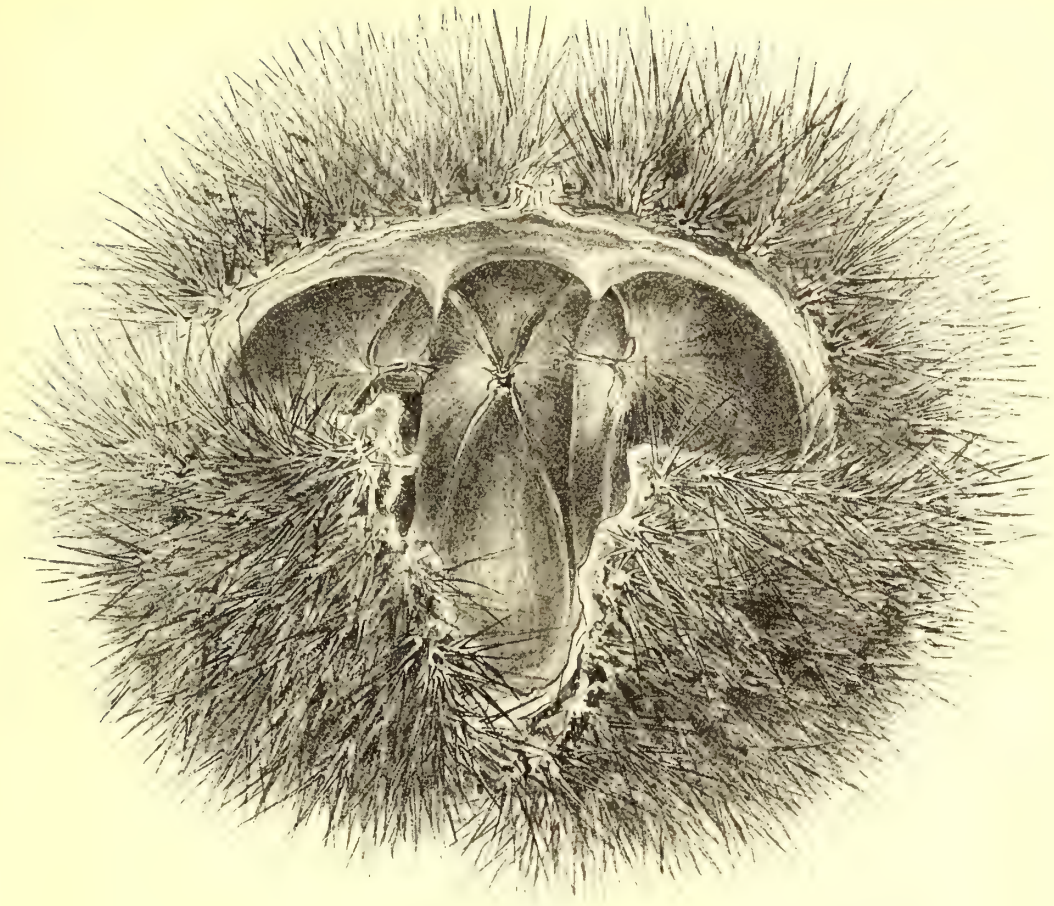


FIG. 1. JAPANESE CHESTNUT, TAMBA-KURI. FULL SIZE.

# THE ECONOMIC PLANTS OF JAPAN*—V.

## EDIBLE NUTS.

JAPANESE CHESTNUTS.—CASTANEA JAPONICA, Blume (*Castanea vulgaris*, Lamarck, var. *Japonica*, DC.); Jap., *Kuri*, *Sandoguri*. Figs. 1 and 2. The chestnut is a widely distributed genus. It is found wild from the Black Sea to Portugal; it is cultivated all over Europe, and has become partly wild in central Europe and England; it is found in northern Africa, in the Caucasus, and elsewhere in western Asia; it is a favorite nut throughout the temperate regions of North America, and it is also found both wild and cultivated on all the larger Japanese islands. De Candolle regards all the forms as mere varieties of the European species. Savatier calls attention to a character which he says differentiates the Japanese plant: the under side of the leaves is covered with white, woolly hairs. It has also appeared to me that the upper side of the leaves is less smooth and glistening, darker green on the Japanese varieties than is the case with those grown in Europe and America.

There are several varieties in Japan, and the one that is of most interest to us, the "Giant Japan Chestnut," is already well known here. It is known in Japan by the name of *Tamba-Kuri*, from the district of Tamba, not so very far from the ancient capital of Kioto, where it has its home and where it attains its greatest size. It is undoubtedly the largest variety of the chestnut in existence. The illustrations (Figs. 1 and 2) show a bur and nut of this variety from a tree grown in Tokio. Although of good size, they are not so large as specimens I have seen from its native district, where climate and soil appear to

favor the growth of the largest nuts. Larger single nuts may also be found on a sub-variety, which usually has but one nut in each bur, the form that the French call the *Marron*, and which is also grown in Japan. The nut of the common variety, which grows pretty much all over the country, is no larger than the common American chestnut. The tree of the *Tamba-Kuri* differs from the latter only in a rather more vigorous growth and larger leaves. Besides these the Japanese have a very small variety, which they call the *Shibaguri*. The tree is small and shrubby, the leaves very small and the nuts scarcely larger than filberts. It is evidently a dwarf form of the common chestnut, the result of chance or culture. It is not so common as the others, though the nuts can occasionally be seen in the stores. As a curiosity, it may be of interest.

None of the Japanese chestnuts are as sweet as the wild chestnuts of this country. They are drier and more mealy, with less taste than the wild chestnuts of our northern woods. Whether this is due to the fact that they have been grown in a milder and moister climate, and whether they would gradually become like ours by continued culture here, are points that cannot be determined at present; but it does not seem improbable that under the same conditions they would develop the same characters as ours.

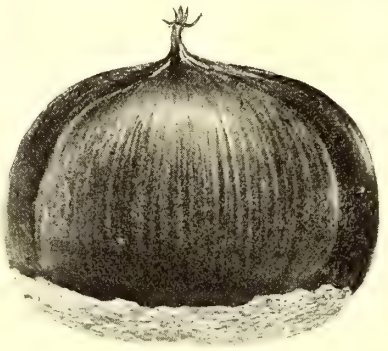


FIG. 2. TAMBA-KURI. FULL SIZE.

Their nuts are greatly troubled with insects which destroy the kernel, and for that reason importers of seed nuts often find that but a small per cent. of what they receive can grow; and they are also affected by a microorganism which gradually changes the kernel in a manner sometimes called dry rot. Chestnuts are highly esteemed in Japan. They are eaten raw, boiled or roasted, and enter into the composition of many native dishes which are not at all unpalatable. They are also dried and ground to flour, which is used for cakes, but they make no bread from it. The kernels are also candied and otherwise worked into various kinds of sweet meats. They have a kind of dried kernels that they call *Kachikuri*, which are used in cooking. They are prepared by soaking the nuts for twenty-four hours in strong lye, after which they are dried in the sun, and when the kernels again harden, the shell is removed. This treatment preserves them against insects, and makes it possible to keep them in stock for a long time. They are as common in well-appointed grocery stores as oat meal or hominy is with us.

The trees are very commonly cultivated, and in certain districts, on a somewhat large scale. Nuts intended for propagation are buried in the ground in winter, and planted three inches deep in the spring. About 400 trees are grown to the acre when planted in groves. They begin to bear when three years old, and at the age of ten years they are expected to average half a bushel of nuts to each tree, or 200 bushels per acre.

The family of Juglandeæ, or walnuts, is represented by at least three indigenous species which furnish edible nuts. These are JUGLANS REGIA, L., var. SINENSIS, Casim. (*J. Japonica*, Sieb.; *Pterocarya Japonica*, Miq.); Jap., *Te-uchi-gurumi*. JUGLANS SIEBOLDIANA, Maxim. (*J. nigra*, Thunb.; *J. Mandshurica*, Maxim.*; *Pterocarya sorbifolia*, Miq.); Jap., *Oni-gurumi*. JUGLANS CORDIFORMIS, Maxim.; Jap., *Hime-gurumi*, *Otafuku-gurumi*.

Of these three, Siebold's walnut is the most common. It yields small nuts of good flavor, and is peculiar in that they are borne in large clusters, a dozen or more being often grown in a bunch. The reader is referred to the December number of THE AMERICAN GARDEN for excellent illustrations and description. The other two species are more rare. None of them are cultivated to any extent. It is very seldom that one finds the nuts offered for sale. They are utilized when found, but attract no special attention.

The hazelnuts are represented by two species: CORYLUS HETEROPHYLLA, Fisch.; Jap., *Hashibami*, and C. ROSTRATA, Ait., var. SIEBOLDIANA (*C. heterophylla*, DC.; *C. rostrata*, Maxim.); Jap., *Tsuno-Hashibami*.

Both are wild in the mountains and foot-hills all over the northern portion of the country. The first named, especially, is very abundant in some places. Though the nuts of both are gathered and eaten, I have never known them to be cultivated. A bearing twig of *C. rostrata* var. *Sieboldiana* is illustrated in Fig. 3. In general appearance the two species can scarcely be told from each other. *C. rostrata* blooms about two weeks before *C. heterophylla*; it has catkins two to four inches long, with brown scales and dark purple anthers. *C. heterophylla*, on the other hand, has smaller catkins and bright yellow anthers, giving the bush a brighter look when in bloom. The nuts of both are badly attacked by insects, and neither of them compare in size and quality with cultivated varieties of *C. Avellana*, the filbert.

GINKGO BILOBA, L. (*Salisburia adiantifolia*, Smith); Jap., *Icho*, *Ginnan-no-ki*. This tree, by no means a stranger in this country, belongs to the Coniferæ. It is one of the finest trees indigenous to Japan. When allowed to take its natural growth, it invariably has a broad, dome-shaped head, symmetrically developed, the dense mass of branches being nearly equally distributed about a central axis. It does not grow as tall as many other conifers, seventy to eighty feet being the usual height of old trees, and they rarely exceed a hundred

* Botanists commonly regard *Juglans Mandshurica* as a distinct species. See Maximowicz's illustrated account of Japanese walnuts Bull. Acad. Sci. St. Petersburg, viii. 630 (1872); also this journal Dec. 1890, 708, and March, 1891, 178.—ED.

feet; but the dense, broad head and sturdy trunk give the impression of massive strength, which the slender pines do not convey. The trunk is very thick at the base, in proportion to its height. Many specimens can be found which have a diameter of between six and seven feet a couple of feet above the ground; but the trunk rapidly tapers upwards, and at a height of forty or fifty feet it usually loses itself in branches. If left to itself it branches very low, and on most old trees the lower limbs are not over eight or ten feet from the ground. Clothed with foliage, such old trees offer a secure shelter, both against rain and sunshine. The finest specimens can be found in old temple grounds, where they have been planted for ornament. There are several trees in temple grounds in Tokio and vicinity estimated to be a thousand years old. Two such giants adorn the yard of an old thatched temple in the district called Kowaba, a short distance west of Tokio.

The icho is not exempt from the training and mutilation that every ornamental bush and tree is liable to undergo, but it bears it well. The most unnatural form that I have known it to be given is that of a tall shaft, all the branches having been cropped close to the trunk; but in due time it sent out a numerous army of young shoots, from base to top, and when I saw it, it was a unique pillar of living green.

FIG. 3. JAPANESE HAZEL.—CORYLUS ROSTRATA, VAR. SIEBOLDIANA. FULL SIZE.

The ginkgo is a deciduous tree. The leaf is remarkable in that the veins fork like the ribs of a fan, as may be seen in Fig. 4, where a twig in leaf is represented natural size. In shape it is triangular, more or less distinctly two-lobed, resembling those of the maidenhair fern. In the fall the leaves turn a bright yellow, some time before they drop. This feature makes a large tree a conspicuous object in the landscape as far as it can be seen, especially when it is set off against a group of bamboos or dark pines. This yellow coloring matter is used as a dye-stuff.

The fruit ripens in October when the foliage begins to turn yellow. It has the appearance of a medium-sized

yellow plum (see cut, page 271), and consists of a thin outer layer of flesh, which covers a smooth, hard-shelled and slightly pointed nut about the size of a large hazel-nut. The kernel in this nut is the only edible portion of the fruit. The outer fleshy covering is so acrid that in picking out the nuts the fingers have to be protected with gloves against its biting, smarting action; and it has at the same time a strong and disagreeable odor, which is developed when it begins to decay, soon after ripening.

FIG. 4. ICHO OR GINKGO. FULL SIZE

The nut is called *Ginnan*, hence *Ginnan-no-ki*, one of the names of the tree, in which *no* indicates the possessive case and *ki* means tree. The kernel has none of the objectionable features of the fleshy portion of the fruit. It is rich and pleasant, though slightly resinous in taste. It is eaten fresh, and also used in cooking. These nuts are quite abundant in the city markets, and can be had at nearly all times of the year. They are, I believe, entirely exempt from insect pests. The tree is hardy in the northern states, and can be propagated from seed and cuttings, and it can also be grafted on its own stocks.

Another nut much prized by the Japanese, though by no means so common as the *Ginnan*, is the seed of TORREYA NUCIFERA, Sieb. and Zucc. (*Taxus nucifera*, Kæmpf.; *Caryotaxus nucifera*, Zuccarini); Jap., *Kaya*.

This is a handsome small conifer, which at times attains a height of 30 feet, but more commonly it is smaller than that, and even grows as an underbrush in the mountains of central Japan. The needles are broad, two-ranked (although the buds are not two-ranked), three-quarters of an inch to an inch long, and with two longitudinal white stripes on the under surface. In the fall this tree yields an abundant crop of seeds the size of acorns, which are eaten raw and also used in cooking. Most of the crop, which is gathered by mountaineers and woodsmen, is, however, put into the oil-press and the oil extracted, and used chiefly in cooking and sometimes for illumination. The tree is seldom cultivated. The wood is hard and is used for coopering, turning and the manufacture of small articles.

QUERCUS CUSPIDATA, Thunb.; Jap., *Shii*, *Shii-no-ki*. This oak may very properly be classed among the Japanese nut trees. It bears a small, oblong and pointed acorn, which is entirely free from the bitterness and astringency that characterize most acorns. It is called *Shii-no-mi*, that is, the fruit of the *Shii*. These acorns are sold on the fruit stands and peddled about the street, and are eaten either raw or roasted like peanuts. The tree is common in the forests of southern and central Japan, and is much cultivated in many places, especially about Tokio, where it is grown not only for its nuts, but for hedges and ornament. It is an evergreen oak, and is the hardiest of all the evergreen oaks indigenous to Japan. Left to itself, it becomes a large, stately tree. The leaves are entire, narrow, though more or less ovate,

about four inches long, with a long, slender point arranged in two ranks on the shoots, and of a shining deep green color. It is a very handsome tree, well worth the attention of our nurserymen. It would probably be hardy in all but the northernmost tier of states. For hedges, young trees are planted a foot apart and trimmed close on both sides, but allowed to run up by the addition of a foot or more to the top each year for several years. I have seen fine hedges of this oak about twenty feet high. It keeps the lower foliage well for some years, but when the hedge finally becomes too naked below, another hedge of some bushy plant is sometimes set just outside, but close up against the oak hedge, the two thus making a tall and impenetrable screen.

ÆSCULUS TURBINATA, Blume. (*Æsculus Pavia*, Thunb.) Jap., *Tochi*, *Tochi-no-ki*. This tree deserves also to be classed among the nut trees of Japan, for though not grown for the fruit, the nuts are gathered and used as an article of food. Owing to their bitter taste they are hulled and the kernels soaked in strong lye for several days, the lye being changed occasionally. This treatment removes the bitterness and renders them edible. They are then boiled and prepared in many ways for food. A common mode of preparation is to make them into a paste with glutinous rice, which is then baked. The tree is very ornamental, and deserves attention on that account. It is a large forest tree, which may be found in the mountain forests all over the country. It has large ornamental leaves and yellow flowers. The bark of this tree is also used as a black dye-stuff.

The family Sapindaceæ, to which the last described tree belongs, contains another fruit tree of much importance in certain tropical and semi-tropical regions, and which may, for convenience, be described among the nuts. I refer to NEPHELIUM LITCHI, Camb. (*Euphoria Litchi*, Desf.); Jap., *Reishi*. This tree is a native of southern China and the Malay Archipelago, where it has been cultivated for at least fifteen hundred years. It has been brought from China to India, and likewise introduced in the extreme south of Japan.* Only a lim-

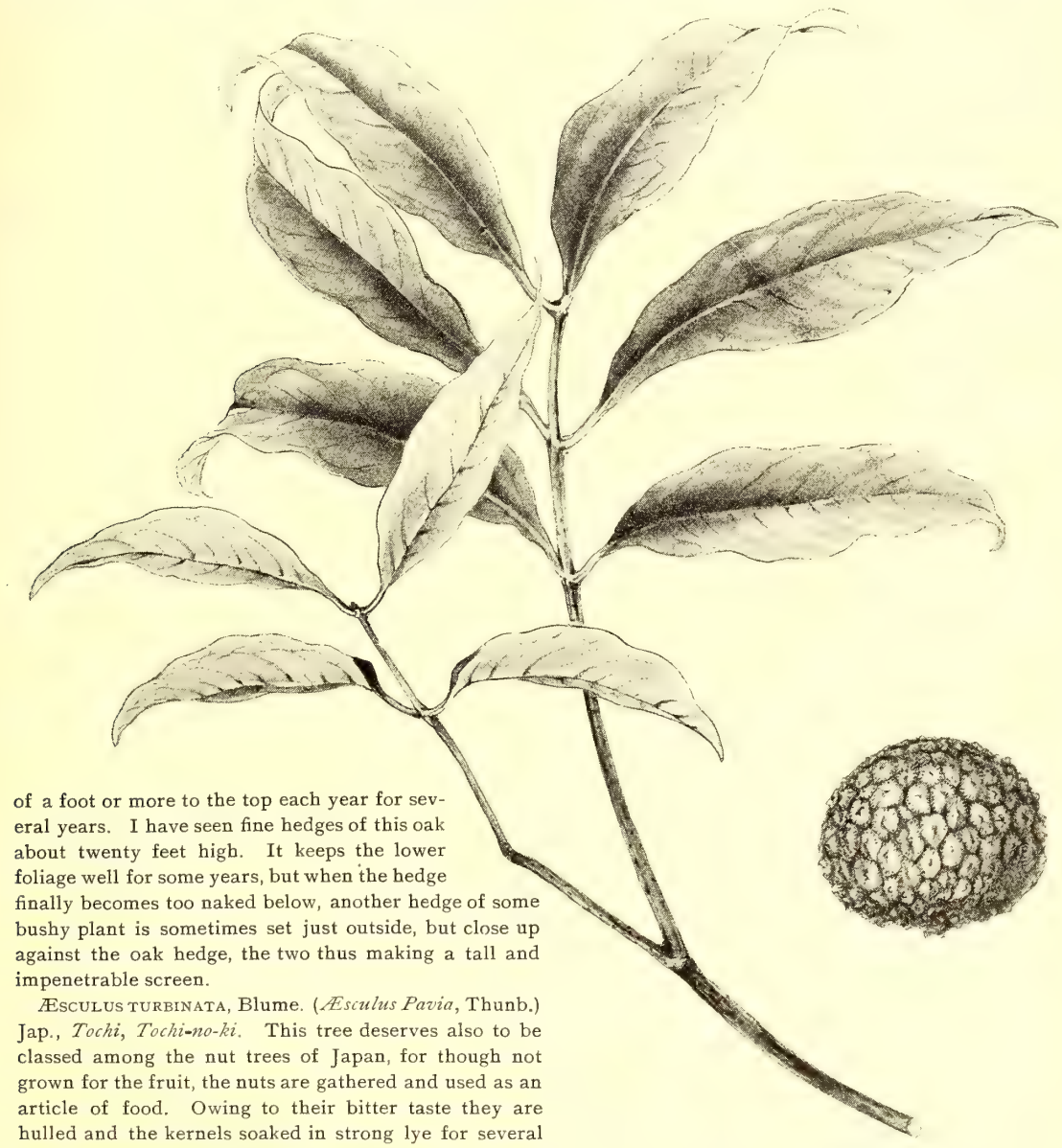


FIG. 5. NEPHELIUM, OR LITCHI-NUT. NATURAL SIZE.

* The tree was introduced into southern Florida in 1886.—ED.

ited area is suited to its growth, as it does not readily adapt itself to climates which differ much from that peculiar to its original habitat. It is a good-sized tree, said to attain a diameter of two to three feet. A full sized illustration of the leaf and fruit is given in Fig. 5. The fruit is of the size of a small walnut. The outer covering consists of a thin, brittle shell, under which is a layer of a soft, aromatic and delicious pulp; finally in the center is a rather large, smooth, hard-shelled seed, from which the pulp readily separates. It is one of the most delicately flavored fruits that the tropics produce. In a dried state it will keep a long time, and can be transported to distant parts. Thus dried, the pulp shrinks from the shell, and becomes tough and less aromatic and delicate. Trans-Pacific steamers often have this dried fruit on their tables, and it can be obtained in all the larger markets of the east.

In this connection I may also mention the cocoanut palm, COCOS NUCIFERA, L.; Jap., *Yashi*, *Yashio*, which is likewise grown in the extreme south of the empire, especially on the Riukiu (Loo Choo) islands. The fruit is well known to every housewife in America, and does not need description here.

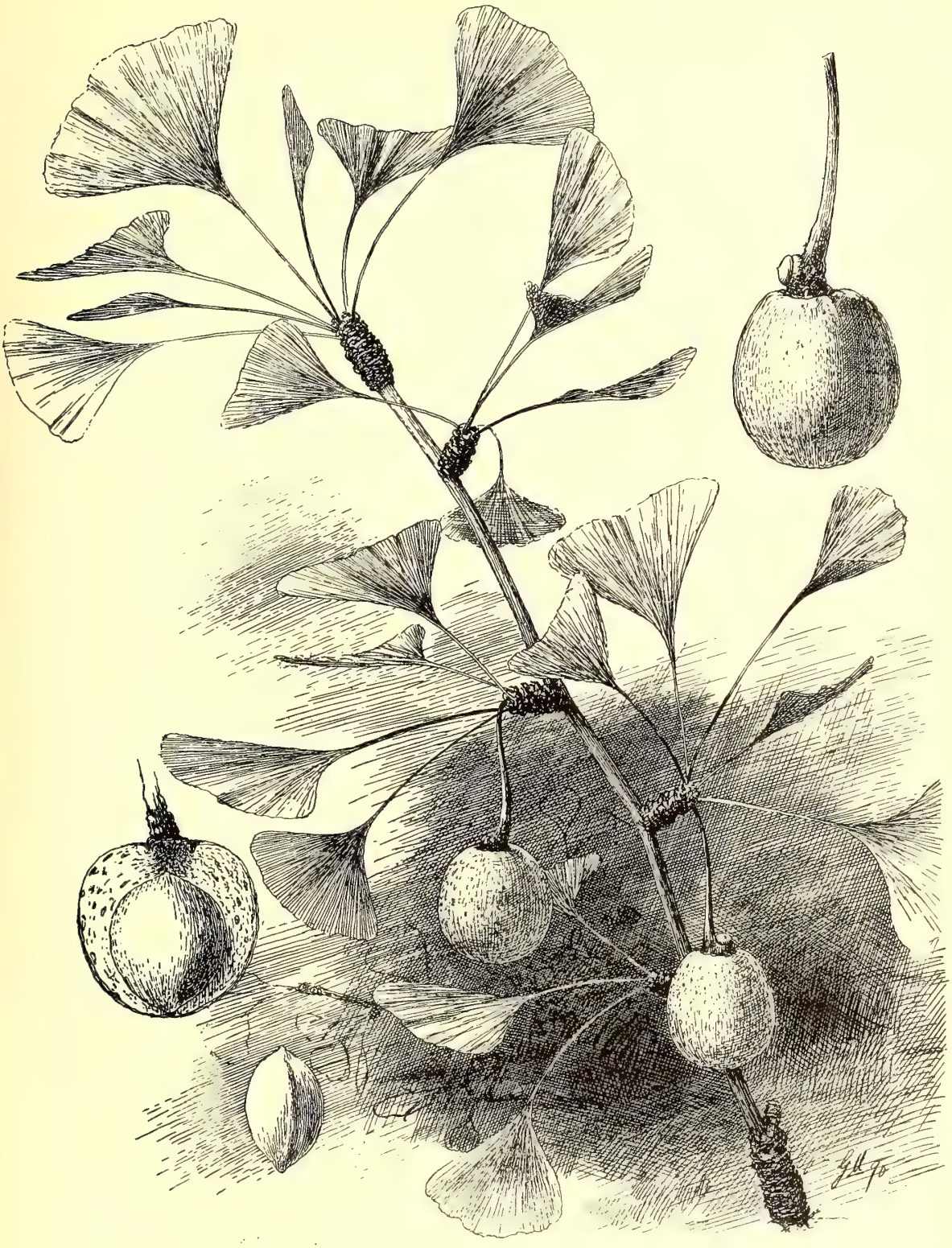
There are two more nuts grown in Japan, both on small herbaceous plants, which should be briefly mentioned here. One is the peanut, ARACHIS HYPOGÆA, L.; Jap., *Tojin-mame*, *Nankin-mame*. This plant, so well known in America, was brought to Japan from China. This fact is confirmed by its name, *Tojin-mame* meaning literally Chinamen's bean. It is cultivated somewhat extensively in certain districts, particularly so in Chiba prefecture, which lies to the northeast of Tokio. One object in growing it is the production of oil, but large quantities are also consumed in the same manner as with us. Fresh and roasted peanuts may be found in greengrocers' and fruit stores nearly all over the country, through the fall and winter. In Tokio, one may even meet with the familiar peanut roaster fitted out with steam whistle and other modern improvements, and occasionally an enterprising peddler with a portable machine of this pattern traverses the streets, blowing his whistle and exchanging nuts for pennies to the great delight of young Japan. The plant is cultivated in essentially the same manner as in America.

The other nut-bearing plant referred to above is the water chestnut, TRAPA BISPINOSA, Roxb.; Jap., *Hishi*. This is a small water plant with running stems and floating orbicular leaves, broader than long, dentate, with broad petioles. The flowers are small, white, turning pink. The fruit is a nut with an edible kernel that much resembles chestnuts in flavor. The hardened calyx forms the shell, which has two opposite recurved projections or horns, from which circumstance it appears that it is sometimes referred to here as "the horned nut of China." The plant may be found everywhere in stagnant, shallow ponds and pools. It is not so common in Japan as in China and India, where, in some places, it forms an important part of the food of the people. A good-sized nut will have a kernel nearly as large as the kernel in a common small chestnut.

A variety of this species has been named INCISA, Franchet and Savatier (*Trapa incisa*, Sieb. and Zucc.); Jap., *Hemi-hishi*, the nut of which does not essentially differ from the foregoing. It, too, is of common occurrence both wild and cultivated.

*Kansas Agricultural College.* C. C. GEORGESON.

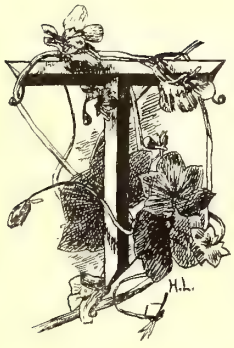
*Nothing tends to destroy breadth of tone so much as any object of considerable size, and of a brilliant white. It stands harshly apart from all the soft shades of the scene.* —A. J. DOWNING.



GINKGO IN FRUIT. Three-fifths natural size, the details full size. (See page 262.)

# THE PECAN.

ATTRIBUTES, CULTURE, VARIETIES, POSSIBILITIES.



THE PECAN (*Hicoria Pecan;* better known as *Carya olivæformis*) is a tall, symmetrical tree closely resembling the true hickories. It grows to a height of seventy-five to one hundred and fifty feet, and has a beautiful, rather slender form. The trunk is straight, and the lower branches are from ten to forty feet from the ground, depending upon the surroundings, or the manner in which the tree is trimmed. The foliage is rich, dark green in color, while the bark of the stem and the older branches is brownish black. The nuts, which are produced in large quantities, are borne at the extremities of the new shoots; the staminate flowers, however, appear at the ends of the shoots produced the preceding year. The foliage and a cluster of pistillate or fertile flowers are seen in Fig. 1.

In some respects the pecan occupies an intermediate position between the hickories and the walnuts, since some of its characteristics are similar to those peculiar to the latter. For instance, its leaves are composed of thirteen or fifteen leaflets, the native walnuts having fifteen to twenty-three, and the true hickories from five to eleven only. Again, its sterile catkins are not at all united, or only slightly at the base, as in the walnuts. But it plainly resembles the hickories in having four divisions of the exocarp or husk of the fruit, and by having three catkins instead of one. Another interesting feature of the pecan is found in the fact that the partition which divides the nut into two principal cells has a bitter and astringent taste, as in the pig-nut, while the large and sweet kernel is very much like that found in the shell-bark hickory. The differences between these two genera, hicorya and juglans, are but slight, and geological records indicate their common origin.

The pecan is native to the southern states and to Mexico, being particularly abundant in Texas. But it is found growing wild as far north as southern Iowa, Illinois and Indiana. Many years ago some nuts were planted in Maryland, and now some of the finest trees in the Union may be found growing in that state. Florida also is producing pecans that have gained an enviable reputation. In fact, this tree will grow readily in all the southern states, provided it is grown under proper conditions. Many young groves testify to its adaptability to the eastern as well as the western sections of the south. California now has its thriving groves, and by careful selection of seed the northern limit could undoubtedly be extended.

The tree grows to perfection along the bottom lands. Here all the requirements for a luxuriant and healthy growth are present. The soil is sufficiently deep for the full development of the large tap-root, and also rich enough to furnish plenty of food. Moisture is continually present, and thus there is no check to a steady growth. These three conditions are essential, and no one can expect success in pecan culture when any one of them is absent. Land that naturally has a good growth of oak or hickory will produce good pecans, for the needs of these trees are about the same. Although the pecan is not injured if the land is occasionally flooded for a short period, still this is by no means necessary. This tree can be drowned as well as many other kinds, and drainage has proved to be decidedly beneficial. But it is quickly affected by drought, and in making a plantation a subsoil of coarse sand or gravel which is apt to dry out should be avoided, as well as one of stiff clay or hard-pan, since it is difficult for the tap-root to penetrate the latter, and a slow and unsatisfactory growth will be made. A rather loose, moist subsoil must be present.

The character of the soil at the surface is not so important. Although the pecan is a ravenous feeder, any defect in the food supply may usually be remedied by proper cultivation and fertilizing. Sufficient humus can be supplied by turning under some green manure, as cow-peas; and commercial fertilizers will supply any mineral elements that may be lacking.

The pecan is generally propagated by seeds. Too much care cannot be exercised in their selection, for upon them depends the value of the grove. Unfortunately this tree does not always come true from seed, and this makes the selection difficult. The character of the plant has a stronger tendency to reproduce itself than the character of the individual nut, and this law should be a guide in seed selection. In other words, an inferior nut obtained from a tree that yields a high percentage of good fruit is more valuable than a superior nut grown upon a tree bearing mostly inferior fruit. Of course there are exceptions to the rule, but nevertheless it is a good one to follow. Again, the varieties of this tree cross freely, so that a valuable tree from which nuts are gathered for planting should be isolated from all inferior trees if possible. If this is done and good, average nuts are chosen, there is little danger that like will not produce like. The larger nuts, produced by a tree cannot be so certainly depended upon for perpetuating the type.

It is probable that before long, grafting will be largely

resorted to for propagating a desired variety, for high culture tends to "break up" a type, and years of seed selection are required before it can be again fixed. Grafting has already been successfully performed, and Mr. Van Deman of the United States Department of Agriculture recommends the following method: The cions should be cut during the winter and put into a cool place so as to keep them back until the stocks have started in the spring. The latter may be either hickory or pecan, and they should not be more than two years old. Cut the stock at the crown and insert the cion, which should be about six inches long, by means of the tongue graft. Tie firmly and bank up the earth nearly to the top of the cion in order to keep it moist.

Budding has also been successfully performed, although good results are hard to obtain. The bud is inserted as in other stock, but only a small per cent. of them take. At present it is almost impossible to get cions or buds of the best varieties, but this difficulty will probably soon be removed.

Young plants are always obtained from seeds. These should be planted in a well-prepared and enriched soil, for a vigorous growth should be obtained from the start. If planted where the tree is to stand permanently, the soil should be loosened to a depth of one to two feet for a space about three feet in diameter. Plant three or four nuts in the loosened soil, setting them about four inches deep. This may be done either in the fall or in the spring; the former is probably the better time, as there is then no danger of the nuts drying out during the winter. But if the nuts are stored until spring they should be put in boxes and kept in a cool place. The seedlings appear from April till June, depending upon the time of planting. They require but little attention, for all that is necessary is to keep them free of weeds. In the fall thin out, allowing only the strongest plant to grow.

When the trees are started in nursery form, the methods followed are somewhat different. The land should receive a dressing of some fertilizer, as barnyard manure or cotton-seed meal, the amount applied depending upon the natural fertility of the soil, and then it should be thoroughly plowed and harrowed. Plant the nuts in drills about three feet apart, and from twelve to eighteen inches apart in the drills. On poorer soils additional manure should be put in the rows. While in the nursery the trees should receive good cultivation. At the end of the first year it is well to transplant the seedlings, or at least to cut the lower part of the tap-root with a spade. This causes the formation of more fibrous roots and the trees will be stronger and will bear the final transplanting more easily. They should not be left in the nursery more than three years, although they are often transplanted when older. At this age they will be four to five feet high.

FIG. 1. FOLIAGE AND PISTILLATE FLOWERS OF PECAN. ½ SIZE.

About the only objection to nursery-grown trees is that they do not come into bearing so soon as those started in the orchard. When one considers that the tap-root of a young pecan is about three times as long as the part above ground, its importance can readily be seen, and any check in its growth must have a strong influence upon the tree. In fact, a transplanted tree will usually be two or three years later in bearing than one not so treated, although this has not always proved to be the case.

The proper distances between the trees in the grove cannot be definitely stated, as so much depends upon the natural fertility of the soil. On strong land sixty or

even seventy feet between the rows is not too much, and even on quite poor land thirty feet should be left between the trees. These eventually grow to be very large, and ample room should be given them.

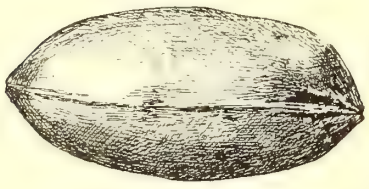


FIG. 2. VAN DEMAN.

While the trees are young, crops may be grown between the rows, and this cultivation will also benefit the grove. When the trees are older it is a good plan to turn the orchard into a pasture, and thus the fertility of the land will, in a degree, be maintained. But the treatment of a pecan orchard should not differ very much from that given an apple orchard or an orange grove. It should be regularly fertilized in order to be most profitable.

FIG. 3. VAN DEMAN.

The pecan is a very rapid grower and it bears much earlier than is generally supposed. It blossoms when six or seven years old, and nuts are usually produced the following year. When first coming into bearing only few nuts are borne, but the number produced rapidly increases. Under ordinary circumstances an untransplanted tree ten years old will bear perhaps one-half bushel of nuts. At fifteen years it should bear from two and one-half to three bushels, and at twenty years this amount should be doubled. A tree in full bearing yields from two hundred to three hundred lbs. of nuts, and one in Texas which is several hundred years old and six feet in diameter, yields annually about four hundred pounds.

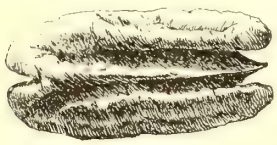


FIG. 4. MEAT OF VAN DEMAN

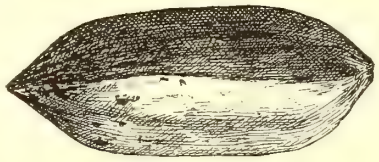


FIG. 5. STUART.

FIG. 6. TURKEY EGG, SR.

The easiest way to harvest the crop is to pick up the fallen nuts about once a week. Shaking them down is often a difficult operation, but if squirrels, etc., are abundant, it may be necessary to do this in order to get the crop. After gathering, the nuts should be dried and put into barrels, when they are ready for shipment. They are often polished before they reach the retail trade. This is done by putting them in rapidly-revolving iron cylinders. Here the black markings are soon worn off and the nuts come out smooth and clean. They sometimes receive a coat of shellac, and this gives them a rich, dark-brown color.

FIG. 7. TURKEY EGG, JR.

During the past few years pecan culture has received much attention, and now several varieties of large size and superior quality are offered for sale. I am indebted to several men in the south for their kindness in sending me samples of their best paper-shell varieties. The accompanying illustrations, all natural size, show the form and size of the principal ones. The Van Deman, Figs. 2, 3 and 4, grown by W. R. Stuart, of Ocean Springs, Mississippi, is probably the largest and the heaviest variety. The nuts average thirty-five to the pound, and three of them have weighed two ounces. The one illustrated weighed one-third of an ounce. The shell is thin, but the flavor of the meat is not quite so rich as that of some of the other varieties. The Stuart, Fig. 5, is another very large variety grown by the same man. The nut is more oval in form; it has a slightly thicker shell, but the flavor is better—an important merit.

FIG. 8. TURKEY EGG, JR.

FIG. 9. GEORGIA MELON.

Arthur Brown, of Bagdad, Florida, also grows several excellent varieties. The variety called by him Turkey Egg, Sr., Fig. 6, is very large and quite thin-shelled. It is very full of meat, which is finely flavored. Turkey Egg, Jr., Figs. 7 and 8. is not so large, but the shell is thinner, and the flavor is excellent, probably not surpassed in this respect by any other variety. Georgia Melon, Fig. 9, is more round in form. It is of medium size, rather thick-shelled, but full of meat. Criglar, Fig. 10, is a medium sized nut having a more irregular meat, but its flavor is excellent. Among the other varieties grown by Mr. Brown may be mentioned Petite (Fig. 11), Repton, Riberia (Fig. 12), and Helen Harcourt. They are all of medium size except

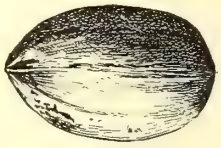


FIG. 10. CRIGLAR.

FIG. 11. PETITE.

Petite, which is rather small, and are full of well-flavored meat, Helen Harcourt excelling in this respect.

Another very valuable variety is the Idlewild (Figs. 13 and 14), grown by Louis Biediger, of Idlewild, Texas. It is very large, quite thin-shelled, and of excellent flavor. As Texas is called the home of the pecan, we may expect to obtain many more superior varieties from that section of the south. Undoubtedly they already exist, but have not yet been reported. It is said that in many parts of the state the trees are cut down in order to gather the fruit more easily, and where such extravagant methods are followed it is not strange that the merits of individual trees are not very seriously considered.

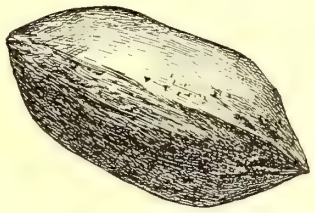


FIG. 12. RIBERIA.

The pecan has few enemies, and but little care is required to protect it from them. The most injurious insect is a borer, *Cyllene picta*, Fig. 15. The ground color of the mature insect is black, but it is so abundantly marked and spotted with yellow that from a distance it has a golden appearance. These beetles are very abundant on the flowers of the golden rod in the fall, and are easily recognized by their bright markings. At this time the eggs are laid on the bark or in the crevices of the tree; they soon hatch, and the larva immediately commences work boring inwards and upwards. The saw-dust like material formed by them is thrown out at the place of entrance, and thus the presence of the insect may be detected. The mature insect issues about the first of September of the following year. Packard suggests, as a preventive remedy, to put soap or some such material on the trunk of the tree during August, so as to prevent the female from laying her eggs; the young larva is also killed by this material. Another way of destroying the insect is to run a wire into the cavities made by the borer early in the fall. Its excavations are not very extensive at that season, and the larva is easily reached and killed. Another cerambicid beetle which attacks the pecan is *Mallodon dasystomus*, but it usually attacks only weakened or injured trees. The remedies are the same as for the preceeding.

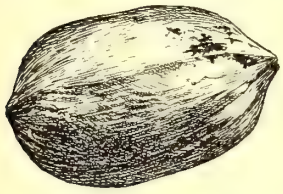


FIG. 13. IDLEWILD.

The fall web worm, *Hyphantria cunea*, Fig. 16, is an insect which, if neglected, will do considerable damage. The moths lay their eggs on the leaves early in the spring. These moths, often called the "many-spotted ermine moth," vary considerably as to size and coloring, some being pure white and others abundantly spotted with brown or black. Their eggs hatch in about a week, and the caterpillars immediately begin to spin their web which, if undisturbed, becomes large and unsightly in the fall. Fortunately these insects can be destroyed easily. Where they are very abundant, arsenites sprayed upon the trees two or three times before the first brood of caterpillars matures, will effectually put a stop to their ravages. Another simple and sure remedy is to burn the webs as soon as they appear, with a ball of cotton or rags tied to the end of a long pole and saturated with kerosene; or the affected limbs may be cut and then burned. This also should be done early in the season.

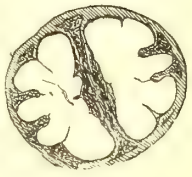


FIG. 14. IDLEWILD.

Among the other insect enemies of the pecan may be mentioned the bark borer, *Scolytus quadri-spinosus*, Fig. 17. This is often very destructive to our common hickories, tunnelling just under the bark, as seen in 1 and 2, Fig. 17, but as yet it has not seriously injured the pecan. *Hemirhipus fasicularis*, a wire worm, and *Chramesus Chapuisii*, as well as several species of phylloxera, also work upon this tree, but at present they have no economic importance. All these figures of insects are from a bulletin of the Department of Agriculture.

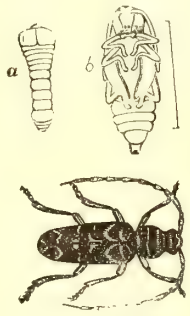



FIG. 15. CYLLENE PICTA.

On black waxy lands the pecan often suffers from a disease commonly known as twig-blight. It is caused by an excess of moisture near the surface of the ground. The remedy is to drain the land, and if this is well-done the trees usually recover.

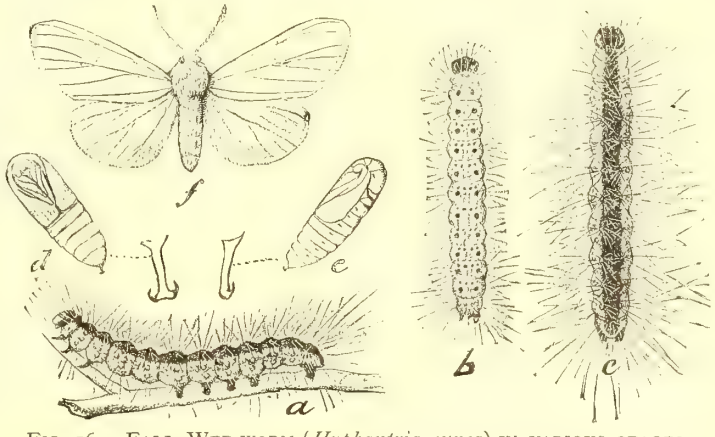



FIG. 16. FALL WEB-WORM (*Hyphantria cunea*) IN VARIOUS STAGES.

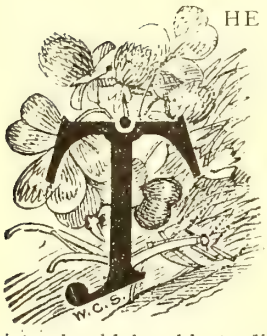
It has been said that the pecan will soon rival the

orange in importance and extent of cultivation, and the truth of the statement can hardly be doubted. The nuts sell readily at fifteen cents per pound, and several growers receive one dollar per pound for their best varieties. Ten dollars per bushel is no uncommon price, for in many markets pecans are as highly valued as English walnuts. A tree twenty years old should yield fifteen to twenty dollars worth of nuts on an average, and should increase somewhat. Much more cannot be expected, as the tree sometimes has "off years," but a regular income may be obtained by making larger plantations. No crop is more easily grown or harvested, and as the region in which this tree can be grown is practically unlimited, we may soon expect to see pecan culture one of the prominent industries of the growing south.

E. G. LODEMAN.

# NOTES FROM A GARDEN HERBARIUM—IV.

## THE CULTIVATED CHESTNUTS.



THE CULTIVATED chestnuts of this country, although few in number, are perplexing to the botanist. It is now generally agreed that the wild American chestnut is only a geographical variety of the European species; yet it is important for many reasons that horticulturists should be able to distinguish between the two. The most important difference, perhaps, between the wild plants lies in the quality and size of the nuts, the American being smaller and much sweeter; but in cultivation the nuts become modified and they cannot be relied upon for characters of separation. De Candolle (Prodromus, xvi. 2, 114) says that the base of the leaf in the American chestnut is more acute than in the European, and this statement has been copied by most subsequent writers. It is true that the base of the leaf is acute or tapering in our plant, but the leaf of the Old World plant is not always obtuse, so that as a comparative character it is insufficient for determination. I have given much study to the botanical differences of the chestnuts during the past year, and at first it seemed almost hopeless to attempt to find differences between the American and European trees which the fruit-grower could recognize; and I cannot now hope to have found characters which are always decisive, unless ample specimens are secured to eliminate variations in individual leaves. But the results are as satisfactory, perhaps, as we could expect.

A marked difference between the American and European chestnuts appears to lie in the texture of the leaves. The European tree has thick and heavy leaves, while those of the native are thin. I was first led to observe this difference at the suggestion of Samuel C. Moon, of Morrisville, Penn., who has made a particular study of the chestnuts. Mr. Moon writes me that in most cases "the leaves of the European varieties have more substance and are more of a leathery texture than the American, which are often papery in character." There are also decided differences in the average forms and dentation of the leaves of the two. Fig. 1 shows this difference exactly, The left specimen is a leaf of the Barnie, a European variety; while the one on the right is the Paragon, which I am satisfied is American, notwithstanding recent statements that it is a seedling of a European variety. The leaf of the foreign chestnuts tapers somewhat abruptly to the apex and the teeth are short and small with a tendency of the points to turn inwards; the leaf of the American is longer and very gradually pointed, with large and spreading teeth and deep rounded sinuses. The figures represent average specimens. It would be easy to select more pronounced types. The base of the leaf in the European plant is often distinctly

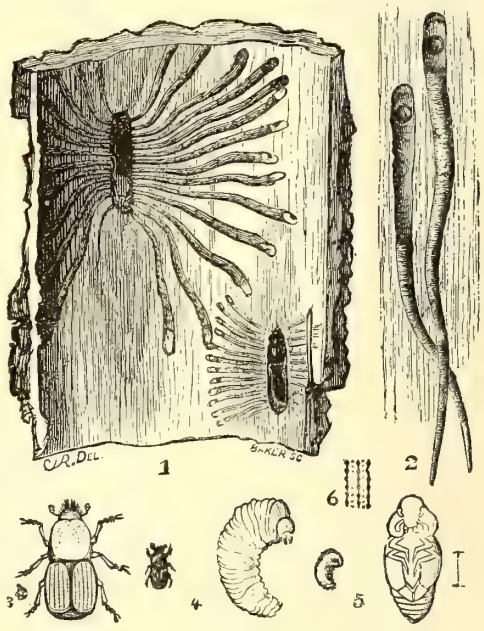



FIG. 17. BARK-BORER AND ITS TUNNELS.

heart-shaped, while it is always tapering in the American, so far as I have observed.

These leaf characters are sufficient, I think, to dis-

tinguish the European and American chestnuts, and they appear to me to prove, aside from other evidence, that Paragon is an American chestnut, and that Barnie, Numbo and Shinar are European. I think that some of the garden seedlings are crosses between the two. This is particularly apparent in a so-called American seedling which Mr. Moon sends me, the leaves having the obtuse or even heart-shaped base of the well marked European type, and the tapering point and something of the dentation of the American. And I am confirmed in this opinion by the following statement from Mr. Moon: "While I observe marked differences in most cases, I have some large tall trees of the American type which bear nuts distinctly European in appearance." Mr. Moon says that in cultivation the American chestnut is more erect in habit than the European and makes a taller and narrower tree. Mr. Moon remarked before the Nurserymen's Association last summer that the fuzz about the point of the nut is thicker in the American variety and covers a greater portion of the shell, but I have not been able, so far, to look upon this as a constant character.

FIG. 1. JAPANESE CHESTNUT (*Castanea Japonica*). ½ NATURAL SIZE.

An interesting feature of the chestnut leaf is the variation in pubescence or woolly covering of the lower surface. Nearly all writers describe the leaves of both the European and American as smooth at maturity—De Candolle says that the European is sometimes canescent—and all the wild specimens which I have examined have

smooth leaves. But all the cultivated sorts have conspicuously pubescent leaves, beneath, even at full maturity. Can this be an effect of cultivation ?

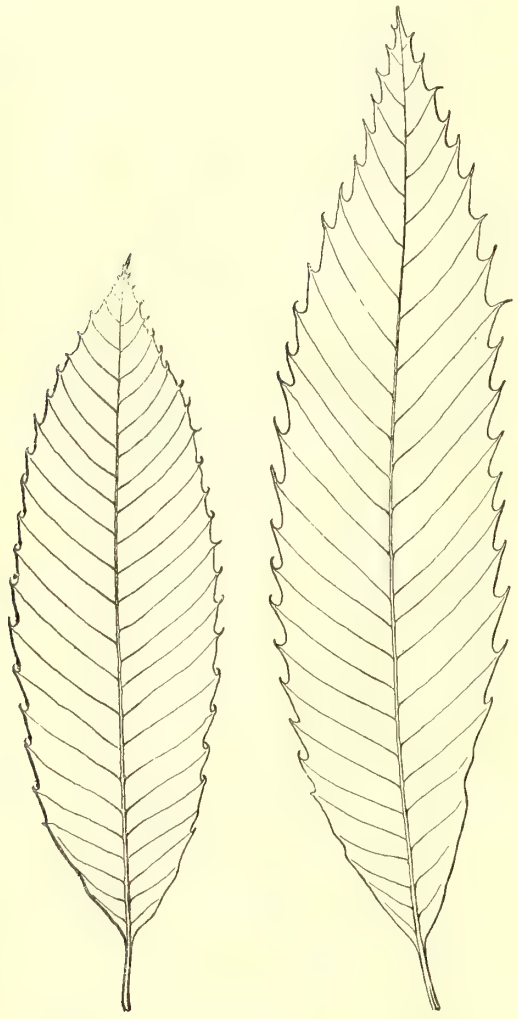


FIG. 2. EUROPEAN AND AMERICAN CHESTNUT LEAVES. ½ SIZE.

For horticultural purposes, then, the chestnuts may be distinguished as follows :

CASTANEA SATIVA, Miller (*C. vulgaris*, Lam ; *C. vesca*, Willd.). Tree branching low, forming a round head ; leaves thick in texture, elliptic-oblong, abruptly tapering or even heart-shaped at the base, more or less abruptly contracted above, the teeth small and close.

VAR. AMERICANA, Watson (*C. vulgaris* var. *Americana*, De C. ; *C. vesca* var. *Americana*, Michx.). Tree more upright, usually forming a narrow head ; leaves thinner, very bright green, oblong-lanceolate, acute below and conspicuously tapering above, the teeth large and spreading with deep rounded sinuses between them.

The Japanese chestnut (Fig. 1) is a variable plant. As seen in this country, it is usually a small tree with a very distinct foliage. The leaves are small, thick and leathery, oblong-lanceolate, very canescent beneath, truncate or heart-shaped at the base, with very small and spiny teeth. The sides of the leaves are nearly straight and parallel for half or more their length, or sometimes the leaf is widest at the base and tapers gradually to the apex. All the nuts which I have seen are smooth, or very nearly so, at the apex, and Professor Georgeson's figure (Fig. 2, page 266), made in Japan, is the same.

I am not sure that all the Japanese chestnuts in this country belong to the same botanical variety, although all my specimens, from various sources, are the same as that shown in Fig. 1. Professor Georgeson's remark (page 266) about the large size of tree and leaf of the Tamba-kuri indicates that the best varieties of Japan may be different from the commonly imported trees. I have never seen very large nuts from trees grown in this country. Mr. Moon asserts (before Nurserymen's Association) that all the American grown Japanese chestnuts which he has seen are "quite medium in size," and he fears "that many who plant them with the expectation of gathering such giant nuts as those imported from Japan will be disappointed." At all events, it is to be regretted that our nurserymen are lumping the oriental fruit off as "Japanese chestnut." This means nothing except that the plants chance to be Japanese in origin, and varieties of widely differing merit may be sold as one. We should not expect to sell the old world fruit as simply the "European chestnut." A rigid investigation should be made into the varieties of Japanese chestnut, and the common and inferior stock upon the market should be destroyed. The best named varieties or types should be imported. One of the largest and best nurseries in the country has sold in good faith the common chinquapin (*Castanea pumila*) as Japanese chestnut.

The botany of the Japanese chestnut is confused. I have used Blume's name, *Castanea Japonica*, for it. But De Candolle considers all the Japanese forms as varieties of the common European species. In fact, he refers Blume's *C. Japonica* to *C. sativa* itself, and then designates four Japanese varieties : var. *elongata*, var. *Japonica*, var. *subdentata* and var. *Kusakuri*. If this classification is followed, the plant which I have described (Fig. 2) should be called *C. sativa*, var. *elongata* (*C. vulgaris* var. *elongata*, De C.). The variety *Japonica* of De Candolle's classification has small leaves and the petioles are shorter than in var. *elongata*. To this variety he refers *Castanae Chinensis* and *C. crenata* of authors. The var. *subdentata* has small-toothed and short-petioled leaves. Var. *Kusakuri* is probably an artificial state, characterized by a contracted habit of growth and very small and short-stalked leaves. It seems scarcely possible that our Japanese chestnut is a form of the European species, although a more complete study of the subject than any one has yet made will be required to determine its specific limits. It is enough for the present purpose if I have drawn some distinguishing marks of use to horticulturists.

L. H. BAILEY.

# WATER LILIES.

NEW ORLEANS LILY POND. The engraving (see frontispiece) shows a fish pond of water lilies in the grounds of Dr. T. G. Richardson, of New Orleans. The pond is forty feet wide. Its chief occupant is *Victoria regia*, five large leaves of which are shown in the engraving. One flower, just opening, is seen on the further side of the pond, in the center. The flower bud to the left is *Nymphæa Devoniensis*, and the two fully expanded flowers are *N. Zanzibariensis*. The pond also contains *N. odorata*, a nelumbium or two, limnocharis, *Pontederia crassipes* and *Trapa natans*. Mr. Roedder, the gardener, writes that the victoria was grown from seed sown the 5th of April without artificial heat, and by September 22d three large flowers, from 12 to 16 inches in diameter had opened, and the leaves had attained a diameter of five feet. The first flower opened August 18 and was witnessed by about 5,000 people.

VARIOUS WATER LILIES.—Not many years ago these interesting water loving flowers were rare, and only such places as public parks and conservatories could boast of them. Most of the rarest kinds were until recently comparatively unknown to the common cultivator of flowers. The common white water lily (*Nymphæa odorata*) was known and loved, it is true, but the pink Cape Cod variety, the large white English lily and the different kinds of nelumbiums or lotus are of recent introduction to common gardens.

If people would know how easily lilies can be cultivated, every one who loves flowers would set a tub in his yard and secure flowers from May till September. The lotuses are particularly adapted to tub cultivation. I placed several tubers of the Egyptian lotus (*Nelumbium speciosum*) in a half-hogshead last spring, and they grew so rapidly and produced such an abundance of noble leaves that they were the wonder and admiration of all who saw them. They produced the finest flowers that can be imagined. On July 7 the first flower-stalk appeared and afterward new ones appeared in succession. The lotus requires a rich soil of muck mixed with a goodly portion of cow manure. I have also found the soil of meadow land or soil of fish ponds an excellent article for lily culture. They are great feeders, and no soil can be made too rich for them. If rich compost cannot be obtained, a very good substitute can be formed by taking common garden soil and fresh cow dung, each quantity alike, and thoroughly mixed. Fill the tub to within six inches of the top and plant the tubers of lotus or lily in this soil and afterward fill up with water.

Sand or gravel should be placed on the tubers to keep them from rising on top of the water. This is practically the only thing necessary to be done, except to keep the tub filled with water. The water need not be changed the whole summer as the leaves and stems keep the water pure. The easiest, and certainly the best place in which to grow lilies of almost every kind is a natural pond. I have four German carp dams, in each of which I place tubers of the different water plants. The plants and flowers are the attraction of multitudes The plants are very necessary to the successful carp culturist. Carp spawn among the noble leaves and are protected by them from birds and other fish-eating animals. Some consider the pink lotus the par excellence of lotuses, but the yellow is certainly an excellent plant and flower.

The white large-flowered lotus grew finely last summer in my natural pond. The roseum or red flowered variety produces rather the most flowers and is also an exceedingly interesting plant. Any one who can scoop out a small mud hole in his meadow can have lotuses or lilies to almost any extent. The large English lily (*N. alba, candidissima*) is one of the very best water plants, and amateurs can not make a better choice than to choose it. Another choice variety is the Cape Cod pink lily (*N. odorata, rosea*).—S. H. FEGELY, *Pennsylvania.*

WATER LILIES UNDER DIFFICULTIES.—When we left the farm about twenty years ago, we carried with us an idea of space; in other words we did not want to be crowded, and we did want a view. We made a selection accordingly — a little story and a-half house, with a stretch of country and river up and down the Mohawk. Four acres of as poor and untillable ground as was ever exposed to rain and dew came with it. With an underlying limestone rock, without shade or tree or shrub, the stinted and sickly native grass, with only an inch of soil to nourish and sustain it, paled in early June and curled and crisped under a July sun. Cattle driven to and from the pasture wandered over it, and boys, both great and small, lolled or played ball on its irregular rocky surface. The deed covered this, and one other thing—a spring or springs of water located about a quarter of a mile distant on a neighboring hill. We were happy in possession and commenced, in the spring following the purchase, to take out the rock. The rock to the depth of four or more feet was removed and soil filled in its place, the little pond laid out, the trees planted around the pond, but the space in front of the house was left for the uninterrupted view. A line of pipes leading up to the springs on the hill, where an artesian well was put down, gives a never ending flow of water and adds a grace with fountain spray and rippled surface. No landscape gardener ever gave a suggestion, only a woman who had a love for nature, and a desire to imitate her, by making the waste places to blos-

som, prompted the thought and guided the work. Native hardy water lilies and the English sister, *Nymphæa alba, candidisima*, with other hardy aquatic plants, are planted out: while the tender ones in all their varieties are placed in it in the summer months. I think that tender water lilies are not grown in any place out of doors in as cold a latitude as this, yet with most delightful results.—Mrs. James Arkell, *Montgomery Co., N. Y.*

The Egyptian Lotus.—Is the Egyptian lotus (*Nelumbium speciosum*) hardy? This question has often been asked, and there seems to be a general opinion that it is not. Well, that depends in a great measure upon how it is grown. Many years ago, when Thomas Hogg lived in Japan, he sent as many as thirty varieties of the lotus to Isaac Buchanan. These were planted in a pool of water in the lower part of his nursery at Astoria, Long Island. The first winter, everyone of them perished; the veteran florist always attributed his loss to a stream of water running through the pool all winter. One of the first to grow this beautiful aquatic successfully in the neighborhood of New York was L. K Meyer, of Clifton, Staten Island. He had two round tanks built of stone and cement, about thirteen feet in diameter and three feet deep. In these the lotuses were planted; they flourished from the start. They were never covered; the water was left in the tanks all winter, which never froze deep enough to reach the roots, as no running water was turned on while the roots were dormant. In summer water was supplied from a fountain in the middle of each tank. As soon as the sun warmed the water in spring they begun to grow vigorously, and the same plants bloomed freely year after year.

Another successful grower of this plant, and one who has shown the public how easily it can be grown, is Mr. Sturtevant, of Bordentown, New Jersey. This, and other aquatics, have been exhibited at most of the flower shows for several years by this grower, who has succeeded in acclimatizing it in one of the swamps in his neighborhood, where the water is deep enough to prevent the mud freezing in winter. In Central Park, and some of the smaller parks in the city of New York, the lotus, nymphæas, and other aquatics are planted in large tubs and plunged in the fountain basins for the summer; and in autumn they are removed to the greenhouse sheds, or some other shelter for the winter. These flower well, but neither the leaves nor the flowers are so fine as when planted out in the bottom of the tanks.

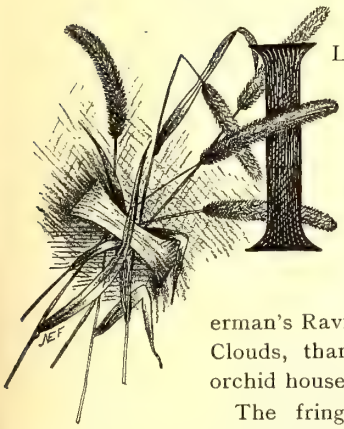
About ten years ago I received some *Nelumbium speciosum* seeds from Japan. These were sown in small pots (after removing a portion of the hard husk of the seeds with a file) and plunged in warm water on the pipes in the grapery, where they soon germinated. When large enough they were shifted into larger pots, and kept growing in tepid water. When old enough, a tank was made by excavating the earth (in a sunny spot) about three feet deep, twenty feet long, by twelve in width, the bottom and sides built with brick laid in cement, with about one foot of rich earth spread over the bottom, the plants put in, and water gradually run in as the plants grew. The second summer they grew amazingly, and by the third year they had crowded out all the other aquatics that were planted along the margin of the tank. It then became necessary to enlarge the tank to allow space for the plants to develop. But it was worth all the trouble to see the luxuriant growth when allowed room enough to have their own way; with leaves over two feet across, on stems from four to six feet high, the flower stems towering above them bearing their large rosy pink flowers. The flowers open three days in succession, becoming paler each day, and closing in the afternoon, the petals then falling off leave the picturesque seed-pod, such as we see sculptured on the oldest Egyptian hieroglyphics. I believe these same plants are still flourishing, of course with occasional thinning out and top-dressing before the water is turned on in spring.

In my own practice I have always drawn off the water on the approach of winter, covering the roots with leaves, salt-hay, or any other rubbish that would keep out the frost. By this treatment they have always come out all right in spring, and were ready to grow as soon as the weather became warm.

If half the care is taken with this splendid aquatic as is given to many plants of inferior merit, there seems to be no doubt of its hardiness in this latitude, as will be seen from the facts stated above, and it will do just as well in water as out, if frost is kept from the roots.—Samuel Henshaw, *Connecticut*.

# NATIVE PLANTS IN FIELD, FOREST AND GARDEN.

VARIOUS FAVORITES.



I LIKE the idea of drawing attention to our native plants, for among them we have some of the best gems in Flora's realm, and many of them are amenable to garden cultivation. I would rather spend an hour in Tuckerman's Ravine or by the Lakes of the Clouds, than in Erastus Corning's orchid houses.

The fringed polygala occcurs in moist, shady woods on Long Island, but it is not nearly so abundant nor beautiful as in the woods of Maine. The first white flowering ones I had were sent to me about twelve years ago from New Hampshire. Since then I found it in the woods at Lewiston, Maine. The fringed polygalas, with special care, grow well in our gardens, but they will not thrive in open, sunny borders. *Polygala Chamæbuxus* is a tiny shrubby species from the Alps, and has long been cultivated and much esteemed for garden rock-work.

The yellow lady slipper (*Cypripedium pubescens*), also its near relative, *C. parviflorum*, are excellent garden plants, easy to grow, long lived, and they are sure to bloom every year. They like a somewhat shady spot, not under trees, but rather on the north or east side of a fence, wall or other shade-giving object; also a somewhat moist soil with a loose, spongy surface such as might be given by a coating of half-rotted leaves. And the lovelier *C. spectabile* is just as good a garden plant and is as easy to grow as are either of the preceding yellow-flowered species, only it is two or three weeks later.

Both the calopogon and calypso are hard to establish and difficult to manage as garden plants, and under artificial conditions never appear so beautiful as when studded about over the surface of cold, mossy, open meadows. But there are exceptional cases in which they are, the calopogon especially, well grown in gardens.

*Orchis spectabilis* grows in shady woods, and is easily cultivated in the garden in such a place as cypripediums enjoy.

*Habenaria ciliaris* (Fig. 2) is an attractive orchid abounding in great quantity near here along the side of a neglected meadow bordering a wood and within a few hundred yards of the seashore. It is in fine bloom about the first of August. Most all of the showy habenarias can be grown well in the garden. They like a moist soil, sandy or peaty if practicable, and a mossy or shaded surface; but the plants themselves, if their roots are moist and shaded, seems to like to grow up into moderate sunlight rather than shade.

The *Lithospermum canescens* has never become as popular a garden plant as its merits deserve, although it is showy when in flower, and easy to grow as an open border plant. I had it some years ago from my kind friend James Goldie, of Ontario.

The rattlesnake plantain (*Goodyera pubescens*, Fig. 1) grows quite plentifully in the woods hereabout, sometimes in low, rich, moist, shady woods, but oftenest on the slopes of rather dry woods. By bringing home sods of plants, being careful to lift the sod deep enough so as not to injure the fleshy roots, it is easily transferred to the garden; and by imitating nature's conditions it thrives very well in captivity. Like many of our prettiest wild plants that are difficult to establish in the open yard, it really seems to enjoy life when grown in pots, pans or wooden flats set in a shaded cold frame. It is one of the best of all native orchids. Its leaves are always attractive.

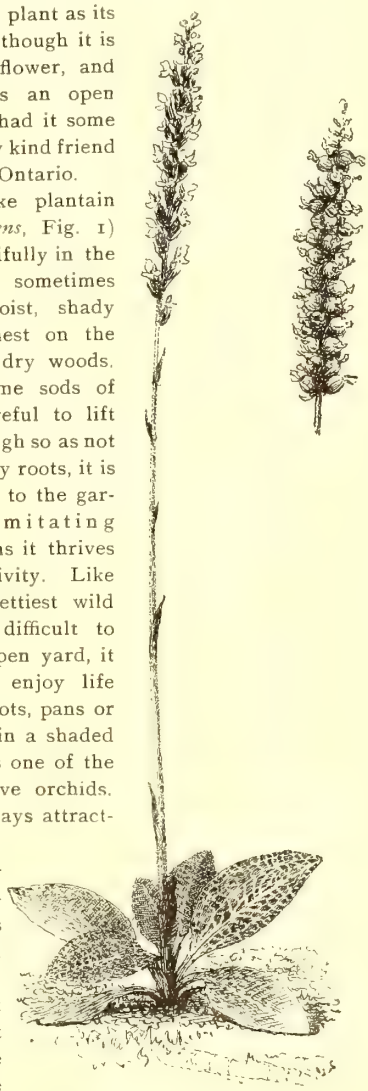


FIG. 1. RATTLESNAKE PLANTAIN (*Goodyera pubescens*).

The spotted wintergreen (*Chimaphila maculata*) is quite common in the damp, rich woods here, and it is always a plant that attracts the eye even of people who don't know anything about plants. But it is one of the plants I cannot recommend for general cultivation. To begin with, it is hard to

transplant, and if we will succeed with it we have to provide for it conditions somewhat similar to those it enjoys in the woods. The green-leaved species is no better in this respect; indeed these, some pyrolas, lycopodiums, and a few other things go well together, and are always prettier in the wood than in the garden, because they are happier there.

The winterberries are too well known to need comment. Their scarlet berries ripen in September, and till November, with their plentiful green leaves, they have a beautiful appearance. As winter approaches and the plants become defoliated, the berries still adhere to them in very vivid character. The winterberry is a holly (*Ilex verticillata*), and like all its kin is always interesting.

The typical *Opuntia Missouriensis* is, to my mind, the most satisfactory cactus of all our natives. It grows vigorously and densely, and blossoms more profusely than *O. Rafinesquii*, *O. comanchica*, *O. vulgaris*, or any of the other hardy sorts. Now, let me say a word against the notion that cactuses should be grown in poor, dry soil and scorching hot positions; my experience does not justify this idea. I have found that they like an open, warm, and sheltered spot, and dislike shade, especially overhead from trees, but they do not object to partial shade as that afforded by a high fence or wall; also, that they thrive best in fairly good ground, providing it is well-drained or ridged so that water will pass off freely even in winter.—WILLIAM FALCONER, *Long Island*.

CRINUM AMERICANUM.—Many species and varieties of amaryllis and hippeastrum (the latter is universally known in cultivation as amaryllis) are common and deservedly popular. It is only within a very few years that crinums have been cultivated at all at the north, except in the greenhouses of a few wealthy amateurs, and an occasional stray plant in some florist's establishment. I remember seeing one such bulb in a florist's greenhouse in the summer of 1883. It was an immense bulb, occupying a very large tub. I did not measure it, and at this late day cannot give its size with any accuracy, but the bulb must have been over six inches in diameter and the amount of foliage was marvelous. The owner said he would not take one hundred dollars for that one bulb, and said that it paid him from $12 to $15 every year for cut-flowers, while the expense of growing it was almost nothing. He did not know its true name, but called it *Crinum roseum*. Several species of crinums have been cultivated in Florida for many years. Some of them have become so common as to be found in almost every door-yard among the older settlers. Within the last three or four years two or three firms of florists and nurserymen in this state have been offering them to their northern customers. Where they have been tried they have proved very satisfactory as house plants, and are growing rapidly in popularity. They have some points of superiority over any of the common varieties of amaryllis.

One species, *Crinum Americanum* (Fig. 3, page 283), is a native of Florida, and the object of this article is to call attention to its merits. It is found, in a wild state, only in the swamps, growing in low bottom land along the creeks and small streams where the land is frequently overflowed by the tides. The soil in which it grows is always saturated with water, and usually if the muck and leaf-mould is dug away from around a bulb, the hole will fill up with water in a very few minutes. Many thrifty specimens are found growing in the water near the edge of the streams. In spite of these facts, they thrive in cultivation on comparatively dry soil. On good soil the bulbs rapidly increase in size and bloom more freely than when wild. In a state of nature they very seldom bloom more than once in a season, and each stalk will bear only two, or at most three blossoms. In cultivation they usually bloom twice and often three times a year, while the number of flowers increases to four or five as a rule, and I have occasionally seen six on one stalk. The blossoms are pure white, and fragrant. The three sepals and three petals are all exactly alike, each from one-half to three-fourths of an inch wide and from three to four inches long, slightly recurved, making a flower from five to seven inches in diameter. The blossoms only last about forty-eight hours on the plant, but if cut as soon as open

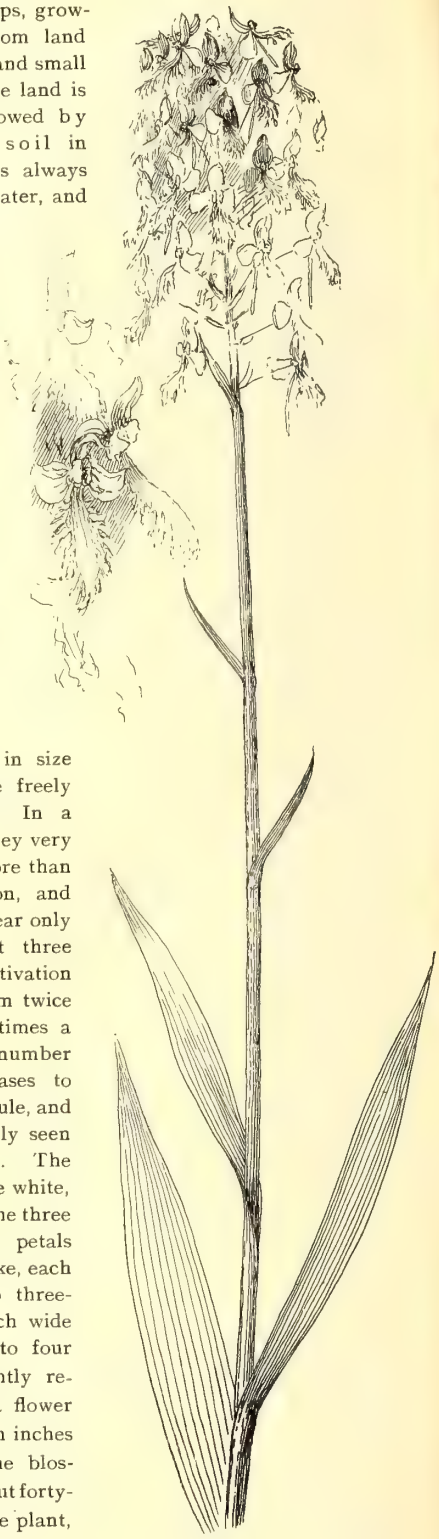


FIG. 2. HABENARIA CILIARIS.

and kept in water, in the shade, they will last much longer. I have only two good bulbs now that have been allowed to grow undisturbed for two or three years. They are very close together, not over two or three inches between the bulbs. The illustration (Fig. 3) is from two stalks cut from these bulbs June 16. The two stalks came up so close together that I took them both in one hand and cut both at one stroke with a small budding knife. The two were never separated, but put into a bottle of water, carried to the photographer and the picture taken.


FIG. 3.

Each stalk had four open flowers and one had an unopened bud in addition. The last week in July these two bulbs each sent up another flower stalk; the larger bulb gave four blossoms and the other three. The first week in September the larger bulb sent up a third stalk with five flowers; this time the plant set and matured several seeds. The seeds are very large, thick and fleshy, many of them resemble a large horse-chestnut in size and shape. They would not be recognized as seeds by any one not familiar with this genus. I have sent several bulbs of this crinum to friends in northern states. The report has always been favorable. They seem to take very kindly to cultivation as house plants.

This species is now catalogued by several northern florists, but usually at an exorbitant price. They are abundant and cheap in Florida and should be sold at a price that would enable every one to try this very desirable novelty. Why should we import plants from abroad and pay extravagant prices for them and neglect better things because they are natives and can be bought at a reasonable price! The real beauty and merit of many things is thus overlooked.

A few directions for the culture of this species may be valuable to some who desire to try it. They should have a light, *rich* soil, plenty of muck or leaf mould, sand and thoroughly rotted stable manure, but no clay if any soil is available that is free from it. When growing they need large quantities of water and as much heat as possible. They will thrive fully exposed to the sun, yet in a state of nature they usually grow in the shade of heavy timber. Hence it is probable that they can be grown in the house in rooms where they will have plenty of light, even though they get no direct sunshine.

In Florida the tops are killed to the ground by the first heavy frost and then the plants remain dormant until warm weather in the spring. The bulbs could doubtless be wintered in a cellar that was free from frost. If kept in a warm room they would probably grow nearly all winter. This species never makes as large bulbs as most of the other species do. Hence they cannot be kept in a dry state so long. Yet fair sized bulbs may be kept entirely dry in a warm room for five or six weeks without injury. This will enable dealers to handle and mail the bulbs with much less trouble and expense than if they are required to be kept in moist earth all the time. In mailing I usually wrap the bulbs in old newspapers, dry, without any packing material.—W. C. STEELE, *Fla.*

AN INSECTIVOROUS PLANT.—Seekers after wonderful and curious things in nature need not search the vege-

table kingdom further than the *Droseraceæ* for the truly marvelous. This family of small and inconspicuous plants does not boast of many members, and although

FIG. 4. BIRD'S FOOT VIOLET.

by no means rare, even those best known in botanic circles are comparatively unknown to the general public. Darwin's interesting book on insectivorous plants has brought *Drosera rotundifolia*—the round-leaved sun-dew—into greater prominence than any other member of the sun-dew family. No other variety grows so freely or has so wide a geographical range—extending from the Arctic region to the Cape of Good Hope, Madagascar and Australia in the Old World, and in the New World from Canada to Terra del Fuego.

The banks of small lakes and mountain streams are often lined with it. The plant is small and so embedded in moss that it easily escapes the eye of the casual observer. It bears from two to six leaves, orbicular in form; the concave surface of the leaves is covered with tiny red hairs or gland-bearing tentacles, as they are more properly called. Each gland is surrounded by a viscid secretion, which, glistening in the sun, has given rise to the poetic name of sun-dew. The average number of glands on fair-sized leaves, as estimated by Darwin, is 192. Possibly English species grow larger than ours. This glandulous element constitutes the wonderful part of the plant. These glands are not only sensitive to the slightest pressure and capable of motion, but exude a secretion having marked digestive qualities, analogous to the gastric juice in the human system.

Obviously *Drosera rotundifolia* is a carnivorous plant, feeding mostly upon small insects which alight upon its leaves by chance, or are attracted thither by its odor. It is difficult to find a well developed leaf which does not bear evidence of the slain; legs, wings and other hard parts of insects are not acceptable food.

Darwin's laborious experiments have proved conclusively that only nitrogenous substances are digested by the drosera. "That a plant and an animal should pour forth nearly the same secretion adapted for digestion is a new and wonderful fact in physiology."

Unsuccessful attempts have, however, been made to produce artificial digestion by an extract of the plant; yet the plant is capable of digesting and assimilating small particles of meat and other substances placed upon its leaves. Leaves thus stimulated make a more rapid growth than others left to get their living in the natural way. Small white flowers appear in August; they are borne on a sort of one-sided raceme, which nods at the undeveloped apex, so that the fresh-blown flower is always highest. My plants under glass attempted to force the season by throwing up long flower-stalks the first of July; the buds seemed full and well-developed, but for lack of reserve strength or other cause never opened. The plants I left exposed to the air were less ambitious and proved to be extremely sensitive, especially to a bit of neglect, and perished for lack of a timely drink. The roots of the plant are poorly developed and serve only to absorb water for the plant—a very necessary element in the economy of the drosera, as experience teaches, and its natural environments indicate.

Few even among scientists would care to follow the careful and exhaustive analysis of the plant made by Prof. Darwin. Nevertheless, a superficial study of the drosera is fascinating and instructive. The blade of the leaf, as well as the tentacles, are capable of motion; hence the edges are often curled inward, thus forming a sort of temporary stomach. The glands close over their prey, draw it down toward the center, pour their acid secretion over it, and the work of death and digestion goes on before our eyes. One authority gives the unfortunate insect fifteen minutes more of life before the secretion closes its tracheæ. The time required for the inflection of the glands and the work which follows varies greatly with the quantity and quality of the substances placed upon the leaf. Experiments with all manner of animal matter have been tried to test the digestive powers of the secretion.

"Fibro-cartilage" (from between the vertebræ of the tail of a sheep) and "bits of the skinned ear of a cat" were served up on the leaves of drosera for the benefit of science by the illustrious Darwin. Common mortals, however, who do not care to invade the sheep-fold or puncture the ears of the family cat, will doubtless be content with more simple experiments; bits of meat, cooked or uncooked, are within the reach of all.

Having a quantity of the sun-dew, gathered in early summer in a Vermont pasture, I placed part of it in a

glass dish, kept it well watered, shaded it from the sun during the day, but put it out at night to catch the dew, and perhaps a summer shower. The rest was placed in a fern case. The latter made a marvelous growth; the leaves, which are—like a fern—circinate in vernation, unrolling rapidly and growing much larger than those not under glass. A bit of roast veal placed upon a leaf was entirely consumed in a few days' time, the tentacles then resuming their usual position. A drop of milk on another leaf disappeared, leaving a tiny drop of oil in its place. A third leaf was given a dinner of roast lamb; for hours it remained untouched. The following morning, however, found it fast in the clutches of drosera. But wonderful changes had been wrought during the night; the particle given was dry and brown, but now a soft white substance, puffy and bloated, was seen through the microscope; this gradually liquefied and was absorbed, leaving a slight residue—probably "for manners." Truth compels me to add that this experiment was too much for the leaf, for insectivorous plants, like animals, sometimes die of surfeit.

The most wonderful sight to be seen in this kind of a laboratory is, perhaps, the working of the glands on a small house-fly. Place the leaf in the sunshine and use the strongest glass accessible. One must, indeed, be color-blind if he sees no beauty in the green cup with its red filaments tipped with sparkling iridescent globes of the secretion; the jet-black body of the fly lies bathed in the sticky fluid, while drosera inserts a gland here and there with animal-like precision, digesting, assimilating and absorbing food for its own sustenance.

FIG 5. LIVE OAK AVENUE, AUDUBON PARK.

FIG. 6. A LIVE OAK, AUDUBON PARK.

Think of it, ye dyspeptic mortals, all of this without the intervention of a nervous system! "Nature does everything as simply as possible," and this is only an every-day phenomena, but proves conclusively that "most persons are walking through wonderland with their eyes shut."—G. A. WOOLSON, *Vermont.*

VIOLA PEDATA (Fig. 4).—The bird's-foot violet is probably our handsomest native species. Its flowers are very large and open, and they vary from the brightest blue to almost pure white. The illustration shows the plant about

half-size. It grows upon open, dry banks all over the eastern states. It is usually found in the most sterile sand, making the desert to bloom in the heat of summer.

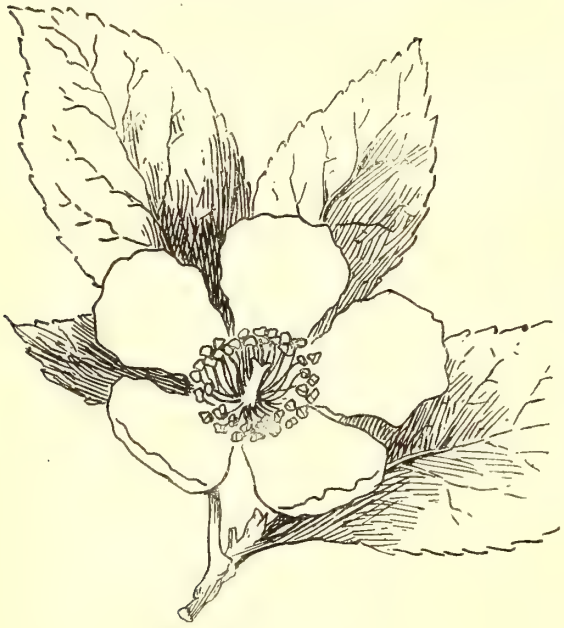


FIG. 8. STUARTIA VIRGINICA.

It takes kindly to cultivation, and should find a place in every garden.—J. C. T.

GALAX APHYLLA.—The natural home of this little evergreen is on wooded hillsides near the Allegheny mountains, seeming to choose for a near friend the mayflower. Its leaves are about two inches wide, roundish in outline, slightly notched on the edge, borne on slender stalks three to six inches long. The flowers are small, white, in a slender spike eight to twelve inches high. The leaves vary in color from dark glossy green to deep red. The brightest colors are found in open sun. Some are found with splashes of yellow, green and red. It has proved hardy here in New England, and easy of culture either in shade or open sun, and on account of its low growth and beautiful foliage is very desirable for borders of walks or beds.—E. GILLETT, *Mass.*

LIVE OAKS (Figs. 5 and 6, page 285).—There are few handsomer trees than a perfect live oak. This species flourishes throughout an extensive portion of our south, but nowhere is it found in such perfection as along the gulf coast. Those shown in our illustration are from photographs taken in Audubon park, New Orleans (the seat of the Louisiana Experiment Station), during the past winter, and are authentically known to be seventy-six years old. There are long avenues of these trees in this park, making in all probably the finest group of them to be found in the south.

In the old villages along Mississippi sound, notably at Biloxi and Pass Christian, the live oaks make an interesting and characteristic feature that never fails to excite the admiration of the northern visitor. Upon the old sugar plantations of southern Louisiana an avenue of these noble trees, when such exists, is always the chief pride of the place. They are found frequently in the forests, but only attain greatest perfection when planted singly, thus giving room for the ample spread of their huge branches. Under such conditions they grow to enormous size, and make a compact, symmetrical head of glistening green foliage through which even the hot rays of southern suns can hardly penetrate.

A picturesque feature in connection with them is that they are almost always festooned with great clusters of Spanish moss; but this attribute is not esteemed by the southerners, as they deem it a detriment both to the thrift and real beauty of the tree. At the home of Parker Earle, at Ocean Springs, Miss., a noble specimen was pointed out to me as unique because of the total absence of the moss, and, per consequence, perhaps, there was not a dead branch or twig to be found about it. To show how rare this is, I may say that during four months of continuous travel and observation in the south, I found no other tree to compare with this in these particulars.—JAMES K. REEVE.

CALTHA—CUP OF GOLD.

Will you drink with me
From the cup of gold,
Which I found by the stream to-day?
I will fill it as full
As it can hold
Of the cool, refreshing spray,
Which sparkles and foams on the rocks below,
But stops to rest where the calthas grow.

We will stop awhile
By the marsh land, too,
While the stream is sleepily mute,
To list the music,
Forever new,
Of the jubilant red-wing's flute,
And solve, if our hearts are well in tune,
The meadow-lark's melodious rune.

S. E. KENNEDY.

THE AZALEA is a genus of plants belonging to the heath family and closely allied to the rhododendrons. They are natives of North America, China, Japan and Europe. There are three North American species: the *A. viscosa*, the clammy azalea or false honeysuckle; flowers white or rose colored and sticky, very fragrant, common in swamps and low grounds from Maine to Mississippi; the *A. nudiflora*, purple azalea or pinxter flower, common in the eastern and southern states, preferring rather dry cool soils; and *A. calendulacea*, flame colored azalea, a native of the Alleghenies and southward. All these have long been cultivated in Europe, and from them hundreds of fine varieties have been produced by crossing them with the European variety, *A. Pontica*, the flowers of which are of a rich golden or orange yellow and about two inches in diameter. Recently a new species has been introduced from Japan, *A. Mollis*, with larger flowers than either the American or European species, and of various colors.

The Chinese azalea, *A. Indica*, is quite distinct from

those found in other parts of the world, coming nearer to the rhododendrons. The flowers are large, showy and of all colors. Double varieties are also common. *A. amacria* and *A. obtusa* are both handsome little evergreen shrubs and quite hardy. The flowers are about an inch in diameter; the first a bright purplish red, and the later ones an orange red approaching flame color, are worthy of notice.

All the hardy varieties and species require nothing more than a good rich garden soil, but it should be deep and contain a fair proportion of vegetable mold. They all form what may be called clumps or balls of earth through which the fine roots ramify in all directions but seldom push out singly. In transplanting, this ball of earth should be removed with the plant and not broken or torn apart, and if care is taken there is little danger of losing them even when transported long distances. Before planting it is always well to soak the ball of earth thoroughly that the water may reach the center roots as well as those on the outside. When planting, the soil should be pressed firmly about the ball enclosing the roots, else there is danger of the water from rains escaping through the more porous soil and leaving the roots dry. The Chinese varieties require similar soil, but as they are to be grown in pots, it should be made quite rich but no fresh rank manure should be used. Old sods from a rich pasture with cow-manure added, made into a compost heap and thoroughly mixed, is the best. In potting give only room enough for enclosing the root-ball with fresh soil—an inch between the ball and the pot is sufficient. Shift the plants annually after they have bloomed and finished their growth, or just before the buds swell for blooming, and at each shift increase the size of the pots.

The plants need a season of rest, and if bloomed in winter should be placed in a half shady cool position during summer, and have water sufficient to prevent shriveling and loss of foliage, In the fall they should be removed to a place where they can be kept at a nearly uniform temperature of about 60° until the buds begin to swell, when the heat should be increased very gradually. A slight change, if sudden, will blast the buds. A great amount of sun is not necessary, but they will be none the worse for it. There is no plant that is more worthy of a place in window gardens or gives better return for the care bestowed than the azalea.

FIG. 7. SHORTIA GALACIFOLIA.

All the species may be raised from seed, from layers and from green cuttings.—L. A. ROBERTS, *New York.*

STRAY WILDINGS.—All through the unfenced mountain lands of western North Carolina—lands where every man's herds have all things in common—go narrow, winding paths, etched by sharp and nimble hoofs that here found nearest and easiest climbing to water, to fresh, sweet beds of grass, or to the "lick logs," where, in notches cut in fallen patriarchs, meal and salt are kept by the herdsmen.

Follow one of these alluring, well-beaten little paths some spring morning far up into the hills, where the air is fresh and sweet, and with bird songs all about you, herd bells twinkling faintly on the heights above you, and your brain cleared and eye quickened by nature's elixir, you will find many a rare stray wilding among flowers which you may vainly have sought dozens of times before.

*Shortia galacifolia* (Fig. 7), considered a very rare plant a few years ago, is now frequently found by North Carolina botanists; but it is a local plant, and there are only two other localities in which I know of its having been found: in Oconee county, S. C., and in Kentucky. This is a plant with a history which may be new to some of my readers.

In Michaux's herbarium, at Paris, Professor Gray found, in 1839, the leaves and a single fruit of an unnamed plant, labeled as having been collected in the "Hautes montagnes de Carolinie," in 1788. For several years he searched vainly for a living specimen of the plant, but finally ventured to name and describe it from the scanty material in Michaux's collection. Fresh search was then made for it, and about ten years ago it was rediscovered here in western Carolina, on the banks of the Catawba river, where it breaks through a chain of foot-hills, near the village of Marion. From new specimens thus obtained, Professor Gray was enabled to confirm his original conception of the plant.

Shortia is a low perennial herb, and spreads by creeping root stalks. The leaves are roundish, evergreen, bright and glossy. In early March it bears pretty white and purplish flowers resembling a primrose in shape.

Choose a path leading downward toward the river through some sheltered valley, and all along the banks of the stream you will find a tangled golden glory of yellow jessamine flowers—*Gelsemium sempervirens*. It is an evergreen woody climber, with opposite ovate-lanceolate leaves that are dark green and shining. Its flowers are borne in short axillary clusters, are of beautiful bright yellow tint, and very fragrant. The shape of the corolla is an open funnel form, and it is often two inches long. For miles along the river bank it will creep and climb, rooting wherever a shoot drops upon the ground, and twining the undergrowth so thickly together with its tough stems that the pioneers of this little path have often been obliged to turn aside instead of breaking through. After a frolic among the underbrush it climbs on upward, and its gay yellow banner will float downward toward you from the tops of the highest trees.

Violets and bluets will be thick under the jessamine canopy along the river, but the handsomest of our wild violets is a wood flower that does not haunt the banks of streams, but grows upon high and dry mountain sides or in the open woods. This is *Viola pedata*, bird-foot violet—so named, I suppose, because its cleft leaf does somewhat resemble a bird's foot. The flower is large and broad, widely open like a pansy, and has a conspicuous yellow eye which adds greatly to its beauty. Its color varies from pale blue to deep lilac purple, and it is very much prettier than many of our cultivated pansy strains.

Like a rainbow in the winter woods shine out the orange-scarlet arils and crimson capsules of the Indian arrow bush, strawberry bush, or *Euonymus Americanus*,

Fig. 9. Wild Calla.

as different people have been pleased so differently call it. Once in a great while you chance upon it, growing beside some little brook, as it winds through dark ravine or cañon, flashing its bright berries down to surprise the speckled mountain trout as winds sweep through the gorge.

Its leaves, dark green, thick and leathery, acute-lanceolate and almost sessile, are so handsome that they are noticeable even amid summer greens, and the square twigs and stems have the same rich green tint almost down to the root of the shrub. It may have been called Indian arrow bush with reference to the straightness of these stems, and the sharpness of its serrate leaves. In May and June tiny pink, four-petaled flowers spring from the axils of the leaves. They are very pretty and dainty in their way, but inconspicuous, and soon give place to little green, pendulous, rough-warty pods, depressed crimson when ripe, and bursting then, to show three or four scarlet ariled seeds. *E. atropurpureus* and *E. obovatus* are much more common, but not nearly so handsome.

Two native species of the genus stuartia are found

among the mountains of our southern states, and they are among the most beautiful of our native deciduous shrubs. *S. Virginica* (Fig. 8) is found in shady woods, sparingly, from Carolina to Florida. It forms a shrub six to twelve feet high, has oblong-ovate serrulate leaves, with large, short peduncled flowers, solitary in their axils. Its petals are white, five in number, crumpled on the margin, and the filaments and anthers purplish blue, the pod globular. In shape and texture the stuartia flower much resembles the tea, and both are members of the camellia family. The genus stuartia was named by Mark Catesby in honor of John Stuart, third Earl of Bute, a liberal patron of the sciences, especially botany, although a most unpopular man.

FIG. 10. ZANTHORRHIZA APIIFOLIA, OR YELLOW-ROOT.

*Andromeda Mariana* is an attractive plant here. Drooping ivy it is commonly called, and very beautiful it is, with thickly shining evergreen leaves, lance-oblong with a long taper point. Its thickly set racemes of white flowers are crowded into panicles and somewhat hidden by the leaves, which droop downward, bending the whole slender pliant stem, which often branches or trails upon the ground. These stems are often eight to ten feet long, and curving outward from the center all around, form a great, shining, shapely clump of handsome leaves and flowers. It blooms in April, but the buds are formed the previous summer.

Not properly a shrub, but belonging to the same genus as the shrubby spireas, is queen of the prairie (*Spiræa lobata*), a perennial herb, with pinnate leaves and panicled cymose flowers. The leaves when bruised send out the spicy odor of the sweet birch. Its handsome four to five petaled flowers are a deep peach blossom in color, and right well does this little blossom deserve the royalty of its common name. Once plentiful, it is now becoming quite rare, perhaps on account of the root digger.

*Halesia tetraptera*, the beautiful silver bell or snow-drop tree, is well known, but its relative, the styrax, one rarely sees or hears of. It is a handsome little shrub, five to seven feet high, growing in sandy, pine barrens, with the same pendulous bell-shaped white flowers as halesia, and one species, *S. pulverulenta*, is delightfully fragrant.—L. GREENLEE, *N. C.*

THE REDISCOVERY OF SHORTIA.—Although the history of the rare shortia has often been told, I wish to repeat some parts of it.

During one of many interesting conversations Professor Hyams told me of the rediscovery of *Shortia galacifolia* in McDonnell county, N. C., by one of his sons, out on a botanizing tour. The specimen plant was brought to him to analyze, and he appealed to Dr. Gray to aid him in its identification, who promptly recognized it as identical with a mutilated specimen in the Michaux herbarium in Paris. The flowers are small, purple, and disposed in long, drooping, divided racemes, placed immediately below the first leaves. The nectaries are obovate and bi-lobed, the styles usually about six or eight in number. These "ovate-lanceolate, acute doubly serrate leaflets" make up beautiful terminal clusters of green, indescribably lovely and graceful, almost fern-like in beauty. Immediately beneath the top cluster of leaves are found the flowers, which must be seen to be fully appreciated. Imagine a thread-like petiole from four to eight inches long, eight to ten in number, studded with chocolate-brown stars with pure gold eyes, hanging like a fringe from a common center. It is almost lace-like in delicacy and beauty. I am acquainted with many wild-wood beauties, but none compare in grace and delicacy with this, unless it is the *Chionanthus Virginica*, the white fringe or old man's beard.

The zanthorrhiza or yellow-root is a low shrub, a foot or two high, and it belongs to the Ranunculaceæ or buttercup family. Its roots yield a good yellow dye. It grows in shady woods and by streams from southern New York to the southern states. Fig. 10 shows a little sprig of it, half size.—MRS. J. S. R. THOMSON, *S. C.*

FIG. 11. THYRSE OF CATALPA.

CLINTONIA AND CALLA.—In this vicinity there is a place known locally as the "pine swamp," which is, I suppose, one of the wildest places in nature. I have never penetrated its depths, as, unfortunately, it is only accessible to "booted botanists," but have been the pleased recipient of some rare plants which came from there.

Among other interesting specimens was one of *Clintonia borealis* in full bloom, one which would have delighted the heart of any botanist, as it was perfect, every part present, from the slender creeping root-stock to the beautiful umbel of nodding flowers. There were four of these, I think, of a peculiar greenish yellow; lilaceous in form, of six spreading segments, with a stamen inserted at the base of each. The filaments are long and thread-like, and bear oblong anthers, fixed at a point above the base and opening outward toward the corolla. The style is long, with stigmas united into one. The naked scape is enclosed at the base in the stalks of the large oblong leaves. These are smooth and glossy, rich in coloring and prettily veined. They tell me that it bears blue berries, but these I have never seen.

Another treasure of my collection was the *Calla palustris* (Fig. 9). This has been found since in several places in this vicinity—always in water or near it, I believe. It belongs to the Araceæ, and is sometimes called water arum. In beauty it cannot compare with the cultivated calla, but in interest is fully its equal. This, too, has a creeping rhizome from which rises a thick scape five or six inches high, bearing an open spathe, white above and greenish below. It is clasping below and ends with a curious, twisted cusp, the whole much longer than the cylindrical spadix. This is covered with flowers, of which the lower are perfect and the upper often consist of stamens only, surrounded by the one-celled ovary. The leaves are long-petioled and heart-shaped, with conspicuous veins. Upon the whole, it is an interesting plant, and I was pleased to learn that it was a native of this locality. The cultivated calla is really not a calla at all, but a richardia.—S. E. KENNEDY, *Rhode Island.*

THE CATALPA.—One of the most ornamental and decorative of trees is the catalpa. It might also be termed one of the most useful; for, aside from its being a thing of wondrous beauty, it is of much practical value as a fine shade tree, its growth and development being vigorous and grateful. It is especially favored as a shade tree, as its foliage does not develop early in the season—not until the sun's rays have become oppressive. And then, as if by magic, the leaves shoot forth like innumerable huge fans, of delightful green.

The leaf is heart-shaped, thick and leathery. The stems are stiff, so the leaves do not droop. Consequently, although its foliage is extremely dense and a most effectual screen against the sun's most piercing rays, it does not interfere with even the faintest breeze. On the contrary, the great fan-like leaves seem to generate air or wind. As the gentle zephyrs play amidst these unique fans, their motion increases the current of air, and hence the cooling effects of the breeze. This is an agreeable point in mid-summer. Its habit has the same consideration for man's comfort in the fall, for it sheds its great leaves with the first heavy frosts, at a time when unobstructed sunshine is highly prized.

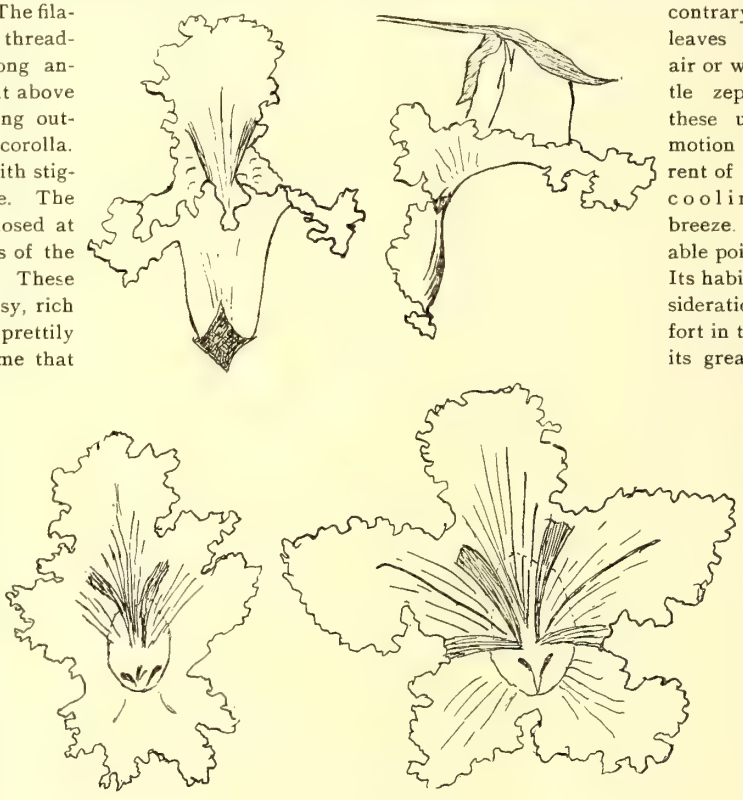


FIG. 12. CATALPA FLOWER.

The blossoms, appear in clusters almost simultaneously with the foliage. They are of delicate white, with richly marked centers in yellow to orange, deepening to brown with the maturity of the flower. The perfume is exquisite. The illustration can serve simply as an idea suggestive of the beautiful original. Nothing but the eye can do justice to its rare beauty.

It is only within quite recent years that the cultivation of the catalpa has been attempted in colder climates, and it has successfully withstood the test of successive and severe winters in northern states—a conclusive proof of its hardiness. The only precaution to be observed is that the seedling, or two-year-old, as the case may be, shall have had a good start before cold weather sets in. This is essential because the terminal tips do not have time to ripen, and hence they do not grow the next year. This, however, does not deserve to be called "winter killed," for the *ripened* wood is perfectly hardy. The

tree remains entirely free from insect pests, and stands knife and ax well in pruning and shaping.

The most propitous mode of propagating the catalpa is from seed. It makes a splendid growth the first year. Generally, the new growths come from the root, leaving the seedling shoot above, as dead. This rather unpromising appearance of the seedling must not be a source of disappointment, for the new shoot will come up from the root and grow finely. If worked or forced too late, the shoot continues to grow too late for ripening before frost, and the unripened wood cannot endure the excessive cold.

Heavy mulching is most conducive to the best results of the cultivation of this tree. Mulching seems to stimulate the growth, making it rapid and not too late. The catalpa is a great absorber of moisture. Frequent and copious watering will prove highly beneficial, though it also flourishes (but more slowly) when favored only with nature's drinks of water.

The tree presents a lovely sight, not only when in bloom, but also when in early fall it is loaded with fruit —great bunches of long seed-pods suspended from its branches. It may not be amiss to mention here, that these pods are a beautiful in-door decoration for winter. If picked quite early they retain their rich green tint, otherwise they turn brown and burst

Two species of catalpa are native to this country, *Catalpa speciosa*, the best and hardiest species, is represented in the accompanying figures. This is also largely grown for its timber value. Fig. 11 shows the form of the thyrse or flower cluster, and Fig. 12 various views of the flower.—ANNA HINRICHS, *Missouri*.

# DRAINAGE AND IRRIGATION OF HOME GROUNDS.

"HE SENDETH the spring into the valleys which run along the hills ; He watereth the hills from His chambers and the laughing abundance by which the mountains are crowned in consequence of it. The little hills rejoice on every side. The pastures are clothed with flocks ; the valleys are covered over with corn ; they shout for joy ; they also sing."

So sang one of the sweet singers of Israel. If the text prove the better part of the discourse, it will be what has often happened to preachers before.

All cannot build their houses upon the rocks, nor upon the sand ; neither can we always build upon a hill nor upon dry ground, but we can make the ground dry. Defective drainage is the cause of the many ills of rural life. Many diseases find their causes in that source. Of discomforts so caused there is no end. Among reforms needed it is certainly one of the first importance. Very many luxuries are not attainable in country life, but the comfort of dry ground by good drainage requires only thought and labor. Being necessary to health and comfort should be argument enough to induce every rural home owner to secure proper drainage where nature has not already provided it, which nature rarely does, for with the single exception of sand or sandy loam all soils are improved in their healthfulness whereon to locate homes, and also in their fertility, by drainage.

Not being an engineer, I shall not enter into the technicalities of drainage. A few general principles may be taken as established by science and experience, Tile drainage, using round tile with collar joints, is best for garden and lawn and for all fields where long roots may reach the bottom of the drain. The tile should have an opening at the head as well as at the outlet to maintain circulation of air, as one of the great advantages of under drainage is in the circulation of the air through the soil, making it light and warm, and adding to its fertility.

A century ago Thomas Jefferson, the leading horticulturist of his day in this country, spoke of the fact that "Air is the great fertilizing agent."

The depth at which tiling should be laid, and the size of the same, depends upon the location and the quality of the soil. Figures to suit in one case would be misleading in another. The length of the purse will also enter into our calculations. We must sometimes cut our garments in proportion to the cloth ; while at other times we may robe the wearer regardless of measurements.

Old Elkington taught our English ancestors how to draw the water off their wet lands a century and a half ago and Johnson quaintly tells the story of the wonderful work. The English being, as they say, very "conservative," but as the Yankee would say, very "plodding," it required many years to introduce the system ; yet the lands round about Sherwood Forest, "The Dukeries," are living examples of the efficacy of under-drainage.

Fifty years after Elkington taught the gardeners how to keep their places comfortable to the livers and wonderfully productive, Thomas Jefferson made a tour through southern France and along the shores of the Mediterranean Sea, then called "the garden spot of Europe," and extended his tour through the gardens of England, which he pronounced the finest in the world. Something, no doubt, was due to the superior skill and industry of the English over the Continental gardeners, and something to their use of manure, but much was also due to the sub-drainage and irrigation of their grounds. The skill some of them displayed and the capital they invested in thus improving their gardens showed that they fully appreciated what Elkington had taught them.

Home grounds and gardens are sometime so favorably situated that the drainage can be utilized for convenient stock water, for an ice pond, fish pond, and other purposes, with but little additional expense. In some cases there are streams of water that can be turned so as to provide water for irrigation purposes. When streams are not so available, the water can often be obtained by means of hydraulic rams, wind mills and other compar-

atively inexpensive methods ; or the water from the drainage reservoir may be utilized. In such instances, where practicable, a combined system of sub-drainage, and irrigation can be advantageously established.

The same tiling has been used for both purposes, leaving them open in wet weather to secure drainage and closing the outlets in drouths for irrigating the ground. But a better plan is to put in two sets of tiling, the irrigating tile at a foot and a half to two feet and the drainage tiling three or four feet. Experiments made in a number of places have demonstrated that sub-irrigation is preferable to the surface method, especially on rolling lands, or on clay lands that "bake."

Irrigation is not so essential in the eastern states as in the arid plains of the west, yet it is often practicable and profitable. Only a few years ago a Vermont farmer published the result of his experiment in making an irrigating pond by building a stone dam across a ravine, and the increase of crops in the first year more than paid the whole expense, without counting the ice from the pond or the fine outlook he had for fish. Once properly made the expense is but a trifle, and perpetual drainage and irrigation are supplied. Think of the refreshing beauty of a blue grass lawn sub-irrigated, when the browning effects of a drouth are everywhere witnessed, to say nothing of flowers and fruits growing finely, because they have a full supply of air and moisture at their roots.

Tests made in England showed that the yield of grass was increased 30 per cent. by sub-irrigation over that of surface. Before the land was irrigated in either way it was a barren heath, not even affording sheep pasturage, but six tons of hay per acre were realized by drainage and sub-irrigation.

A practical test made by a Texas gardener shows the following : A reservoir 30 feet square and 5 feet deep will hold 40,000 gallons. A 12 to 14 foot wind mill in a favorable location and with a good pump attached will fill it in 10 to 12 hours. That amount of water will cover two acres an inch deep, but in sub-irrigation would suffice for four acres. These facts show that it is feasible in nearly all instances to drain and irrigate home grounds and gardens, if not entire farms, and that the increased beauty, productiveness and healthfulness would more than repay the cost of the work in a very short time.

"We must teach by example" says a New Jersey horticulturist. Let the readers of THE AMERICAN GARDEN who are amply able to put these statements to the test, employ drainage and hydraulic engineers, establish drainage and irrigation systems on their home grounds and gardens and in a few years these examples will have spread and they will not only increase their own pleasure and comfort, but will deserve and secure the credit of being pioneers in a great reform.

*Indiana.* J. P. APPLEGATE.

# POINTS OF MERIT IN VEGETABLES.

EXTERNAL INDICATIONS OF INTERNAL QUALITIES.

I WANT to ask your attention to the consideration of desirable qualities in some of our common garden vegetables, speaking of each as a whole rather than of any particular variety. Possibly this may seem unnecessary. Most of you think you know beans, at least well enough to tell good from bad, and all of you recognize the superiority of vegetables as brought to your table by your wife or mother ; but would it not be worth while to give a little thought to those external indications which enable one, who can read them, to recognize a good vegetable without a cooking test ? And this is what I ask you to do with me this afternoon ; and first let us look at

ASPARAGUS.—There has been a good deal of discussion as to whether this vegetable should be blanched or green, some claiming that blanched shoots only are really fit to eat, and refer for proof to the long, tender, and delicious shoots served up in France, where only blanched asparagus is used. Others say the brown or blanched portion is always tough, woody, and flavorless, and only the green portion should be used ; that we must never cut or break below the surface. We think a little consideration of how the plant grows will disclose the cause of this difference of opinion. The young shoots of asparagus expand and elongate very fast at first, but with gradually decreasing rapidity. The hardening or development of woody fibre commences at the base of the shoot and extends upward, slowly at first, but with gradually increasing rapidity until it overtakes the elongating point about the time it breaks into branches, and the entire shoot becomes hard and inedible.

An asparagus shoot, or bud before it becomes a shoot, is woody at the point of juncture with the collar from the first, so that if we cut it at the collar when it is ever so small the lower part will be woody and tough, and we shall have to cut it at a proportionately greater distance from the collar, as the shoot elongates, to avoid this woody portion ; so that, if we plant shallow and cut much below the surface, we shall always have woody butts, and to avoid them we cut above ground and have green and tender shoots. If, however, we plant deeply

(or, better still, follow the French method and plant shallow and thin, during the cutting season banking up over the plants with light, friable soil, or other suitable blanching material) we may have long, perfectly blanched shoots, but far enough from the collar to ensure tender blanched asparagus without woody butts. The secret is, cut your shoots at a distance from the roots proportionate to their age.

BEANS.—I will only speak of them as used for snaps. Since the general introduction of the wax-podded sorts people have come to judge of this vegetable almost entirely by its appearance, the longest, whitest, handsomest pods being considered the best; but a better observation will show one that the whitest pods in the basket are by no means the whitest when cooked. If we will cook the clear white pods of the ivory pod and the yellow ones of the golden wax, we will find the latter much the lighter and brighter color; and if we go further and taste them there will be no doubt as to which is the better quality. The value of a snap bean rests in its fleshy pod, and in judging of the merits of different lots we should not only look at the external shape and color, but at the flesh. This should completely fill the pod so that there is little depression between the beans, and on cutting the pod at these points there should be no cavity seen. The flesh, too, should be firm and solid. In some sorts it is very juicy, and even watery, when the pod is young, but speedily becomes spongy or pithy. Last, but by no means least, the pod should be, as the Europeans say, "free from parchment"—that is, the inner lining of the pod should be thin and without fiber, a point which is often overlooked, the observer being satisfied if there is no "string" at the back.

BEETS.—Most people are content if the root is smooth, shapely, and of good color, but this is by no means all. The color should be one that will hold while cooking—should be "fast;" and secondly, the top should be small and compact, covering and occupying as small a proportion of the top as possible, because it will always be found that the portion just below the top is harder, rank-flavored, and lacking in sugar. This is so universally invariably true that the French and German sugar-makers always cut off and throw away this portion (often amounting to from three to five per cent.) of the root, saying they cannot make good sugar when this part is taken.

CABBAGE.—In a long and large stemmed plant we will find the leaves relatively far apart and with large, coarse midribs; and as a portion of the stem extends up into and becomes the objectionable core of the head, it carries with it the same character, and we have a large-cored and soft-hearted head, the base of the leaves being separated in the head in the same way as below it. Again, the shape of the leaf is important. A fault often seen is the blade not extending to the very base, thus giving the leaf a distinct stem. The leaves of the head will be of the same character, and consequently the heart, made up of the bases of the leaves, will be loose and "stemmy" at the center, even if hard and firm at the outside. The leaves should also be abundant in number, long, and show a decided tendency either to enclose the center or to be dish-shape. If not, we have a head in which the leaves do not lap by each other, forming one with either an opening, or soft spot down through the center, through which the seed-stalk will soon push its way and the head becomes worthless. Lastly, the leaves of all cabbages should be thick and brittle rather than thin and fibrous.

CAULIFLOWER.—The common opinion is that cauliflower heads should be smooth and flat; but Long Island gardeners who have given more attention to this vegetable than any one else in this country declare that the head should be round rather than flat, and as knobby as possible. They claim, and we think with good reason, that the flat umbel-shaped head must of necessity have a much larger proportion of stem than one which is in general outline nearly globular, and in which each section is also globular, thus giving a rough or knobby, rather than a smooth, head. Certainly the latter style are much heavier and more solid, and we think are of better quality.

CARROT.—Few people in this country know how palatable well-grown and properly cooked carrots are, but in order to fully appreciate them one must use the small and finer grained garden varieties, and when they are in proper condition, which is when they are young and tender, not waiting until they are nearly full-grown, as is commonly done.

CELERY.—Here, as in beans, too much weight has been given to whiteness; and flavorless and soft White Plume has ruled the market. It certainly is true that excessively blanched and white celery is always of inferior quality. Often it is actually worthless, being pithy and soft. Good quality is indicated by fine grain and solidity. A person should be able to snap a stem into three pieces by taking it in both hands and giving a quick jerk with each hand in opposite directions. The break should be square, showing brittle fiber, and as little "string" at the back as may be. The flesh should be firm, solid and fine-grained, and have a rich nutty flavor. Such celery is rarely seen in market, because of the demand for the whiter and (to the novice) more attractive kinds; but no one knows better than the Kalamazoo growers how to produce it if it is called for.

CUCUMBER.—Whether for pickles or slicing, if triangular in general shape of cross-section, as most of them are, the sides should be concave outward, instead of convex, the latter shape always indicating a hard and often bitter strip along the center of each side where the seeds are attached. The fruit should also be nearly the same size throughout its entire length, any depression or seedless neck being indicative of hardness and bitterness of flesh at that point. In pickling cucumbers, the color is a very important point. It should be as deep, and extend as uniformly over the fruit, as possible. Contrary to the usual opinion, we do not think that coarse spines or prickles indicate crispness of flesh, as the most

crisp and brittle sort we know of is the Parisian pickling, in which the spines are exceedingly small.

LETTUCES should be divided into two classes, according to the method of use. If to be served with oil or similar dressing, the leaf should be thick, brittle and crisp rather than tender, and should have a decided flavor—may even have, when first picked, a decided bitter taste, this disappearing when served. Most lettuces of this class form distinct heads, and the same suggestions as to the proper form of plant and leaf which were given in cabbage will apply here. In the second class, the lettuce is cut up with vinegar, sugar, etc., and here tenderness is the great consideration and outweighs all others. No bitterness is admissible, and as a rule there is but little flavor. It is a disadvantage for lettuces of this class to form a distinct cabbage-like head, as the thin tender leaves loose all their crispness and beauty of color when crowded into a dense head. A cluster of large leaves is much more desirable.

TOMATO.—This is the queen of vegetables, and one in which there is as wide a difference between the good and the bad as between a "frost" pear of the hedge row and a well-grown Seckel. The ideal tomato may vary somewhat in shape. For myself I like them to be nearly round or apple-shaped, but others prefer that they be flattened, oval. Whatever the shape, there should be no deep corrugations or seams, the fruit being nearly smooth, although a slight depression along the line of natural division is not objectionable. The stem should always be relatively small and set in a very shallow basin. When the stem is large and set deeply into the fruit, it is accompanied by a large pithy core extending into the fruit and ruining it for slicing or for canning. The stem end of the fruit should be nearly flat or slightly rounded. When there are any marked projections here they will be sure to be imperfectly ripened at the time the rest of the fruit is in the best condition. As to color, tastes differ; but I have never yet found a tomato of the purple tint of the old Fiji, which was not of a sharp, hard, metallic-like acid, very much less pleasant than the mild, fruit-like acid of the true red or scarlet tomato; and I am quite certain that, were we to select ten of the best varieties, quality to rule, eight at least—and I believe more likely nine or all of them—would be found to be clear, bright red, with little trace of purple. Of the interior of the fruit, the general opinion as to what constitutes merit is certainly at fault. Most people only ask for a solid, seedless, pulpless flesh. Fortunately, the fruit is too good to develop any such worthless variety as is thus called for. If you will carefully examine a tomato you will find that the greatest amount, and by far the finest flavor is found in the pulp surrounding the seed, and that the flesh surrounding the fruit next to the skin is quite different, and greatly superior, to that in the interior divisions, which many people value as making a solid fruit. Often these interior divisions are made up of perfectly flavorless, hard, but corky tissue. This is the case in an exceedingly large-fruited sort which I have grown for several years for comparison, but have not considered worthy of a name or of general cultivation, although I am certain that this variety can be made to produce the largest fruit having the smallest proportionate weight of seed and the largest proportion of dry matter of any of the hundreds of sorts I have tried; and yet I have seen the Mikado recommended as the best variety, because it stood first of any the writer had tested in these respects. My ideal tomato, as far as interior is concerned, is one in which the outer circle of flesh next to the skin is very thick, the thicker the better; the interior divisions few and consequently comparatively large, and each completely filled with pulp. Seeds are of themselves a disadvantage, but as we never have pulp except surrounding seeds, we shall have to have a fair quantity of them in order to get the desired pulp. This pulp should be as thick as possible. We sometimes find fruit in which it is very thin, and in such cases it is usually quite acid. The pulp should be as thick or solid as may be, while the flesh, both of the outer circle and of the inner division, should be as soft and juicy as possible, thus making the fruit as nearly uniform in consistency as it can be made to grow. I would be as critical as to the flavor of the fruit as of that of a pear or apple, and insist that, to be good, it must have a distinct, fruit-like, sub-acid flavor. Lastly, the entire interior, except the seeds should be in color as nearly like the deep, rich red of the outside as possible, making a fruit which is a delight both in color and flavor.

In what I have said I have referred to table qualities only. There are many other qualities, as of earliness, size, productiveness, keeping, ability to stand rough treatment, etc., all of which should be considered in making up our judgment of a variety. Often a sort which will be the best of any for one set of circumstances will be worthless under other conditions—and no one can say, "off hand," which is the best bean or tomato, any more than he can say which is the best apple or pear, or which of a hundred women would make the best wife.—W. W. TRACY, *before Michigan Horticultural Society.*

## NOTES FROM A WOMAN'S GARDEN—MAY.

BY DINT of much teasing we are allowed to have the garden plowed during the first week in May, though the captain thinks it would be much better to wait until the fifteenth.

It is a bright warm day, and we all go out to see the important work well begun at least. The garden has, of course, been thoroughly dressed. We are "great," for using all kinds of fertilizers. "Such a reckless waste of manures was never seen," says the captain. Levi attributes the quantities of cut-worms and other unpleasant "varmin" to the undue preponderance of what

he calls "good stuff" but we believe no ground can be too rich. As we have been planting seed, and setting out plants, off and on for the past two or three weeks, the garden is "almost enough to drive any plowman crazy," the captain declares. "Purty katty-cornered walks 'twill hev to be" says old Levi. But our plowman is a good natured individual who surveys with an indulgent smile the planted row here, the bed there, this place covered with brush, in the vain hope of tempering somewhat the ravages of the omnipresent hen; that place outlined by bean poles and boards laid down to keep him and his horses at a safe distance. His plow as usual is a "little out of kilter" and requires some "tinkering," but at last he starts, and with the reins around his neck, a clay pipe in his mouth, he drives his far from jocund team afield. He is calm, serene; all our cries of—"*Don't* let your horses bite those raspberry bushes any more!" "*Can't* you plow a little deeper?" "Oh, *do* be careful, don't let your horses step over those bean-poles!" effect no change in his weather-beaten countenance, and no replies further than, "No, marm;" "Can't do it, marm;" "Yaas, marm," are elicited.

We see plainly that he will plow that garden just as he pleases, but is fairly careful, so at last we leave with directions to old Levi to keep an eye on him, and not let him do anything "too awful." The next day, or that very afternoon, if the plowing has been done early enough, we begin to plant in good earnest. More beets, radishes, lettuce and parsley are sown. Beans, corn, onions, salsify, squashes, etc., in fact almost all vegetables except lima beans and late turnips are planted as soon as possible, of course allowing for several plantings of corn. The 10th is our favorite date for planting melons and cucumbers. We have given up trying to raise watermelons, but plant between thirty and forty hills of muskmelons, which do well on our land. "Surprise" always does well with us. The radishes in the cold frames are ready for eating by the fifth of May, and the small red olive-shaped ones we like best. Although we try them every year in the open ground, they are rarely eatable, being pierced through and through by worms, for which we have found no remedy. May is a very busy month in the garden; every day there is planting to be done, plants to be set out, and the flower garden should now be stocked and planted.

Apple and pear trees we graft about the 10th. The strawberry beds are bright and green and we have found blossoms as early as the 2nd. As soon as the first green leaves appear, go over the currant and gooseberry bushes with hellebore, dry, or in a solution as you prefer; it is well to get beforehand with the currant worm. We generally have three or four separate sets come on, but our eternal vigilance is well rewarded. About the 20th the lima beans are planted. Thirty-three poles we find none too many. Put in a good deal of seed, for there is nothing a cut-worm likes better than a young and tender lima bean. We count ourselves lucky if three out of ten beans dropped escape this all-devouring foe. Dust the squases, cucumbers and melon vines, as soon as they get above ground, with fine plaster. But here again you must "allow" for trouble; plant twice as many seeds as you wish plants in a hill; if—rarely—more than you want survive, you can easily thin them out.

Look out for the rose bushes; spray with whale oil soap suds before you see any insects, and keep it up; you may be able to show later some roses with foliage not looking as though burned by fire. "Just about this time" look out for the low grass that comes in the apple and pear orchards; have it hoed before it perfects its quickly grown seed, and scatters it over the entire garden. Fortunately there is little hoeing to be done this month, but kill every weed you find; "so much in" towards another month's work. May is essentially the month for planting—making the garden, as it were. Although we greatly enjoy the blossoming of the fruit trees, the many beautiful spring flowers, notably the lilies of the valley and forget-me-nots, and appreciate the few early vegetables, it is to the next month we must look for more substantial rewards for our constant but very pleasing and interesting labors.

*Plymouth Co., Mass.* M. E. VIGNERON.

# LIMA BEANS.

WHETHER planted for field cultivation or raised in the garden simply for family use, lima beans are not only a desirable, but also a profitable crop. This, of course, depends upon the yield, and this, in turn, depends upon the soil and the preparation.

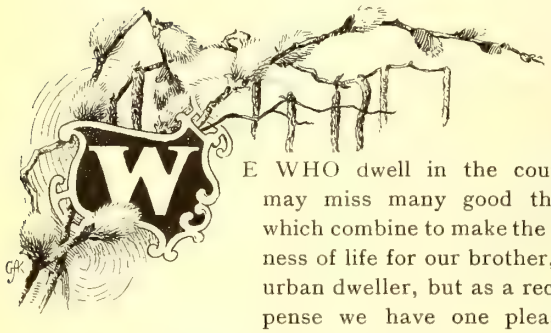
In order, then, to secure profitable results, the soil should be at least moderately rich. If it is not so naturally, manure should be used. If possible, it is of course best to apply this by scattering broadcast over the plot, and then thoroughly incorporating with the soil. I tried manuring in the hill. The plan followed was to first plow the soil thoroughly, and then dig holes three feet apart each way; into these a good forkful of manure was put, and worked well into the soil. A good stout pole was set by the hole at the time of planting, and three or four beans, with the eyes down, were planted about one inch deep, and the soil pressed firmly down upon the seed. Good cultivation was given; that is, the weeds were kept back and the soil stirred sufficiently to keep it mellow. Four cultivations in all were given, and although a fair crop was realized, it failed to be what I expected. The vines were allowed to run.

The next year I was a little short of manure, and run out a good furrow ten or twelve inches deep. The manure was thrown into the bottom of this, and loose

soil thrown in and then thoroughly worked together. This put the soil in fine condition. I might add, perhaps, that the manure was well rotted. The seeds were placed eyes down and only three or four inches apart, planted like peas, only not quite so thick, and were covered with mellow soil pressed firmly down upon them. Before they were up well, good brush, four or five feet long, was used instead of poles. I brushed them the same as peas, only using larger and higher brushes. When the beans reached the top, they were pinched back. This crop yielded fully as well as could be expected. I tried the same plan last year with good results. I planted part of my crop in good, rich prairie loam, without manure, putting the vines about three and a-half feet apart and the hills eighteen inches apart in the row. They were cultivated well, the same as the others; the weeds were kept down and the soil mellow; hoeing around the plants and using a garden plow to cultivate between the vines. Those planted close together and brushed were much the best. Of course, the manure aided considerably, yet I am satisfied from the two experiments that the brushing was the best. This year I have planned to have the manure scattered broadcast and thoroughly worked into the soil, and shall plant two plots, one in hills and the other in drills, and shall use poles in the hills and good stout brush in the drills.

N. J. Shepherd.

# THE PHYSIOGNOMY OF THE SEASONS—SPRING.



WE WHO dwell in the country may miss many good things which combine to make the fullness of life for our brother, the urban dweller, but as a recompense we have one pleasure that never palls—that of watching the seasons as they come and go. Here we find that infinite variety that constitutes the best relish of life; a variety produced by nature, endless, ever changing, not subject to the finite limitations that make the contrivances of men of so little avail to refresh and rejuvenate the inner self.

The ancients, who looked upon the manifestations of nature as a constant series of miracles, never with surprise but always with veneration, must have received such satisfaction from observing the seasons' changes as served to make life worth living for that alone. The man of the pavements, the citizen whose scenery, the year through, is bounded by a limitless vista of brick and mortar, can know nothing of this, however closely he watches the calendar and regulates his strolls in the park thereby. There are definite characteristics pertaining to each of the seasons, individual physiognomic attributes that are not marked upon his calendar and which can be learned only from close contact with the world out-of-doors. If one will go far enough a-field he may learn to tell, by reading the face of nature, not only the season but often the month, the day, sometimes the very hour. The first is written in general and large aspects, such as the colors in field and forest; the density of the boscage, the quality of the atmosphere, the labors upon which husbandmen are engaged. The second may be most surely marked by the blossoming of a wild-flower or by the blooming of a tree. For some years I have been accustomed to watch for the fifteenth of April as the day of days in the spring. Then I go into the orchard and beneath a certain group of plum trees drink in great draughts of fragrance and delight the eye with long gazing upon billowy masses of white bloom. Above me the honey-bees hold high carnival, reveling in unwonted stores of nectar, and making the air musically vibrant with their incessant humming. Rarely do the plum trees lead me astray as to the date, whether the season has been backward or forward; the forces that work within them have been busy, whether skies were bright or leaden, to the end that I and the bees may have our fill of sweets that day.

The hours have their more minute signs, and they are not to be found in the same lazy way that we tell the month or the day. Now we must note the drooping or lifting of a leaf, the opening and closing of flowers, the coming and going of insects, and the quality of their notes, which is shrill and eager in the morning when they first go about the pressing business of their lives, but grows more slow and mellow as the day advances and their quest for wealth and fame and political preferment grows less strenuous.

There are large effects in the landscape which even the least careful and least technical observer recognizes as the sign-manual of spring, or summer, or autumn. Such are the budding verdure and freshness of vegetation of the first; the expression of the landscape is animated; a note of expectancy is in the air; there are wonderful possibilities ahead; the bloom of the fruit and the germ of the sown grain are full of promise of future corn and wine. Then follows the deep, dark, sensuous fullness of the foliage of mid-summer; there is a sense of satiety in the completed growth of vegetation; and rest, and a waiting for the harvest. Then the harvest comes, a synonym for ripeness and final completion, and with it is the brilliant, diversified spectrum of the autumn. These things "he may read who runneth."

There is a curious analogy between some of the minutiæ of spring and autumn that one who looks only

at these large effects will fail to discover; such is the correspondence between some of the tints of the opening bud and the dying leaf. It is a pleasing thought that the dying year is thus suggestive of the year to be born. The October hue of the maple is soon rivaled by the tints of its own tender spathes when they first open beneath the genial influence of April's sun and showers; the color of a maple wood in early spring differs only in degree, not in kind, from that of late autumn; and the axillary bud of the grape, as it unfolds warily from the parent stem, flashes at us the August hue of the gum tree and borrows from October the purple bloom and promise of its own ripened fruit.

Indeed, what we are accustomed to call the "autumnal tints" are not wholly lacking at any time throughout the season of vegetation; but when they hold only a subordinate place in the general scheme of color for the day or month, we are apt to lose sight of their values. Yet they are the determining influence that relieves any landscape from the danger of becoming monotonous in tone, and would be missed if absent from it. Aside from the succession of what we commonly call the flowers—although any bloom or blossom or portion of a plant destined to produce seed is a flower—these tints abound in a clover-field in June, and surround in a hazy, feathery fluff the ripening heads of herds-grass in the later meadow, and abound in the creeping tendrils of the woodbine in July, the while its own leaves, deepening from green to brown and red, forecast the autumn's coming. Likewise certain plants, such as the golden-rod and the aster, have lake-colored radical leaves in early spring, and the under sides of strawberry leaves have often the same deep hue, although we are accustomed to think that it pertains to autumn rather than to spring. So also the earliest tips of the grass-blades, started into life by moisture rather than by light or heat—rather, despite their absence—have first a saffron hue which changes rapidly to the rosiest tints the palette of nature can bestow. Thus we cannot generalize the color, or rather, attribute of spring, or any season; each borrows something from the other, encroaches upon its prerogative, laps over upon it; yet each remains broadly individual and cannot be mistaken, more than the face of our nearest friend.

We are accustomed to speak of looking for spring, of searching for her as if she were something elusive, evasive; of no other season do we speak or think thus. The discovery of the first sign of spring is a personal triumph. It may vanish again tomorrow before some belated north-wind, but we have seen her, have touched the hem of her garment, and thenceforth she is ours.

There are two ways of seeking her. One is to go abroad with the poet and see with his eyes; thus we shall find singing birds and flowers, and sweet scents in the air, and velvety turf under foot, and the murmur of running brooks; but, except with the very truest poets, we shall rarely find the spring. The poet so idealizes nature that he fails to observe that the very first flower comes to us with so unpleasant a name as skunk-cabbage, and passes it by for the sake of euphony. Nor does he perceive that the first grass starts where the ground is cold and wet; it suits his mood and his muse better to find it upon some warm southern hillside, where they and the grass may be nourished together by the soft south-winds. Yet if we are looking for it in sufficient quantities to give physiognomic value to the landscape, we will go to the hill-side; there the grass comes first in big green patches, making bright relief against the sombre brown of last year's dead herbage.

The better way to find the first sign of spring is to go alone—early, or the season will be before us—and seek her in some low meadow where a creek finds its way between willow-fringed banks. Here spring comes, before the last film of ice has left the edge of the water. Here the willow-catkins push out and make a bright glint of new color across the meadow, shining with a yellow radiance in the clear air. At the feet of the willows, where the marsh grass lies sere from last year's dying, we may push away the snow that yet lingers in some moist hollow that it has sheltered all the winter through, and there find our earliest bit of verdure—a tuft of grass. This might not seem of great value in mid-summer, but it is treasure-trove now. It is the first characteristic bit of the season. Fruits and flowers come to us now from the hot-house, out of time and rhyme with nature; but grass, the most beautiful and universal of plants, has happily not yet become a forced exotic to mock us from the flower-shops with false visions of the season.

A chief characteristic of the spring and our search for her out-of-doors is that our satisfaction and delight depend upon such small things that the appetite is not cloyed, but rather whetted on toward further quest by each new discovery. In summer we may drink our fill of nature at a single draught, and in autumn she throws at our feet such a fullness of riches that all zest is taken from the search. The first flower, the first expanding bud, the first notice of robin or blue-bird all serve to make us only the more emulous to discover other signs of the reason of which these are the precursors, and with heightsening elation we run along the ascending scale until confronted by the full blown perfection of summer. Not thus do we look for the last flower, the last leaf, the last song bird in autumn.

There are characteristics of spring that appeal to every sense; and I think that were I deprived of all but one—and that remaining might be any one—I would be enabled by its exercise alone to distinguish this from any other season. To the eye it is discovered by color and form; to the ear, by the notes of the birds and the chirping of insects; to the sense of feeling, by the warm south wind, the springiness of the turf under foot, the velvety softness of twig and bud and grass; to the sense of smell by all sweet odors of the earth and growing things; to the taste, in the bark of birch and sassafras and the sap of the maple. Our compensation for winter lies in the resurrection of the spring-time; it is the synonym of awakening life; this is the pervading thought with which

we seek her. We do not ask if winter is gone, but if spring is come; and our answer comes in the wakening of all nature. The dormouse and the woodchuck come from their holes where they have slumbered through the long winter, and again begin to live; life in the soil quickens, and sap begins to flow in the veins of the trees; chlorophyl is developed in all vegetation, and a mantle of green is speedily spread out upon the earth.

With the first awakening begin those changes that determine the physiognomic aspects of the advancing season. Much of the physiognomy of a certain landscape depends upon form, which in its outlines does not greatly vary. The proportion of open field to forest or copse remains about the same from season to season. The woods, if composed of deciduous growths, only become denser, more compact, more umbrageous, more strongly relieved between field and sky; as the season advances their foliage makes continuously heavier masses, and their black shadows are more boldly outlined.

The first change in color in the woodland is from the dead browns of the naked branches to a gray pearliness. This is when the sap begins to flow beneath the bark, and the tree, like the dormouse, wakens from its winter's sleep. In the strong sunlight, the woods glisten with these masses of pearly hues. When the buds start, there is a change toward a pinker tinge, which gradually deepens and verges towards ruby. This is the last stage before the leaves come out; then, on a rare morning we waken, and, lo! the woods are green.

The fields, which have lain yellow with last year's stubble, now show green about the edges where the turf has not been disturbed for many a year. Presently, close beside this green line, appears another and different one; at a distance it is reddish, and as the farmer turns furrow after furrow, the field finally lays like a ruby square in the landscape, all fringed about with emerald. Now the changes become kaleidoscopic; the masses of green in the woods become yet more dense; the red earth, upon which grain has been sown, is faintly tinged with a paler green than is shown elsewhere in the landscape; then, day by day, this deepens and darkens; nature ceases to be so sportive with her colors, and the landscape becomes quiet, settled, restful-green.

We have been told by some astronomer (whether in sportive mood or because science has revealed this secret to him, I know not) that, in the moon, all vegetation is red. If this is so, doubtless the retina of the lunar resident has been so adjusted by Providence as to make that a grateful color, or at least, knowing nothing of the vernal beauty that clothes our world, he is satisfied with his own through that ignorance, upon which so much bliss is predicated. But for ourselves, if this mantle of green, with its sense of freshness that no other color can typify to us, was not spread upon the earth with each returning year, we should sensibly miss the chief charm of spring. And this is a charm that doth grow by that it feeds on, as do the charms of all the phenomena of the seasons.

*Ohio.* JAMES K. REEVE.

# The Editor's Outlook.

*PLANT SUPERSTITION.*

SUPERSTITION is handmaid of ignorance. The old fables could never have arisen if men had known the first rudiments of plant life. The study of the superstitions and travelers' tales of the middle ages and later gives a measure of the thought of the time, and through it we can trace the birth and growth of botany. Botany began as superstition, it passed through a long stage of formulation, and later it became the subject of a vast amount of poetry aud sentiment; but it is only in the last few decades that it has come home in any intimate and practical way to the tiller of the soil. It has lately assumed a breadth and importance which was not dreamed of a half century ago, and which it could never have attained under the old systems of philosophy and study. Botany is more important to the cultivator to-day than chemistry. Its applications to the common problems of the garden and orchard are more frequent, more intimate, more practical; and its importance is enhanced because it can be studied as one rests upon the plow. It is everywhere, always, an ever inspiring and intimate companion whom one can know without laboratories and apparatus. Knowledge of plants is imperative to him who would grow plants, and this knowledge is botany.

Superstitions have not yet passed away. One meets them everywhere among farmers. One man fears to touch the heart of his tree lest he kill it and another sows his peas in the old of the moon. And lesser misconceptions are abundant and they comprise the larger part of hindrances to a better horticulture. A good knowledge of botany is worth more than improved tools.

But the knowledge of plants is not to be measured alone by the immediately practical effects. It is an inexhaustible source of enthusiasm and contentment. Its day of superficial sentiments has passed. Botanies are no longer languages of flowers and cullings from the poets. But it strikes deeper than ever into the roots of affection and inspiration. No one but the botanist knows where the flowers bloom in the fence corners or knows the consolation which should come with every returning day. Knowledge of plants is a spice for every dull hour and gloomy day, and it is the most suggestive education which the horticulturist can possess. It is impossible to undertake a bold experimentation without it. One must first free himself from the conventional and perfunctory methods of studying it, and approach it in the evolutionary spirit of the time. In no other way can we wholly rid ourselves of plant superstition.

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*OUR GRAPE INTERESTS.*

VITICULTURE has grown to enormous proportions, and like all other horticultural interests we have known nothing of its extent until the present census has given us the figures. The two census bulletins so far issued upon horticultural matters are remarkable illustrations of the neglect and indifference of such interests by the government. The census report upon viticulture divides our leading grape areas into five regions: the Eastern, including New York and that portion of Pennsylvania lying upon lake Erie; the Middle, including Ohio, Indiana and Illinois; the Western, lying in Kansas and Missouri; the Southern, in Georgia, Tennessee, North Carolinia and Virginia; the Pacific, comprising California and parts of Arizona and New Mexico. Of these, the Pacific division comprises the greatest acreage, there being no less than 213,230 acres in cultivation, of which 157,458 acres are in bearing. The Eastern or New York region follows next with 51,000 acres, the Middle with 42,633 acres, the Western with 17,306 acres, and the Southern with 17,092 acres. About 60,000 acres are in cultivation outside these definite areas, making a grand total of 401,261 acres in the United States, of which 307,575 acres are in bearing.

The product of this enormous acreage is sold as table grapes, wine and raisins. In the production of table grapes New York leads with 60,687 tons in 1890, and is followed by Ohio with 38,947 tons, California with 38,785 tons and Missouri with 22,500 tons. In the production of wine, California leads with 14,626,000 gallons, and is followed by New York with 2,528,250 gallons, Ohio with 1,934,833 gallons, and Missouri with 1,250,000 gallons. In raisins California produces practically the whole quantity grown. The highest average yields per acre are reported in Arizona, Missouri and New Mexico which give three tons to the acre, while California gives only 1.77 tons per acre, which is less than Illinois, Kansas, Ohio, Tennessee and

Virginia. The highest market value of grapes per ton is $96 in Georgia, which is followed by Tennessee at $89, New York at $70 Indiana at $67, North Carolina and Virginia at $60, while California and Arizona give the lowest returns, with $17.66 and $16.50 respectively.

An interesting feature of this census report is the estimate of the grape interest in Arizona and New Mexico, and it seems to show that those territories are destined to be great wine and raisin centers: "Viticulture in Arizona and New Mexico is comparatively new, but is thought to have a prosperous future. Not only do the native varieties of grapes grow in these territories, but the European, or vinifera, also flourishes here. The Muscat varieties, grown so successfully in California for raisins, grow equally well in these territories; also varieties that produce a fine sherry wine. This is one of the most prominent features of viticulture in Arizona. Mr. J. De Barth Shorb, a prominent vine grower and wine maker of southern California, after experimenting in Arizona, reports that the sherries produced there have the true sherry flavor and are made by the natural process; that is, without it being necessary to 'bake' them. They not only have the flavor of the Spanish sherries, but also the same excellent qualities, So far, the fine sherries produced in this country have come from that territory. The same authority states that Arizona will be to the United States what Spain is now to Europe. There were in 1889 in Arizona 1,000 acres of bearing vines and 1,500 acres of new vineyards. The product was 2,850 tons or 5,700,000 pounds of table grapes, of which 150 tons or 300,000 pounds were sold to wineries. In New Mexico in 1889 there were 1,186 acres of bearing vines and 9,000 acres of new vineyards, which produced 296,500 gallons of wine and 1,779 tons or 3,558,000 pounds of table grapes. The information received from New Mexico by the census office shows a great advance in viticulture since irrigation has proven practicable. Two companies are building immense canals 45 feet wide at the bottom, capable of carrying seven feet of water. These canals will irrigate 400,000 acres of as rich land as can be found in the world adapted to the growth of fruit and grapes."

The largest vineyard in the world is at Tehama, California, which comprises 3,800 acres and to which 1,000 acres are to be added at once. In April, 1890, this great establishment had in stock 300,000 gallons of brandy and 1,000,000 gallons of wine. But if "California has the largest vineyard in the world, it may be well to state that she has also the smallest. It is a vineyard consisting of a single vine, in Santa Barbara county. It was planted by a Mexican woman about sixty years ago, and has a diameter at one foot from the ground of 12 inches, its branches covering an area of 12,000 feet, and produces annually from 10,000 to 12,000 pounds of grapes of the Mission variety (many bunches weighing six and seven pounds), the crop being generally made into wine. The old lady who planted this one-vine vineyard died in 1865 at the age of 107."

In the Pacific division the European grape is grown almost entirely. This division contains somewhat over half of the entire grape acreage of the country, but the greater part of the product is consumed in wine and raisins. Most of the table grapes of the country are produced on the remaining half of the grape acreage, and these are the native grapes of our woods. No more remarkable instance can be produced of the rapid improvement and dissemination of native species of plants in any country. In other words, the native grapes, improved by culture, are now grown upon nearly 200,000 acres in the United States, and they yielded in 1890 9,655,905 gallons of wine and 225,636 tons of table grapes! And to this can be added a very large acreage in Canada. All this native grape industry has arisen since the introduction of the Catawba by John Adlum between 1820 and 1830. Adlum was regarded as visionary in his day, but in the light of these developments his simple record of his hopes and labors and disappointments is sad. He had long endeavored to direct attention to the native grapes, and he had applied to the president of the United States for a lease of a bit of public ground in Washington to enable him to cultivate them. But the country was not yet ready for experiments in agriculture, and he was obliged to confine his efforts to his own resources. And then, lest he should die before his work became known, he published a little book on the subject. "As I am advancing in years, and know not when I may be called hence, I am solicitous that the information I have acquired should not die with me." "I have been obliged to prosecute the undertaking myself, without assistance and without patronage, and this I have done to the full extent of my very limited means." Time has drawn its curtain over the work of Adlum, and now the government willingly spends its thousands to prosecute labors less important than his. Every man who loves the grape should feel grateful to Rafinesque for bestowing the name Adlumia upon the charming "Allegheny vine" of our woods and he should grow the plant at his door.

*HORTICULTURE AT THE COLUMBIAN EXPOSITION.*

TIME passes and there is yet no commissioner of horticulture for the World's Fair, and very few of the states, apparently, are making an effort to collect displays of horticultural products. Creditable exhibits cannot be made with little or hasty effort, and every horticultural community should begin at once to discuss the means and extent of exhibiting at Chicago. The proposed horticultural hall, to cover a space 1,000 feet long by 50 feet wide, and to cost about $250,000, will accommodate an immense exhibit, and the display must be of unusual character to do it credit. California and Florida are making great efforts, and a few northern states are awakening. Michigan, under the leadership of an energetic state horticultural society, is making large demands upon the legislature. President Lyon makes the following suggestions for preliminary work on the Michigan exhibit:

"Select model trees—peach, dwarf pear, and if possible cherry and plum—of bearing age; shorten their roots prior to the present spring's growth and leave them standing till next season, taking off all fruit. In the spring of '92, lift and place in suitable size tubs or boxes; keep them in healthy condition, but remove all fruit; secure, by use of liquid manures if needful, the free formation of fruit buds, and in April or May, 1893, after cold spring storms are past, plant on Exposition grounds, on plot assigned for the purpose. Apply similar rules to as many non-bearing fruit trees and other of our hardy ornamental plants and trees, either indigenous or introduced, as funds and space will warrant, and well grown models can be secured. Begin this year the preparations for growing a full and satisfactory set of long-keepers to be put aside (if practicable in cold storage) to go upon the tables at the opening of the Exposition, and to be followed by small fruits as well as others, each in its season, upon the plant or on the table, either or both, if practicable. Encourage prospective exhibitors to impress their names (or initials) upon colored specimens, by shading the requisite portions from sunlight while coloring. Maintain, by renewals when needful, as full an exhibit as practicable of our native as well as introduced wild flowers and fruits, each in its season, with their botanical and local names and the localities where obtained. The correct name should accompany all plant as well as fruit exhibits. The preparation of an exhibit of our indigenous and introduced woods should be made, though, perhaps, this may be appropriately done by the Agricultural college, or by the State Forestry association. The fruit interests of the state should also be represented by a display of both canned and desiccated exhibits, and the same is also true of its vegetable garden products."

Every state society should begin at once to awaken public enthusiasm and should ask for funds of the legislatures. A well made exhibit will prove a great advertisement to any region and will form an essential feature in any estimate which may be ultimately made of the extent and condition of our horticulture. And it is due to horticulturists that the World's Fair authorities should now act.

The commissionership could have been filled a few months ago without sectional jealousies if we may judge from the unanimity with which the Columbian Horticultural Association seconded the name of Parker Earle. The only objection to the nominee upon personal grounds is some feeling in Florida due to real or supposed discrimination in favor of California at the New Orleans Exposition. The demand of any state or region to be given the commissionership simply because of the extent of its horticultural interests is unfortunate, not only because it represents an objectionable method of appointment, but also because any man elected upon a sectional basis is bound to meet with sectional opposition. One state, it is said, has gone so far as to demand the commissionership upon penalty of withholding some of its exhibit! The representative of California upon the Fair commission is represented as demanding the commissionership because that "state is the only one in the Union that can furnish an exhibit of fresh fruits through the whole period of the Exposition," and the "horticultural interests are as large as those of all the other states together." These statements are very wide of the mark, and they confirm us in the belief that the nominee of the Columbian Association should be chosen for the commissionership; and we are sure that California would have every facility for making its best display. In many directions, the horticultural interests of eastern states exceed those of the Pacific, but that fact is no reason to our mind why any one of them should demand the commissioner. The success of the exhibition will depend upon the man in charge, not upon his state or region. We need a man upon whom the whole country can unite, and who has had the opportunity to prove his fitness for the place. Above all, sectional jealousies should be avoided, and we think it due to the country at large that neither California nor Florida should have the commissionership.


*** THE AMERICAN GARDEN *stands for simplicity, good taste and correctness in names of varieties. In general botanical nomenclature it follows Bentham and Hooker and Nicholson's Dictionary of Gardening. In the names of fruits, it adopts the catalogue of the American Pomological Society, and in vegetables the Horticulturists' revision in Annals of Horticulture. In florists' plants, it follows the determinations of the Nomenclature committee of the Society of American Florists. It opposes trinomial nomenclature, and therefore places a comma or the abbreviation* var. *between the specific and varietal names. It uses capital initials for all specific and varietal Latin names which are derived from proper nouns.*

FRUIT PROSPECTS are good in all parts of the country.

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CITRUS CULTURE is given particular attention in the March issue of *Farmer and Dealer*.

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WE HAVE a promise of good peach and general fruit crops in all this region this year.—PARKER EARLE, *Miss.*

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A BIG ORCHID.—Siebrecht & Wadley send us a flower of *Phalænopsis amabilis* var. *Dayana* which measures a trifle over four inches across. This is the largest one we have seen.

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PANSY SALE.—M. B. Faxon made an exhibition of pansies at the Massachusetts Horticultural Society Hall from March 31st to April 3rd. The collection was sold at auction April 4th.

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LINDENIA, the famous orchid journal of Belgium, is now published in an American edition which can be obtained through the agency of THE AMERICAN GARDEN at $6 per year. This is one of the most magnificent journals published. Each issue contains a number of large colored plates. The journal is monthly and is edited by J. and Lucien Linden, Em. Rodigas and R. A. Rolfe.

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MRS. ISOBEL HENDERSON FLOYD, daughter of the late Peter Henderson, has written a bright novel of Bermuda life which she calls "Stolen America." The motive of the book is to show our need of coast defenses, by portraying the strength of the English fortifications upon Bermuda. These islands should have been an American strategetic point, rather than an English, and they are, therefore, "stolen." But aside from the motive, the story is an entertaining one.

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THE MICHIGAN HORTICULTURAL SOCIETY has decided to ask that fifteen per cent. of the amount to be appropriated by Michigan for the Columbian Exposition should be devoted to the display of the horticultural interest. It was held that the best results could be obtained by transplanting orchards and setting out fruitage over as large an acreage as Michigan could secure from the fair commissioners; that it would be necessary to make a complete show of early and late fruit interests, to be done by preservation in cold storage if impossible otherwise, and also that a complete exhibition of the methods of culture and of fruit food products would be necessary. The Society also declared in favor of the bill before the legislature prohibiting the spraying of fruit trees with Paris green or other poisons while the trees are in blossom.

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SIZE OF PACKAGES.—Michigan peach growers are greatly exercised over the the recent Chicago ordinance that no packages shall be allowed except those representing aliquot parts of a bushel (see page 172, March issue). This forbids the use of the fifth bushel Michigan peach basket. The Saugatuck and Ganges Pomological Society opposes the ordinance, and it has adopted the following expression of its opinion: "This society deprecates the action of the common council of Chicago in regard to size of baskets, for the reason that we have an immense amount of fifth baskets on hand, and that our factories have their machinery in shape to manufacture that size; and that we desire the city to allow us to ship as we have done, and that the baskets be sold for what they are on their merits." The society favors the fifth bushel basket. The South Haven and Casco Pomological Society, however, twenty miles north of Saugatuck, takes a different view of the matter, and it has unanimously voted "that we are in full accord with the Chicago ordinance in favor of full packages and honest packing."

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HORTICULTURE IN THE SAGINAW VALLEY.—The Bay County, Michigan, Horticultural Society was organized the 16th of last January, and it already has a strong and enthusiastic membership. From the 5th to the 11th of next November it will hold a flower show in which chrysanthemuns will be the leading feature. "Arrangements have been made to give the exhibition on a larger scale than has ever been attempted in the west. The society has the necessary funds to offer special inducements to exhibitors from a distance coming here and

making displays. A special premium list has been provided for outside exhibitors, which has been made especially liberal. The official premium list will be ready about April 20. It will be a handsome work of twenty-four or thirty pages, and be mailed to the trade generally. The total premiums, including a large number of specials, amount in all to over $1,000 for chrysanthemuns alone."

The officers of the society are as follows : John Irvine, president ; Ernest Frank, vice president ; T. J. Cooper, secretary ; C. W. Hull, treasurer. Board of trustees : William Reuther, Chas. Breitmeyer, E. R. Phillips.

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THE NEWPORT HORTICULTURAL SOCIETY held the first of a proposed series of meetings, for discussion of questions pertaining to plants and flowers, Feb. 25, in the Mercury building hall. There was a good attendance of gardeners and others, the president, Colonel McMahan, presiding. The only formal paper presented was by Mr. L. D. Davis, in which he discussed the methods of improvements, through which new and better species and varieties are originated and perpetuated. In doing this he called attention to the processes of nature which are assuring progress along the line, and quoted the geological record as showing not only the appearance of new species from time to time in the long past, but also the improvement of old ones. He strongly dissented from the opinion that each distinct species was produced by a direct exercise of creative power, and presented proofs that the work was done rather by the processes of natural laws provided by the Creator at the beginning. In taking note of the distinctions between the several species, he claimed that they are not greater than the differences between races of men and of nationalities, and argued that if the conditions of life could create such distinctions as exist between the Caucasian, Mongolian and Ethiopian races, so could similar diverse conditions produce races or families in plants possessing equally fixed characteristics. We all admit that the racial distinctions among men have not come from direct acts of creation, neither have the diversities in vegetable life. In following out this line of thought the results of hybridizing plants was held to be much the same as amalgamating human races, and to imply nothing more. Several curious results of hybridizing were given, and attention especially called to the recent experiments of Mr. Carman with the Japan rose, *Rosa rugosa*, as published in THE AMERICAN GARDEN, the general conclusion being that the intelligent and patient cultivator has it in his power largely to determine the qualities and perfections of the plants which he cultivates.

The reading of the paper, which was closely followed, led to spirited discussion participated in by several of the most prominent gardeners and horticulturists in the city.

At the conclusion, Mr. Davis was requested to publish his address, which he said he was not prepared to do until he could more fully authenticate some of the positions taken, by a further collection of facts.—*Newport (R. I.) Daily News.*

MAINE POMOLOGISTS.—The winter meeting of the Maine State Pomological Society, was held in the city hall at Bangor, Feb. 24 and 25.

Hon. Z. A. Gilbert, secretary of the State Board of Agriculture, traced the growth of the State Pomological Society. The society was organized in 1873, and receives an annual bonus of $500 from the state. Mr. Gilbert dwelt on the necessity of training our children, in school and college, so they shall be able to do something when they leave school. He mentioned the establishment of a chair of horticulture at the State College, and urged the various horticultural societies represented to join in helping on the work at the college.

W. H. Jordan, director of the State College Experiment Station, gave a short report of the work of the station. Heretofore the work of the station had largely been in the lines most talked about—fertilizer and digestion experiments—but fruit plantations have been started, a forcing house has just been completed, and a horticulturist secured, and now special work in horticulture will be undertaken. But because of the existence of experiment stations, individual work must not cease.

Professor W. M. Munson was called upon to give some idea of the nature of the work to be carried on by the Horticultural Department of the State College. He said, so far as practicable, all branches of horticulture will be brought prominently before the farmers of the state. A leading feature of the work will be the selection and production, by means of crossing and hybridizing, of improved varieties of fruit which shall prove hardy in our trying climate, thus extending the area of profitable fruit culture in the state. This will require co-operation on the part of fruit-growers in different parts of the state, as results obtained at Orono may be of little value in Aroostook county. The influence of soil and climate on the quality and character of various fruits and vegetables will receive attention, as will also the effects of fertilizers and improved methods of culture. In all the work of the department, the aim will be to determine laws rather than simple facts ; for facts are such only under certain conditions, while the laws controlling those conditions are general, and are as applicable at Caribou as at Portland. Conclusions will not be hastily drawn, and much of the work will require several years to determine its value.

The cultivation of small fruits was described by S. H. Dawes, of Harrison. Four essentials of successs in small fruit culture are : "pluck, gumption, plenty of manure, and a love for the business." The speaker was more especially interested in strawberries. Such varieties as Crescent should be set in rows 4 feet apart, and but one crop should be taken from the vines. In his own case, had set apart one acre, and taken a crop from half of this each year. Sets aside a small plat for the production of plants to set on the other half the year following. The plants should be set in the spring, cultivated thoroughly, and allowed to bear no fruit the first season. Mr. Dawes considers it practicable to use the same land for strawberries year after year. He has used the

same land for seven consecutive years and his last crop was the best, while a neighbor has used the same land sixteen years without apparent ill effect. The land should be plowed in the fall, turning under about twenty loads of stable manure per acre. Crescent is the most profitable variety. Besides strawberries, Mr. Dawes cultivates other small fruits "and the annual varieties brought around by agents—the varieties which look so well on paper." Raspberries and blackberries require protection in Cumberland county. Cuthbert is the most profitable raspberry, and Snyder heads the list of blackberries.

S. C. Harlow, of Bangor, spoke at length on the "Results of Spraying." Mr. Harlow's display of apples, protected by spraying with Paris green, was very choice, and added weight to his arguments in favor of the uses of the arsenites. He finds Paris green safest for general use, and uses only one pound to 320 gallons water for apples, and a pound to 400 gallons for peach and plum trees.

Plum Culture.—Elijah Low, of Bangor, a veteran pomologist, presented the results of his long experience in raising plums. He has successfully withstood the attacks of the black-knot, which has devastated so many orchards of the state, by a vigorous use of the knife. His rule is: "A sharp knife and courage to use it." One reason plum culture is not more widely extended in the state is that people are ignorant of what can be done. The fairs and fruit exhibits are held before the fruit ripens. The varieties selected, after fifty years experience, as best suited for this region—the Penobscot valley—are: Washington, McLaughlin, Bradshaw, Green Gage, Lawrence Favorite, Reine Claude, Smith's Orleans, Penobscot, Columbia, Victoria, Imperial Gage, Lombard and Moore's Arctic. The soil where these varieties are grown is a heavy clay—once a brick yard. As fertilizers, bone meal and hard wood ashes—with about a pint of coarse salt around each tree in spring—give the best results.

"Care and Embellishment of Cemeteries" was the subject of a paper by John G. Barker, Superintendent of Forest Hill Cemetery, Jamaica Plains, Mass. Great care is necessary in the first arrangement. Lay out the grounds and make the map afterwards; and don't try to make natural features conform to pen and ink plans. The entrance should be especially neat and attractive. Well kept avenues and walks will aid greatly in retaining the interest and making the grounds attractive. The avenues should be 18 feet wide, and the walks 3 feet. Wherever possible, plant a nice tree or shrub, and do not allow marble to monopolize the space. The custom of putting several large headstones, of different styles, on a lot is in bad taste; better put one large stone, and simply small markers at each grave. Plant with a view to permanency. Among the desirable trees for the cemetery are the elm—especially the Huntingdon elm for broad avenues—the maples, (*Acer saccharinum* and Wier's cut-leaved) the catalpas, the birches, beech—especially the copper beech—*Magnolia tripetala*, ginkgo and the tulip tree. Of desirable shrubs, among others mentioned were white fringe (*Chionanthus Virginicas*), *Cornus florida*—and its var. *rubra*—the spiræas, *Hydrangea paniculata, grandiflora*, and, when the soil will permit, rhododendrons and kalmias.

Professor Elijah Cook, of Manchester, in speaking upon "Agriculture—its Present Needs and Future Prospects," took a very hopeful view of the situation. He thinks agriculturists do not appreciate their advantage, and that Maine is specially favored because of her adaptation for orchard culture.

"Better Care of Orchards" was advocated by J. W. True, of New Gloucester. Mr. True urged careful preparation of the soil before setting the trees, and thorough cultivation for several years afterwards. By liberal manuring, other crops may be made to pay the cost of cultivation for eight or ten years, but the best results can not be expected from starved trees. Potatoes and corn—the latter planted thinly and not very close to the trees, are the best crops. Do all pruning with a knife. For the less hardy varieties, the trunk should should not be more than 4 or 5 feet high. Dig out the borers every year, and remove clusters of eggs of tent caterpillar in March. Baldwin, Rhode Island Greening and Northern Spy prove most profitable in Cumberland county.

In the discussion following this paper, the question as to the proper time for pruning in this region was brought up. There was much diversity of opinion on the subject, but the general drift of discussion pointed to early spring as the most satisfactory time for heavy pruning, if such must be performed.

"Orchard Fertilizers" was the subject of a paper by Professor Walter Ballentine, of the State College. The fertilizing elements required are the same for trees as for other plants, and stable manure is a safe fertilizer; but the supply is limited and we must often look elsewhere. A good fertilizer to use in connection with stable manure may be made by mixing equal parts of wood ashes and finely ground bone; moisten, and cover with land plaster. Apply 600 to 800 pounds per acre. Plaster should be used in the stable, rather than in the field, as the ammonia will thus be saved. Various substances furnishing the essential elements were enumerated, and samples were exhibited.

"Fruit Culture—Its Possibilities in Maine" was discussed by Secretary D. H. Knowlton, of Farmington. The outlook is very promising. Maine fruits come at a time when they have a monopoly of the markets, and can command high prices. After urging more extended culture of cranberries and blueberries, the speaker mentioned several striking examples of the profits of fruit culture. But few have been raising apples for market, for more that thirty years. Phineas Whittier, of Franklin county (Maine's "Apple King"), began forty years ago, by the purchase of 90 acres of old rocky pasture for the sum of $400. Mr. Whittier was a poor man and commenced on a small scale, but during the past ten years, his receipts have averaged $2,000

per year. Another man, who grows Roxbury Russetts exclusively, has during the past ten years received an average annual income of $1,000 from his orchard of a thousand trees—only two-thirds of which are in bearing—and fifty per cent. of this is net profit. A large majority of growers have not been raising fruit for market more than fifteen years, and there are now thousands of orchards containing 500 trees, and more, probably not more than half of which are in bearing. The value of orchard lands ranges from $5 to $50 per acre. Even after planting, many owners do not appreciate the value of their orchards, and the price is still low—ranging from $25 to $500 per acre. While the difficulties of fruit raising are not to be ignored, the same skill and industry which make men and women successful in other vocations, will insure eminent success in this line. Maine offers a promising field for the organization of a stock company similar to those operating in Florida and California.

Dr. G. M. Twitchell, Lecturer of the State Grange, advocated the extensive use of poultry in connection with the orchard, as an inexpensive means of keeping up the fertility. Professor I. O. Winslow, of St. Albans, considered swine exceedingly valuable for this purpose, and also as an aid in holding the apple maggot—*Trypeta pomonella*—in check.

"Fruit Growing in Aroostook County" was the subject of a paper by Hon James Nutting, of Perham. Only within a few years has it been thought possible to raise fruit in this region. Of the various kinds first introduced Duchess of Oldenburg is the only one that is wholly successful, though in some localities Alexander and Fameuse do well. A few later introductions have been added and the list of hardy varieties now includes, in order of ripening: Yellow Transparent, Duchess, Tetofsky, Montreal Peach, Wealthy and Dudley's Winter. The latter is a seedling of Duchess, raised by J. W. Dudley, of Castle Hill. The following sorts have been tried and found wanting: Peabody Greening, Red Astrachan, Pewaukee, McIntosh Red, Haas, Gideon, Mann, Early Russian, Talman Sweet and several other so-called hardy varieties. No good sweet apple has yet been found. Of crabs, Hyslop, Lady Elgin, and Lancaster are the only ones that have proved a success. Plum culture is now receiving much attention. Moore's Arctic, which originated at Ashland on the Aroostook River, is the favorite variety, but even this requires laying down in the fall to do well. The strawberry is the only small fruit extensively cultivated. Aroostook valley is as far north as there is any attempt at orcharding, and the 20,000 people in the St. John valley will solve the problem of a market for surplus fruit. Up to the present time there are few enemies to contend with. No borers have been found, and there are very few worms. The greatest insect pest is the green aphis, which infests scions the first season. The only apples badly affected with scab are Fameuse and McIntosh Red.

In the discussion following this paper, E. W. Merritt, of Houlton, said Moore's Arctic is the only plum at all reliable in Aroostook county, but that the conditions seem specially favorable for this variety. Apple trees should not be more than 12 to 20 feet apart, and should have low heads. Limbs should start about two feet from the ground. Attention was called to the Gideon apple, which is a handsome fruit, but is always rotten at the core. Agawam is the most reliable blackberry—Snyder is utterly unreliable.

J. G. Barker read a paper on "Our Homes and How to Improve Them." A love for the beautiful cannot be formed in a few weeks or a few months. It is the work of time, and should be impressed on the minds of the young. Prizes should be offered by horticultural societies for the most attractive homes. Trees and shrubs should be more extensively planted. For climbing roses, give the old Queen of the Prairie and Baltimore Belle a chance. The tulip tree is well adapted for avenues and the lawn. The oaks are exceedingly valuable and should be more extensively planted. More attention should be given to hardy shrubs and less to annuals.

On Thursday, a large delegation from the society visited Bucksport, by invitation of F. H. Moses, the florist who supplies the Bar Harbor trade. Mr. Moses has some 16,000 feet of glass, and his plants show evidences of skill, watchfulness and "gumption."

W. M. M.

# FOREIGN NOTES.

THE DEMAND FOR ORCHIDS in Paris during the past winter has been much greater than the supply.

LONDON FOGS have become so poisonous that in many districts gardening can no longer be carried on.

LAWN GRASS. — The Revue Horticole recommends *Poa trivialis* as the best grass to use in shady places.

A DRY MONTH.—The month of February, 1891, will rank as one of the dryest ever experienced in England.

A STEEL-GREEN ROSE has been obtained by Dr. Bonelli-Turin after continued selection. He proposes to name it the Edison.—*Garten und Blumenzeitung.*

TO DESTROY ANTS in greenhouses, place a rather deep vessel, partly filled with pear syrup, where the ants will easily find it. The following day this will be found full of ants, sow-bugs, and other insects.—*Le Journal des Orchidées.*

PROFESSOR DR. KNY has been appointed to succeed Professor Wittmack as rector of the Royal Agricultural High School of Berlin. Herr Ad. Keller has been appointed head gardener to the King of Saxony, at Moretzburg.—*Gartenflora.*

WINE PRODUCTION IN FRANCE. It has been estimated that the amount of wine produced in France during 1890 is about 603,118,000 gallons, this being an increase of about 92,246,000 gallons over the product of 1889.—*Le Progrès Agricole.*

BAITING THE SLUGS.—A very efficacious method of destroying slugs consists in serving them with beer in earthen pans filled almost to the brim, and sunk in the tan, sand, soil, or ashes. These insects are very fond of that beverage.—*Bulletin d' Arboriculture.*

AZALEA PRINCESS OF WALES. — This is a better flower than A. Deutsche Perle, the petals of which are stained at the base with green. There is a very faint tinge of flesh color at the base of the petals of Princess of Wales. It is one of the best double white varieties for early work.—*The Garden.*

TO REMEDY DRIP IN GREENHOUSES.—Fasten a piece of twine to the top of each rafter of the house and also to the bottom. The water runs down the twine, which acts as a siphon, and is then easily disposed of. This method is particularly adapted to houses having iron rafters.—*A. Van Imshort, in Journal des Orchidées.*

THE PHYLLOXERA has occasioned considerable alarm amongst the vine-growers in South Africa. All farms on which the dreaded pest has appeared, are at once placed under special regulations, and a meeting of growers at Paarl was held recently to consider the advisability of asking the government to send one or two cultivators to Europe for the purpose of studying the phylloxera question. Experts from Europe were described as a failure in dealing with the insect on South African soil. A determined effort is to be made to stamp out the pest.—*The Gardeners' Magazine.*

THE INTERNATIONAL EXHIBITION AT ANTWERP, this year, should prove of more than ordinary interest to the botanist and scientist. There are three sections, all bearing upon plants from various aspects. Those who require information about this exhibition, which will be held in August and September next, in L'Athénée Royale, Place de la Commune, should write for prospectus and rules. All except the microscopical division will be dealt with by M. Ch. de Bosschère, president of the executive committee, Lievre-lez-Anvers. Those interested in the microscopical department should write to Dr. H. Van Heurck, Botanic Gardens, Anvers.—*The Gardeners' Magazine.*

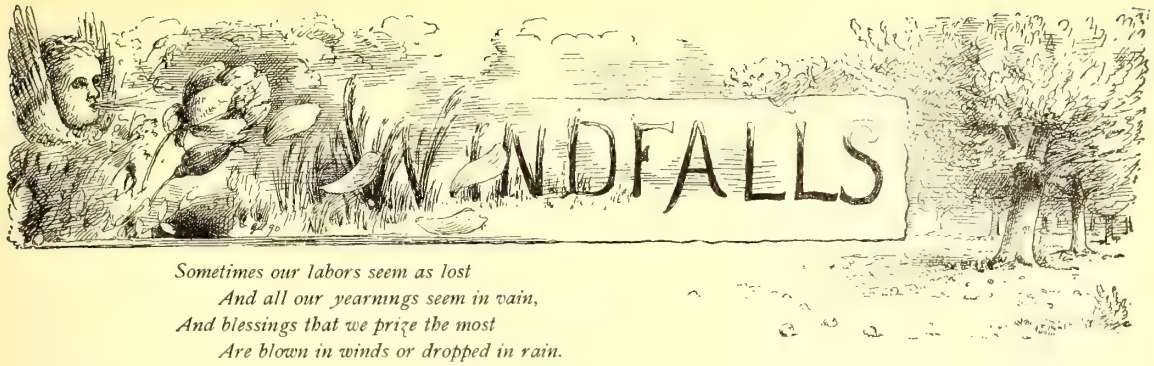
OBITUARY.—E. R. Cutler, secretary of the Gardeners' Royal Benevolent Institution, died February 24, aged 72 years.

Frank Casey, a prominent English nurseryman, died February 26, aged 55 years.

Dr. Maximowicz died February 16, at St. Petersburg. This scientist has long been well known, especially to botanists. The flora of Japan was carefully studied by him, and at the time of his death he was engaged on the floras of Tibit, Central Asia and Mongolia. His collections from these regions are rich and valuable.

William Richards, for twenty years the publisher and business manager of *The Gardeners' Chronicle*, died March 11, aged 44 years.

MARKETING FRUIT IN GERMANY.—A method of marketing fruit which originated in Schleswig, but which has extended to many other parts of Germany, has proved successful in securing buyers against a bad article, and in giving an opportunity for good growers to make sales of a good article. Samples of various fruits are placed in dishes for exhibition in a salesroom by growers, who are prepared to furnish various kinds. The buyer has only to write his name and address on a card, with the quantity he wishes, and leave it at the central office, with the number of the plate. The order is then forwarded from the office to the grower, who in turn delivers his goods there. Here the fruit is inspected, and if it comes up to the sample in quality, it is forwarded to the buyer. If it proves inferior it is returned at once to the grower. A grower who on three occasions furnishes goods inferior to samples is excluded from the market. The office receives 10 per cent. commission for inspecting, forwarding, etc.—*The Garden.*




*Sometimes our labors seem as lost*
*And all our yearnings seem in vain,*
*And blessings that we prize the most*
*Are blown in winds or dropped in rain.*

Showers are singing, clouds are flowing,
Ocean thunders, croons the rill.
Hark! the West his clarion's blowing!
Hark! the thrush is fluting shrill,
And the blackbird tries his trill,
And the skylark soars to sing!
Even the sparrow tunes his quill.
'Tis the Symphony of Spring!

—*Henley.*

**Chestnut Orchards.**—Several parties in New Jersey are preparing to graft large areas of natural chestnut suckers in timber clearings with Numbo, Paragon and other large varieties, with a view to creating chestnut orchards of them.—SAMUEL C. MOON, Penn.

**Piece Roots and Whole Roots.**—T. V. Munson speaks as follows in *Texas Farm and Ranch* concerning the relative merits of piece and whole roots for apple trees:

"During the last 20 years I have grown some hundreds of thousands of apple trees from cions set upon 2 to 2 ½-inch pieces of roots, and in nearly every block of such trees have had a solid stand, in which 80 to 95 out of every 100 would grade No. 1. They were always well-rooted, and often my one year trees would stand 5 to 6 feet, many with well formed heads, and two-year trees have frequently been 6, 7 and 8 feet, well headed and stocky, some producing much divided, shallow spreading roots; others few, strong, deeply penetrating roots, according to variety grown."

"After carefully considering the principles involved in the growth of the apple, and all the evidence from practical sources bearing on the subject, I grow trees from vigorous cions grafted on pieces of vigorous roots, simply because I am satisfied that I furnish my patrons better trees than can be grown on long pieces, or even whole roots. The difference in cost is not worth considering."

**Gooseberries in Southwestern Michigan.**—"Can gooseberry growing be made profitable in this vicinity?" brought out the following discussion before the West Michigan Fruit-growers' Society:

J. G. Ramsdell: The Downing rarely drops its leaf, while Smith does sometimes. Several others, including the Industry, are hardly worth planting. They mildew badly. Drouth seems to be most severe on gooseberries, and seems to affect the Downing least of all. This variety seems best for all purposes in this vicinity.

A. Hamilton: The gooseberry has been in the past profitable; but now there seems to be a disposition to plant largely, and I fear it will be overdone. A few years ago crab-apples were in great demand, but now the price is so low that it does not pay to ship.

J. L. Hopkins: The supply of gooseberries is very great now, but the demand is so great that if one-half the land on the lake shore were planted to gooseberries, there would be none too many. The Downing is preferred.

J. C. Gould: I think no fruit except pears should be picked green. It injures the market, and all fruit is better ripe than green.

E. C. Reid. As to the gooseberry, there is a growing liking for the ripe fruit, but green gooseberries are very nice for sauce and preserving, and they can be sent even to the Rocky mountains. I have the Smith Improved, which dropped its leaves somewhat last year, but is a thrifty, strong grower, with fruit of excellent quality.

W. A. Taylor: It makes some difference as to the soil on which the gooseberry is planted. The Houghton does well on light, sandy soil. The Downing will sometimes mildew on heavy soil.

H. Chatfield: I think California will take lots of our gooseberries. They cannot raise them there—it is too hot. Colorado will take quantities, and it is one of the best fruits we have for canning or preserving.

**Japanese Fruits.**—J. L. Normand, Marksville, Louisiana, writes as follows to the New Orleans *Times-Democrat*, concerning the Japanese fruits which he has introduced:

*Kawachi orange*, the largest of all Mandarins, and fully as hardy as the Satsuma or Oonshiu.

*Japan walnut*, a small nut, but very prolific.

*Bougoume plum*, the earliest of all Japan plums; ripens the 10th of May in this latitude. It blooms with the Kelsey; fruit about 5⅛ inches in circumference, of a beautiful golden yellow. Tree a vigorous grower and a profuse bearer. This variety was imported by ex-Gov. Hubbard, of Texas, while minister at Japan under the Cleveland administration.

*Hattonkin No. 2*, a fine plum on the order of the Kelsey, but much earlier.

*Hanayuma*, not yet fruited with me. Brought over by ex-Gov. Hubbard from Japan.

*Japan apricot*, the earliest, the largest and best flavored of all apricots; a valuable acquisition; no doubt will be largely planted throughout the Gulf states. It is

grandest of all Oriental fruits. Was brought over by the ex-Governor.

*Burbank*—This is a fine variety, which I have fruited. Described as follows: The fruit is usually from 5 to 5½ inches in crcumference, and varying less in size than any other Japan plum; nearly globular, clear, cherry red, with a thin lilac bloom; the flesh is a deep yellow color, very sweet, with a peculiar and very agreeable flavor. The tree is a vigorous grower, and large and rather broad leaves; commences to bear usually at two years old. This plum was named by H. E. Van Deman, chief of the U. S. Department of Pomology, in honor of the introducer.

*Japan Cherry* (dormant bud)—Not fruited yet with me; a vigorous grower on the Mariana plum stock.

*Hattonkin No. 1.*—A beautiful straw-colored plum, twice the size of the Wild Goose, and ripening the latter part of May; a delicious plum, and will become very popular when better known.

I now have thirty varieties of Japanese plums in my orchard.

**The Kawachi Orange,** which was illustrated in the February issue (page 119) promises to be a valuable fruit. A specimen sent to us was sweet and pulpy, although too green to enable us to judge fully of its merits.

J. L. Normand, of Marksville, Louisiana, the introducer, considers it an acquisition.

**New Michigan Grapes.**—C. Engle, of Paw Paw, Michigan, has made a careful endeavor for many years to procure new varieties of fruits. His best new grapes are thus described by one of our leading pomologists.

*Herta*—Bunch medium, compact; berry black with a reddish tinge, large, round, juicy, sweet; pulp rather tough, slightly foxy; season medium; good.

*Elaine*—Bunch rather loose; berry medium, dark purplish red, with bluish-white bloom, juicy, very rich, sweet, sprightly; pulp very tender; aftertaste, astringent; very good; early.

*Pulpless Black*—Bunch slightly loose; berry medium, round, black with blue bloom; skin thin; juicy, vinous, high flavored, rich, sprightly, nearly pulpless; very good to best.

*Honey*—Bunch rather small, loose; berry round, white, almost translucent; bloom thin, whitish; skin thin, tough, astringent: sweet, pleasant, not rich; pulp tender; good.

*Iris*—Bunch above medium, long, compact; berry above medium, round, dark amber; bloom thin bluish; skin rather thin, firm; pulp slightly tough; meaty, slightly astringent, rich, foxy; good. Berries were dropping from the stems.

*Vesta*—Bunch above medium, long, shouldered, rather compact; berry greenish white, with whitish bloom, large, round; skin medium, juicy, vinous, rich, slightly acid at center; pulp tender; very good.

*Metis*—Bunch rather small, short, not very compact, sometimes shouldered; berry medium to large, dark red with whitish bloom; skin thick, juicy; flavor high, vinous; pulp rather tough; good.

*Guinevra*—Bunch large, long, very compact, sometimes shouldered; berry above medium, round, pale, greenish white, with whitish bloom; skin thick, tough; juice vinous, rather acid (perhaps not fully mature); pulp rather tough; scarcely good.

*Michigan*—Bunch long, sometimes shouldered, compact; berry medium or above; greenish or yellowish white, with whitish bloom; juice sweet, vinous, sprightly, rich; pulp tender slightly astringent; very good.—*T. T. Lyon*, in *Allegan (Mich.) Gazette.*

**Sizes of Peach Baskets.**—The following is part of a discussion before the South Haven and Casco (Mich.) Pomological Society: After the report of the committee there was a lively discussion, some expressing surprise that the honest fruit grower should still persist in trying to cheat the consumer with small packages, against the law and common honesty, by saying the consumer could not tell the difference between fourth and fifth bushel baskets and the grower got the same price for each. It was agreed that if we stamp ours "full pecks," with our name as a guarantee, we could sell them quicker when side by side with the fifths and for a better price. The commission men are already pointing out the difference between the fourth and fifth baskets to their customers.

Some propose that the manufacturer stamp the package "full peck," for we are not ashamed to stamp on our goods just what they are and put our names to it.

The cost of shipping a bushel of peaches was considered, and for basket, tarltan, freight and drayage it cost us just ten cents more for a bushel in the fifth packages than for one in full pecks, and the price from numerous instances was just the same per bushel. Some thought we might reduce expenses by leaving off the tarltan, but it was shown that at present the tarltan was necessary to hold the peaches in place and it also improves the appearance of the package.

**Japanese Fruits.**—I am much interested in Professor Georgeson's articles on Japanese fruits, and I want to know who is to introduce them into this country.—B. B. *Illinois.*

[Some concerted effort should be made to obtain all the promising fruits of eastern Asia. Many of the species are now upon our markets, but the best varieties of some of them are probably entirely unknown to us. The Government could afford to introduce them, and it might even pay a commercial establishment to make an effort to bring in a complete list. The ornamental plants are quite as important as the fruit plants. There is at present a great interest in Japanese plants, and we should like to see an effort made to introduce them.]

**Should be Better Known.**—The following discussion took place before the last meeting of the Michigan Horticultural Society:

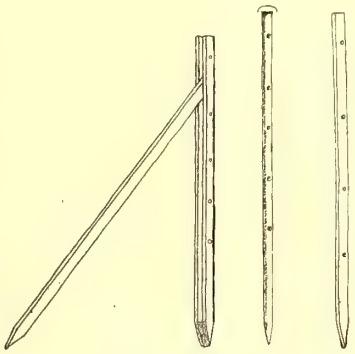
Professor Tracy: Sugar beets are simply sweet. They have not fine flavor and are not best for the table.

Mr. Reid: The Scarlet Horn carrots should be more generally grown for the table. They are best while young, and are then a real delicacy. Kale is another vegetable too little known. It's culture is simple, its growth strong, and, cooked as cabbage, its flavor is delicious.

Professor Taft: It is as good as cauliflower and more easily grown than cabbage.

Professor Tracy: Swiss chard is a vegetable which also has not the attention it deserves. There is no vegtable I like better. The beautiful, white leaf-stalks are the part eaten, and whether dressed like asparagus or put into pickle, it is very fine. Like all other vegetables, it should be put, for cooking, into hot and slightly salted water. Savoy cabbages are very superior in flavor to the other varieties. They are greatly preferred in the New York market, and have been much improved under American cultivation, both in size and flavor.

**Iron Grape Posts.**—The rough surface of wooden posts serves as a most excellent place for the lodgment of the spores of the numerous fungi that attack the grape. Many of these spores, doubtless pass the winter safely in the cracks of the post and here they are perfectly sheltered from the various dressings that are used to destroy them. The timber, when it begins to decay, also offers a safe harbor for many injurious insects. I believe it would be far better to substitute iron piping for the wooden posts that are so generally used. These iron posts would cost more in the beginning, but after a few years they would more than pay for themselves. Anyway they would be far cleaner and would allow a freer circulation of air through the vineyard. These iron pipes need not exceed one and a-half inches in diameter, and should be about seven or eight feet in length. The top of the post should be fitted with an iron cap and small pipes of the proper size should be screwed through the posts to serve for the passage of the wire. The posts should be pointed at the lower end and thus no insects or moisture could possibly get inside; and if the outside were tarred or galvanized, such posts would outlast a lifetime.



THE IRON POST.

If these iron posts are not practicable in the vineyard I am sure they would be the means of great saving in the growing of tomatoes, raspberries and similar plants. For these plants the pipes need not exceed three-quarters of an inch in diameter. Instead of pipes, iron bars might be used for growing tomatoes. These bars should be about a quarter of inch thick, and about one and one one quarter inches wide, and they should have holes bored through them about one foot apart for threading the wires. Instead of holes, notches might be cut into the bar, but by this latter method, although saving time when erecting the trellis, the bar would be considerably weakened. At the end of the rows three bars should be used; two side by side, with the third between for a brace; or a bar might be especially constructed for use as a brace.—H. W. SMITH, *La.*

**Tomato Recipes.**—FRIED.—It happens frequently that our "modern conveniences" render the genuine broiling process inconvenient, and in such cases a tolerable substitute may be prepared as follows:

Select your tomatoes as for broiling. They must be ripe and sound, and of nearly equal size. Cut off a slice from the "stem end," and take out the hard core, as already described. Lay them, cut side down, in a skillet well greased with butter or beef drippings (the latter is preferable), and of proper heat for frying. Cook gently for about five minutes, then turn carefully, so as not to break the tomatoes. The cut sides are now on top, so they may be sprinkled with salt and pepper. The frying is then continued. To prevent scorching, a large spoonful of cold water must be thrown in from time to time as it evaporates. Too much water will cause the tomatoes to boil, and will break the skins; and if permitted to fry dry, they will burn and stick to the iron.

In about twenty minutes take them from the skillet, adding a little butter to each tomato.

BAKED.—Select and prepare exactly as for broiling or frying. Arrange with the cut sides on top in a buttered baking-pan. Salt and pepper, and set in a well-heated oven. Bake for half-hour, and then transfer, without breaking if possible, to a platter or dish, where the gravy is poured over them. A sprig or two of parsley may be laid around each tomato as a garnish. The tomatoes themselves may also be used as a garnish for meat baked in the same pan or separately.—*Ex.*

**Essentials of Cauliflower Culture.**—"*Of all the flowers of the garden I like the cauliflower best.*"—DR. JOHNSON.

There is no vegetable, the cultivation of which in this country is regarded as more difficult and uncertain than that of the cauliflower. The conditions of success however, though imperative, are very simple:

1. *Climate.* It is useless to attempt to grow cauliflowers in a dry hot climate, without irrigation. This applies particularly to the climate or weather at the time they are expected to head. While growing, cauliflower plants will stand nearly as much dry weather as the cabbage. But if the heading takes place in dry hot weather the result is apt to be loose, leafy, sun-burnt heads, strong in flavor and unattractive in appearance. On the other hand, unless the weather and treatment are such as to maintain an active growth through the summer months the plants will fail to be far enough advanced to head at all.

2. *Soil.* This cannot be too rich. Cabbage will produce small heads even in poor soil, but cauliflower in such a soil will generally fail to head at all. In soils supplied with an excess of vegetable matter, or with nitrogenous manures, cabbages often form coarse soft heads, but cauliflowers thrive best and produce their

finest heads in such a soil. The nature of the soil required, depends somewhat on the climate—if that is perfect almost any soil will do, providing it is rich. Otherwise the soil must be depended on to overcome as far as possible the defect in climate. For this purpose the soil should be deep and cool, and of a somewhat loamy nature, in order to retain moisture. It ought not to be heavy clay, for on such a soil the crop will be apt to grow too late.

*Varieties.* These differ mainly in earliness and in the certainty with which they can be depended on to head at a given time. Some varieties head fairly well in hot weather, providing the soil is moist, but most kinds either fail to head at all at such times or they form inferior heads. All varieties head much the best in cool damp weather when the soil is also moist. For this reason varieties should be chosen which will head at such a time. In this country, at the north, the spring is so short that it is very difficult to get even the earliest varieties to head before the hot weather comes on, and on this account the fall crop is the most generally grown at the north. For this crop the half-early sorts, such as Early Paris, are most popular. These, if started at the same time as late cabbage, and treated in the same manner will, if the soil and weather are good, form their heads during September and October. With professional growers the extra early sorts, started in midsummer, are often used for a fall crop, but greater care is required to start the plants so late in the season and obtain a successful result.

There are comparatively few portions of the country exactly suited to the growth of cauliflower, but in these localities it is quite as safely and easily grown as cabbage. Among the most favorable localities yet discovered are the north shore of Long Island, a few places on the Great Lakes, one or two localities on the Gulf of Mexico, and the Upper Pacific coast in the neighborhood of Puget Sound. There are other sections but slightly superior to these, and indeed almost everywhere that ordinary crops can be grown, there are spots where the soil is such that in most seasons this excellent vegetable can be grown successfully.—A. A. CROZIER, *Michigan.*

**Moles.**—In THE AMERICAN GARDEN for March the experiments of Theodore Longnecker are given as showing that moles do not eat vegetables, corn included. I, with hundreds of farmers here, especially before the advent of the corn planter, have found that in replanting corn, wherever the mole passed through the hill, the corn would be missing, and when it missed the hill, the corn would be in place, the "runs" often following directly in the row for rods at a time. Now, we cannot say that the mole ate the corn, but we will certainly hold it responsible for disposing of it in some way, the circumstantial evidence in the case being rather conclusive, as any one will admit.

Yet I have never been able to poison moles in any way tried, and am inclined to think that ordinarily they do as much good as harm.—B. B., *Sangamon Co., Ill.*

**Gardening in the Ninth Century.**—Below I give an extract from a capitulary, supposed to be of Charlemagne, at the beginning of the ninth century, stating the herbs and trees he required to be cultivated in his gardens. I think it will interest the readers of THE AMERICAN GARDEN to see what herbs and fruits were cultivated in the gardens of the wealthy 1,000 years ago. The names are, many of them, in barbarous latin, some of them I have not been able to identify. The Emperor desired his servants to have in his gardens:

| | | | |
|---|---|---|---|
| Lilium | Lily. | Sabinam | Savin. |
| Rosas | Roses. | Anetum | Dill. |
| Fenigræcum | Fenugreek. | Faniculum | Fennel. |
| Costum | A bitter root. | Intubas | Chicory. |
| Salviam | Sage. | Diptamnum | Dittany. |
| Rutam | Rue. | Sinapi | Mustard |
| Absotanum | Southernwood. | Satureiam | Savory. |
| Cucumeres | Cucumbers. | Sisimbrium | Watermint. |
| Pepones | Pumpkins. | Mentam | Mint. |
| Cucurbitas | Gourds (squashes?). | Mentastrum | Wild mint. |
| | | Tanaritam | ? |
| Faseolum | Kidney Beans. | Nepetam | Catnip. |
| Cuminum | Cumin. | Febrifugiam | Centaurea. |
| Rosmarinum | Rosemary. | Papaver | Poppy. |
| Carvum | Caraway. | Betas | Beets. |
| Cicerum Italicum | Chick Pea. ? | Vulgigina | ? |
| | | Bismalvas, *i. e.* | |
| Squillam | Squills. | Alteas | Marshmallow. |
| Gladiolum | Sedge. | Maloas | Mallows. |
| Dragontea | Tragacanth. | Carencas | ? |
| Anisum | Anise. | Pastinacas | Parsnip. ? |
| Coloquintidas | Colocynth. | Adripias | ? |
| Solsequium | Sunflower. | Blitum | Spinach. ? |
| Ameum (Amium ?). | An umbelliferous plant like Cumin. ? | Ravacaulos | Turnip Cabbage. |
| | | Caulos | Cabbage. |
| | | Uniones | Onions. |
| | | Brittas | ? |
| Silum | ? | Porros | Leeks. |
| Lactucas | Lettuce. | Radices | Radishes. |
| Git | Roman Coriander. | Ascalonicas | Shallots. |
| | | Cepas | Cives. |
| Erucam albam | Colewort. | Allia | Garlic. |
| Nasturtium | Nasturtium. | Wacentiam | ? |
| Bardanam | Monk's Rhubarb. | Cardones | Artichokes. |
| | | Fabas magores | Horse Beans. |
| Pulegium | Penny Royal. | Pisa maurisca | A kind of pea. ? |
| Olisatum | ? | Coriandrum | Coriander. |
| Petroselinum | Parsley. | Cerefolium | Chervil. |
| Apium | Celery. | Lacteridas | ? |
| Levisticum | Lovage. | Sclarejam | ? |

And the gardener shall have at his house

Jovis burbam . . . . . Silver-leaved wood blade.

Of trees, we desire that he shall have fruit trees of different kinds:

| | | | |
|---|---|---|---|
| Prunarios diversos | Plums, varieties | Avellanarios | Filberts. |
| Sorbarios | Service berries. | Amandalarios | Almond trees. |
| Mespilarios | Medlars. | Morarios | Mulberries. |
| Pirarios diversos | Pears, varieties. | Lauros | Laurels. |
| | | Pinos | Pine trees. |
| Castanearios | Chestnuts. | Ficus | Figs. |
| | | Nucarios | Nuts. |
| Persicarios diversi generis | Pears, varieties. | Ceresarios diversi generis | Varieties of cherries. |
| Cotoniarios | Quinces. | | |

Some of the names of apples.

Gormaringa. Crevedella.
Geroldinga. Spirauca.
Dulcia.

*Toronto.* W. P.

**The Cover.**—The cover represents the French Globe artichoke as it comes into the New York markets. It is the unexpanded flower-head of a thistle-like plant (*Cynara scolymus*). These chokes are eaten raw or are boiled or cooked in various ways.

**Hard Work.**—The older readers will probably remember Parepa and her glorious voice. To have heard her sing "I know that my Redeemer liveth," is an event to be remembered ever afterwards. After one of her matchless renderings of Handel's masterpiece, a young girl went to her and said, "How can you sing like that?" "My dear," said Parepa, "it is by hard work!" 'Tis only by hard work that success can be had in raising flowers by amateurs. My callers say: "Sister Gracious can make anything grow. I believe she could whittle a stick, put it into the ground and it would take root." But these see the flowers on the plants, and not the constant daily care—the going over them every morning, loosening the earth in one pot, picking off the dead leaves on something else, snipping off the ends, digging for worms, killing the insects, sponging the leaves, visiting them the last thing at night when it is very cold to see that every possible avenue to let in the wind is stopped, to watch the thermometer to see that it is not too warm. All these things, and more, the plant lover sees to, and instead of being "a bother" it is a loving and healthful service, and her reward is, that her pets will bloom, in spring, summer, fall, and even in the darkest days of winter.—SISTER GRACIOUS.

THE "MAN OAK."

**Tools for Women.**—In the long waiting for the gardening time to come, it is worth while to think of proper tools. A light shovel is a necessity, also hoe, rake and weeders. A weed cutter for thistles and dandelions is handy for stout people, as one does not have to stoop over so much. But, I hear my friends say, "I can't afford these new fangled things." For answer, go into some of the large candy stores and see the crowds of women, rich and poor, buying the sweets. "It's only ten cents here and ten cents there, not enough to buy costly tools." But the ten cents here and the ten cents there spent for candy would soon fit one out with every desirable instrument for the garden, and lots of plants besides. Said a candy merchant to me: "Our sales of candy in the busy season amount to over a ton a day." Imagine a seller of garden implements disposing of a ton's weight of light shovels, hoes, rakes and weeders to a crowd of eager women jostling one another to be served first, all in one day. The editor of THE AMERICAN GARDEN would not be able to fine type large enough to express his surprise and joy at such a grand advance in garden lore. But seriously, if we women would put by our dimes and nickles spent at the candy counter, put the amount in light garden tools and *use* them daily, our usual white pasty complexions and general debility would give place to ruddy cheeks and strong arms and backs.—SISTER GRACIOUS.

**The "Man Oak" at Elmwood, Conn.**—James Shepard, of New Britain, Connecticut, sends us the following account from a local paper of a peculiar tree near that place: "Not far from the railroad tracks at the Elmwood station is a curious oak consisting of two dis-

tinct trunks as it leaves the ground, but which finally comes together and are united in a single trunk as smooth and round as the trunk of any tree, and without any visible seam. The members of the double trunk are not, properly speaking, limbs, and the complete trunk may well be termed a two-legged trunk, and from this fact it is called the "man oak."

"The tree is *Quercus rubra*, or red oak. The space between the two trunks is ten inches wide at the widest place and seven and one-half feet high, the total height of the tree being about forty-five feet. As viewed from the southeast, the right trunk is sixty one inches in circumference and the left one fifty-eight and one-half. Both, in cross section, are in the form of a flattened oval with the flattest sides confronting each other. The longest diameter of the right trunk is twenty inches and that of the left is twenty-three. The left trunk has begun to decay at the roots and is partially hollow. The right trunk, however, is perfectly sound, and even if the left trunk should cease to grow, the tree would undoubtedly be supported by the right trunk and thrive for years. Oaks do not often sprout from the roots, and no doubt this tree comes from two separate acorns and when young was two distinct trees, growing side by side, until from some unknown cause they came together and were literally "joined in one." The trunks stand somewhat obliquely to the track, and for that reason are best seen when coming from Hartford. sitting on the left hand side, and may be seen when coming from the cars of either the New England or Consolidated road."

**Prevention of Floods.**—The Jamestown (N. Y.) *News* proposes the following simple series of reservoirs to catch and hold back the water which, in consequence of forest denudation, swells the streams and causes the annual spring floods :

"Every one who has been at all observing has noticed the fact that the highways, and especially those upon the hills, are the easiest and most practical routes to the streams in the valleys, and that in a rain-fall they form the natural conduits for the waters in their drainage area. The more the road is cleared up and "improved" the more rapid becomes the precipitation, the sluice ways at either side of the track often representing miniature rivers. When we consider the vast area given over simply to the roadways, and then take into account the contiguous territory drained, it will be seen that if this water could be held in check, as it was wont to be when the forests decked the hillsides, the problem of the floods would be solved. More than this, the roadways themselves would no longer be cut up and destroyed, causing a vast annual expenditure to keep them even passable.

"All that is necessary is to adopt a system of underdrainage by means of earth reservoirs, retaining the waters for a period and allowing them to reach the lower levels by percolation, instead of tumbling down the hillside and doing damage from the moment they fall until houses and lives are sacrificed to the floods in the lower river countries.

"The average annual rain-fall in this state and Pennsylvania is less than six inches, and a large share of this falls in the five months beginning with May. Assuming, for the sake of demonstrating our plan, that one-half of this amount, or three inches, should fall at a single precipitation, we find that a piece of road fifty feet wide, by the same distance in length, would receive 625 cubic feet of water. Suppose, then, beginning at the summit of a hill road three rods (practically fifty feet) wide, we measure down the hill fifty feet and cut a ditch entirely across the road five feet wide and ten feet deep. This would give us a reservoir capable of holding 2,500 cubic feet of water, or four times the amount that could fall on this piece of ground. This ditch could not, of course, be kept open, so we would fill it loosely with large rocks, old stumps, logs, furnace slag or other coarse material, occupying as little of the space as possible, giving the whole a top dressing of cobble stones and coarse gravel. This reservoir would hold all the water of the drainage area above, and the operation could be repeated fifty feet below and so on down the hill. The momentum of the water flowing over fifty feet of space would not be large and it would all sink into the bed of gravel and cobble stones before it could run over five feet, leaving the road to be dry and in good condition as soon as the shower was over."

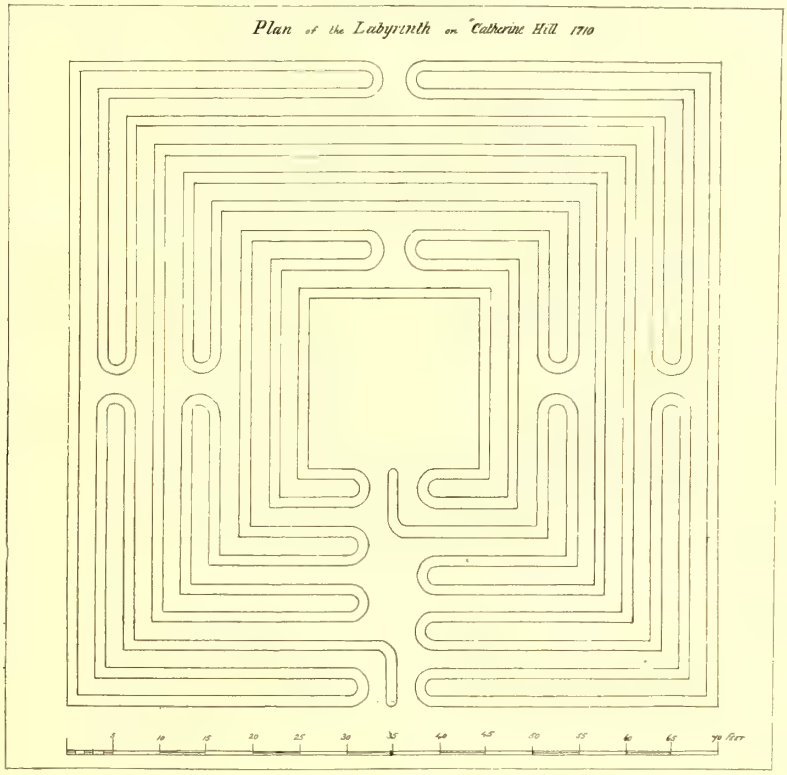
**Cultivating.**—The cleaner and the better in tilth the soil can be kept the thriftier the growth. In the garden it is very essential to keep the soil loose and mellow. It is also an advantage to keep the soil reasonably level. Of course, good drainage is necessary in the garden, but this can be secured much more readily by providing means either for good under drainage, or to get rid of the surplus moisture by surface drainage, and it is only in exceptional cases that it will pay to resort to what may be termed hill cultivation in order to afford drainage.

Keeping the soil level affords a much better opportunity of giving repeated cultivation than is possible in any other way, as the cultivation can be repeated as often as may be necessary to secure the desired results.

Of course, the kind of implement used must, in a measure, determine the amount of labor required, but as a rule the implement used should be something that will stir the soil thoroughly and at the same time economically. But thoroughness should be the first consideration. Keep fine and mellow and level, stirring repeatedly. One of the best gardeners I know does a considerable part of his work early in the morning, while the dew is on, thinking that this is much the best time.—N. J. SHEPHARD, *Mo.*

**Black-Knot.**—A recent bulletin from the New Jersey Experiment Station on the subject of black-knot by Dr. Halsted is very opportune. It is a subject that well deserves legislative enactment. The *Plowrightia morbosa* is not so severe in the west as it is in the east, at least so far as cultivated plums and cherries are concerned, though it is on the increase especially on *Prunus domestica*. In the west, especially in Iowa, Wisconsin and Minnesota it attacks with preference the choke

cherry (*Prunus Virginiana*), then the wild plum (*Prunus Americana*), followed by the wild black cherry (*Prunus serotina*), and the cultivated European plum (*Prunus domestica*). Near Ames, Iowa, and La Crosse Wisconsin, I have seen large trees of *Prunus serotina* totally destroyed by the fungus. But in every locality where *Prunus Virginiana* grows the black-knot is almost certain to accompany it. Not so with *Prunus serotina*. There are many localities in both Illinois and Missouri where it does not occur on that herb, but when it does occur it brings destruction about in a short time. In Texas, I have found it very severe on *Prunus chicasa*. In Iowa, I have not seen it on that herb, nor does it occur on the cultivated cherry so far as I know; on the other hand it has been found on the apricot, here at Ames. Should it become at all common on that plant it would become a serious question in some parts of the United States. Why it has appeared on the apricot on the college grounds, no other reason can be suggested than that of severe pruning, and that possibly it may have been carried over from plum trees. It would seem advisable therefore for those who remove black-knot with a knife to be somewhat cautious. If once common on the apricot may it not also adapt itself to the peach as it has on the cultivated cherry and plum ?—L. H. Pammel, *Iowa Agricultural College.*




An Old Maze.

**An Old Maze.**—The diagram shows the maze on St. Catherine's Hill, Winchester, England, from a plan made of it in the year 1710. The maze has been recut in the turf several times since then, but the plan is unaltered. St. Catherine's Hill, called "Hills" by the boys of Winchester school, is about a mile from the college. On holidays the boys used to go thither, walking two and two, with the prefects or senior boys on the watch to see that they did not stray. The top of Hills is nearly encircled by a broad deep entrenchment, of Danish or British origin, forming a boundary which no junior was allowed to pass. Within this boundary the boys amused themselves until it was time for them to go home again. One of their amusements consisted in treading the maze, which has existed from time immemorial behind the clump of trees on the top of Hills. The tradition is, that it was cut in the turf by a boy of the school, name and date unknown, who was kept back when the rest went home for the holidays as a punishishment for some breach of school discipline. Some have identified him with the nameless boy, who, being chained to a pillar, or according to another legend, to the tree called Domum tree on the way to Hills, during the holidays, wrote the well known song "Dulce Domum" and then died. These legends must be of some antiquity, for they are mentioned in the "Gentleman's Magazine" for the year 1796. There was some sort of a maze called "Rosamondesboure" (Rosamond's Bower) in the garden of the college as early as the year 1410, from which this maze may have been taken But nothing is certainly known about it; nor do I know more than I have already told about this very interesting and ancient maze on Hills. — Thomas F. Kisley.

**Peach Tree Borer.**—It is the general belief that this borer works only at the base of the peach tree or other trees on which it works. Having examined many trees and finding the larvæ as often on the main branches four or five feet from the ground, I have concluded that the female must lay her eggs as often in the higher portions of the tree as she does near its base. Saunders says:* "Nor does the insect always confine itself to the base of the tree; occasionally it attacks the trunk farther up, and sometimes the forks of the limbs." I do not believe that the larvæ pupate in the soil under the tree, but in the burrows or crevices under the bark. I have found pupa in their cocoons in the crevices of the bark three and four feet from the soil.

* Insects Injurious to Fruits, p. 193.

This borer is easily prevented from killing trees. It never bores deep into the wood as it lives only on the cambium layer and sap wood. It is easily removed when once in the tree with a sharp knife and a good sharp tree scraper. They should be removed in the fall, winter or early spring. It is a good winter job when the weather is mild. After scraping the trees during the winter, apply a thick paint in May and June, made with ingredients in the following proportion: one quart soft soap, four ounces sal soda; apply first coat May 1, and second coat on June 1. Apply on a clear, drying day and the paint will dry quickly and form a glistening coat. The female appears in the north as early as May 20, and possibly earlier. The first coat will prevent the earliest from depositing their eggs, and as the first coat will gradually wash off, the second coat a month later will replace the first in time to continue the protection through the remainder of the ovipositing period. This wash will also prevent the attacks of the flat-headed and round-headed apple tree borers which often attack the peach tree, and also will destroy lichens and protococus that live on the body and branches.

If the above wash is persistently used every spring, smooth healthy bodies and branches of the trees will be the pleasurable result. Wood-ashes makes a good substitute for the sal soda.—Thos. L. Brunk, *Maryland Agricultural College.*

**Four Palms for Everyone's Use.**—First on the list of palms for general purposes comes *Latania Borbonica*, commonly known as the fan palm. This plant will stand more rough usage than any other palm, and can be used as a vase plant in summer if not exposed to the full sun; and to keep it looking well it must not be allowed to get too dry at the root. It is a rapid grower and soon makes a large plant; it should be grown in a rich fibrous loam, lightened with a little sand The drainage should be good, for although it enjoys a liberal supply of water, the soil must not be allowed to stagnate. It prefers a warm greenhouse, but will do well anywhere the glass does not fall below 45°. They are multiplied by seed. The latanias are characterized by the male and female flowers being produced on separate plants, the former being produced in abundance upon the spikes, whilst the females are less plentiful. The fruits are three-seeded, each inclosed in a hard shell.

The kentias are amongst the most useful greenhouse palms and make splendid house plants. They are handsome robust plants, with graceful pinnate leaves. They are very useful for decorative purposes, and are easily grown in an ordinary greenhouse, giving them the same treatment as the *Latania Borbonica.* They are increased from seeds. The varieties which are the best for general use are *K. Belmoreana* and *K. Forsteriana.*

*Areca lutescens* is an exceedingly beautiful palm, with pinnate, arching leaves, the stem perfectly smooth, yellow in color, and mottled black. It is of a very graceful habit, and one of the best palms for table decoration. They do better with more heat than the latania or kentia, therefore should be kept in the warmest part of the conservatory. Care should be taken not to allow the direct rays of the sun to strike this palm, as its foliage burns very easily. If your greenhouse is cool, water sparingly in winter, of course, not allowing it to get dust dry. If the house is cool and the areca gets too wet, the foliage turns yellow. Use light rich loam with a little peat mixed in it, and give plenty of drainage.

The phœnix or date palms are very useful greenhouse palms. They are elegant and compact growing palms, with long pinnate leaves, the pinnæ long, and in some species reduced to spines at base of leaf stalk. They are rapid growers and soon make large specimens. They make splendid plants for vases, as they stand the sun well. They like a rich loam with abundant drainage. *P. reclinata* is one of the best of the species; it is a fine greenhouse plant and will stand the sun and wind in the open air better than most palms.—J. S. Taplin.

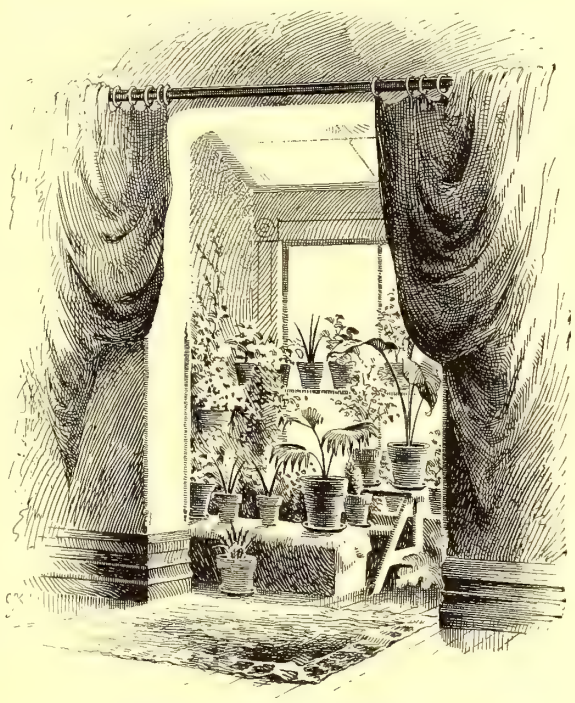
**Notes on Flower Culture**—Old Sorts.—Plants of difficult cultivation, or new, often costly, varieties, are not, in the main, the best for general cultivation, however beautiful and admirable they may be; nor are the old varieties always eclipsed by them. A perfect forest of old-fashioned and hardy flowers, with excessively bright and variegated hues and sweet fragrance profusely blended together, may be had about the humblest cottage; for it may be said of such that they are not respecters of persons or things, nor hesitate to ask for whom they are to grow and exhibit their charms.

However, with some knowledge of the business and proper care, most of the less hardy plants, or those of difficult management, may be successfully cultivated. The essential points with all are proper soil, moisture, warmth, air and light.

A room without sufficient ventilation, or a window too much exposed to the glaring sun, often prove injurious, especially to the less hardy plants. The air in a close room is soon exhausted of its vitalizing principles by plants placed therein, and they suffer in consequence as animals do similarly situated. To place tender plants, especially, in a window exposed to the meridian rays of the sun, closed within, as is often done, with bright curtains, is to place them, as it were, in the focus of the heat reflected from all the sunlit surface around them, and without free circulation of fresh air to lower the temperature, they can but perish. Both for the room and the window, therefore, a free circulation of fresh air must be had if well developed flowers are produced.

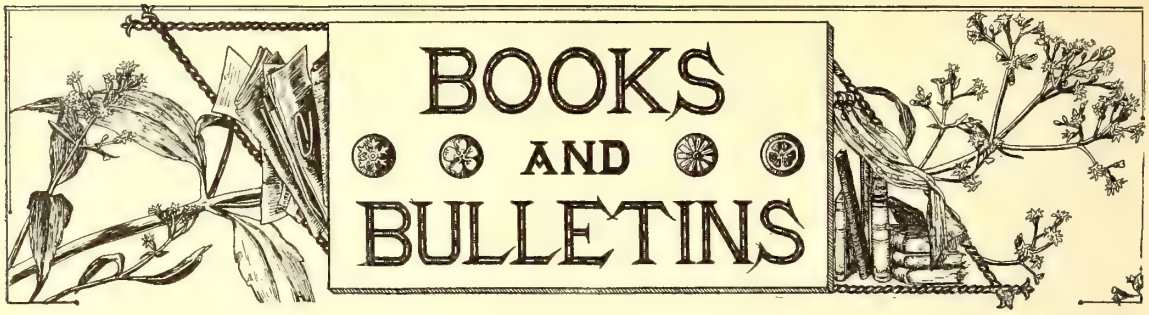
The soil for flowering plants should be suited to their requirements as nearly as possible. Rich loam is, however, amost universally adaptable, while well-rotted stable manure, in the main, is the best fertilizer. An excellent soil may be obtained by composting or mixing loam, leaf-mould, peat (or in lieu of it, turf) and sand; these should be well intermixed and frequently moistened with liquid drawn from manure. Leaves and turf with manure, or the liquid of it used, may be piled every fall and left to rot, and thus a supply of soil be kept up.—James I. Baird, *N. Y.*

**Sister Gracious' Conservatory.**—When the new house was built, a small glass room, thirteen feet long and six feet wide was added to the family sitting-room, the opening into it being a wide arched door, and another glass door led out onto a piazza. There were double glass windows put in at the side and top, and the large base-burner in the sitting-room gave the heat required, except when the mark was below zero, and then a large kerosene lamp was added, and I never lost a plant by frost. As this small conservatory was a part of the plan of the house, the added expense was very small. Two long shelves by the windows, plant-stands and brackets, made room for about two hundred pots, and here I spent two delightful hours every day among my pets, and I don't find time to consider the question, "Is life worth living?" And it gives me such delightful opportunities for giving. The dainty young girls want a flower to wear, for Jack, or Harry, or Charley "is coming to-night." An invalid is made happy by a pot of mignonette or a young girl that I send visiting to the bedside, and at Easter, the church in my neighborhood sends around an express wagon and wants "Sister Gracious to send what plants she can spare." And there are birth-days, and holy days when my plants are put upon the table, or perchance a dead baby may hold some of the sweet blossoms in its hands. I wish every new home when planned, would add a plant room, as well as a library, or a kitchen or a sewing-room. Every member of the family would find it an education and delight, not only in caring for the plants, but in getting new specimens, and reading the excellent floral magazines that are now published. Last winter I succeeded with my callas—they gave me royal looking flowers from November till May. Abutilons, red and yellow, are good amateur plants. So are petunias, nasturtiums, ageratum and geraniums. All through February and March the bulbs were in blossom—hyacinths, freesias and jonquils. A palm and pteris gave a tropical look to my winter garden, and a pine apple growing was a constant interest. I had a small, strong step-ladder, and when not on duty, it held the white hyacinths. I found a little girl one day seated on the floor at the front of the ladder gazing up at the flowers with such a sweet spiritual expression that I asked her "What she was thinking about." She said, "This is Jacob's ladder," and pointing to the white hyacinths, "These are the angels going up and down." At the top, close to the windows in the roof, is an illuminated text in large letters, "We are workers together with Him." It puts such sweet thoughts into my heart when I am working among the plants. Some one asked me the other day, seeing how much labor was needed to keep my small conservatory in order, "Does it pay?" I answer "Yes, indeed!!" Not in money, but in added health, in wider interests, in reading and in extended opportunities in doing good.—Sister Gracious.



Sister Gracious' Conservatory.

**Experience with a Passiflora.**—In the summer of 1889, a friend gave me a slip of the new variety of passiflora, Constance Elliott. Putting it in a wide mouthed bottle of water, I hung it in a sunny window where it rooted rapidly, then carefully transferred it to the soil where, in time, it became a beautiful plant. Last summer it grew luxuriantly, shading part of the veranda, and was only checked in its growth by lack of support in the way of wire netting. The delicately cut-foliage and exquisite cream white flowers were greatly admired. When the vine was being lifted in the fall, the stem most unfortunately was split at least an inch downward toward the root—the division of the stem into three parts at the collar, or a little above, made this possible. Binding it together with cord, the vine was finally planted in the box prepared for it, the soil heaped high around the injury, though with grave misgivings as to the result. After a sojourn of six weeks in the cellar, it was removed to a warm, sunny room, in the forlorn hope that the heat might stimulate some latent germs to growth. The passiflora was, indeed, a sorry spectacle; three stout stems, four yards long without a leaf on them! The only hopeful thing about it was the greenness of the stems, which, so far as we could see, gave no sign of withering. About a month ago, to our great surprise, a tiny green shoot appeared near the top of one of the branches, which has since been followed by others, until at present writing, February 12, every joint is breaking forth in leaf. I have examined the stem where it was broken, and found it strong and close as though it had not been injured, while right beside the wounded spot a strong young shoot is pushing out.—M. D. B., *Pa.*




BROWN ROT OF GRAPES. *Bulletin No. 10, Vol. III, Ohio Experiment Station. By C. M. Weed. Illustrated.* As a result of experiments conducted in the large grape regions of Ohio, Professor Weed makes the following statements concerning the brown rot or downy mildew: "The downy mildew or brown rot, which for several years has seriously injured the grape crop, is a diseased condition of the foliage or fruit, due to the presence of a fungus—a minute parasitic plant. This fungus reproduces by means of spores, small bodies corresponding to the seeds of higher plants. It has been found that these spores can be destroyed, or their development prevented, by applying to the surfaces of the green parts of the vine certain salts of copper, especially the sulphate of copper. The fungicide known as eau celeste has given the best satisfaction as a preventive of this disease. It is applied in a spray. The first spraying should be done a few days before the vines blossom. One, two or three additional applications should be made at intervals of about two weeks. Sulphate of iron (copperas) has no value as a remedy for this disease. Carbonate of copper has not given as good results generally as the eau celeste. Shraidt and certain other black varieties seem to require a stronger solution of eau celeste than Catawbas. The experience of 1890 has shown beyond doubt that this disease may effectually be prevented at comparatively slight expense."

**Grape Mildew in Ohio.**

VEGETABLES—VARIETIES AND METHODS. *Bulletin No. 70, Michigan Experiment Station. By L. R. Taft. Pp. 41.* Professor Taft gives characterizations of many varieties of beans, and finds the following to be good kinds: Cylinder Black Wax, Yosemite, Mammoth Wax and Pinkeye Wax among the wax beans; Paris Canner, Ne Plus Ultra, Refugee and Sion House among green podded.

**Beans in Michigan.**

"Of the early varieties of Cabbages, Reynolds (*Reynolds' Earliest*), is by far the best, being as early as any, and nearly one-half larger. Lightning (*Salzer's Lightning*) was much like Landreth's Earliest, while the Earliest from Salzer differed but slightly in the form of the heads." "From this year's trial, our list of four varieties for a succession would be Reynolds, Early Summer, All Head or All Seasons, Premium Flat Dutch. Market Gardener, Hard Head and Deep Head are also good sorts to follow Early Summer. Diamond does not make a very worthy showing. Marvin Savoy is the best of its class, and Red Drumhead is also desirable."

**Cabbages.**

"Of the extra early varieties of sweet corn, there was no appreciable difference in time of ripening of Cory, Harbinger, Marblehead and No. 48 from Salzer; and following very closely came Burbank, Crosby, Minnesota, Ford, Leet, Pee and Kay, Perry and Shaker. Amber Cream, Everbearing, Guarantee, Honey, Maule's XX, Old Colony, Concord and Stabler would be classed as intermediate, and Late Mammoth, Gold Coin, Shoe Peg and Stowell as late sorts. For a succession the choice would be Cory or Marblehead, Crosby, Concord, Stabler and Gold Coin."

**Sweet Corn.**

Of cucumbers, "Boston Pickling was the earliest variety. It is straight, smooth and of good quality; excellent for pickling. Long Green is a good variety for table use; medium early; vines vigorous and productive. Parisian bears slender, long fruits; excellent for pickling. Perfection has fruit in perfect form, smooth and of good quality. The fruit remains in condition for table use a long time before ripening." The striped beetle was kept away by applying, every two or three days, a pailful of ashes, in which a half teaspoonful of turpentine has been mixed.

**Cucumbers in Michigan.**

Professor Taft gives the following notes upon lettuces: "For forcing purposes the Grand Rapids is unequaled. It is one of the first kinds to mature, and on account of its upright habit can be planted closer than most varieties; for the same reason there is much less mildew and rot of the lower leaves. Another strong point in its favor is the fact that the edges of the leaves never burn, and we have never seen a variety so free from rot of the inner leaves. The leaf has something the appearance of the Curled Simpson, and is very attractive in the market and on the table. We have sent some of our surplus lettuce to the hotels and stores in Lansing, and found it impossible to sell the Tennis Ball and similar varieties until the Grand Rapids was disposed of. The Chicago (*Chicago Forcing*) is, next to Grand Rapids, our favorite variety for forcing purposes. The qualities commended in the Grand Rapids are less strongly developed in this variety. With a little care in ventilating and watering, it will produce plants superior to the Grand Rapids, and a week earlier than Tennis Ball and similar varieties. The leaves are less upright in habit than the Grand Rapids, and differ in appearance by being rather more blistered and with edges more finely cut.

**Varieties of Lettuce.**

"For hot-bed purposes we find the Chicago su-

perior to all others. It matured heads a week earlier than Grand Rapids, and they were much thicker and heavier. The Arlington Tennis Ball is one of the best strains we have grown, and unless one of the above sorts is to be grown, will be found very desirable for forcing. During the fall we wrote to several seedsmen and requested them to send us their two best forcing lettuces. In nearly every case White Tennis Ball was sent as one. We have generally grown the Boston Curled variety for forcing-house and hot-bed purposes, but it is ten days later than Grand Rapids, and in several respects it is inferior to that variety. Landreth's Forcing is a good variety, but all of the three first mentioned sorts are better. Market Gardeners' Private Stock and Boston Market are good strains of Tennis Ball, but the Arlington is better. Silver Ball, from Hallock, is also a strain of Tennis Ball. For hot-bed varieties, in addition to the Chicago, Black-Seeded Simpson, Curled Simpson, Hanson, Blonde Block-head (practically identical with Hanson), and Sugar Loaf will do well. For the cold-frame and the open ground for spring use, the hot-bed kinds did well, as did Chartier (Early Prize seems identical), which is an excellent variety with the wrinkled edges of its leaves tinged with red. All Heart would be a splendid lettuce, were it not for its tendency to rot.

"Of the summer varieties, All the Year Round, Everlasting, No. 21, and Salamander (all much alike), are excellent, as are Marblehead, Mammoth and Sunset, which also seem identical. The Cos varieties could not be distinguished."

**Notes of Peas.**

Woven wire trellis, supported every ten feet upon stakes, has been used two seasons as a pea support with satisfactory results, particularly with the half dwarf kinds. In the early sorts, more depends upon the particular strain than upon the name of the variety. A dozen sorts of this extra early class are practically identical. Among the second early sorts Quantity and Advance were most productive, followed closely by Quality, Profusion, Market Pride (*Pride of the Market*), Midsummer, Horsford (*Horsford's Market*), and Satisfaction. "As the varieties in this group are more productive, and generally of better quality than those of the extra early sorts, it is only advisable to plant enough of the early kinds to bridge over the week or ten days before the Advancer and others of its class are ripe. Among eighteen late kinds, the Everbearing was very productive, followed by Stratagem, Abundance, Forty-fold, Yorkshire and John Bull."

**Varieties of Potatoes.**

Extensive variety tests have been made with potatoes. "Owing to the premature drying up of the vines from blight and drought, we are not able to judge accurately of the actual earliness of the varieties. Last season, Premium and Gardener (*Gardener's Early*) ripened first, followed by Harvest Early. These are all of good quality, but not very productive. Ripening within a week of these sorts are Timpe's No. 4, which this year produced 157 bushels; Early Rose, 150 bushels; Early Ohio Queen, 133 bushels; Maine Early, 133 bushels; Puritan Early, 126 bushels; Putnam (*Putnam's Early*), 120 bushels; Timpe's No. 6, 113 bushels. Of the varieties yielding over 100 bushels and ripening about August 1st, are Clark's No. 1, Burpee's Early, Dandy, Delaware, Hebron, Oxford, Faust's 1889, Ft. Collins No. 83, Gregory No. 2, Ideal, Lee Favorite, New Queen, Queen Valley (*Queen of the Valley*), Thorburn, Gregory No. 1, Morning Star, June Eating and Putnam Rose. All but six of these varieties were grown last year, and, as confirming the accuracy of the test, it may be noted that every one of the above old sorts was in the selected list of last year, and that the lowest yield of any of them was about 300 bushels. It may be stated that the crop this year averages from 35 to 40 per cent of what it was in 1889. There is but slight difference in the quality of these sorts, all being good to very good, except, perhaps, Lee's Favorite, which is rather coarse and sometimes watery.

"Of the late sorts, White Elephant and Summit were most productive, with Copper Mine, Brownell Winner, Bannock, Empire State and Nameless No. 2 not far behind. Red Star, Arizona, Lincoln (*President Lincoln*), and Dakota Red were also productive. None of these varieties are of high quality, and although valuable market sorts, some others, better in quality, might be selected for home use.

"The Wild Mexican variety has been grown here for a number of years, and has greatly increased in size and yield. They eyes are rather deep, and it is too coarse to be a valuable variety. The *Solanum Jamesii* has shown itself much less susceptible to improvement, and we have been able to detect no increase in size, which is about three-fourths of an inch in diameter."

The season's experiments indicate that a change of seed about once in three years is desirable.

**Seed Ends and Butt Ends.**

It is commonly thought that the seed end of a potato gives more small potatoes than the middle or the stem end. Professor Taft arrives at this conclusion: "The test has now been conducted for two years, with five different varieties and under various conditions, but with results that seem to us conclusive that a given weight of the seed end is as valuable as an equal weight from the middle of the tuber. The average yield from the stem end, however, is considerably less than from either of the other portions, the difference being greater than the amount required for seed. This indicates that when cutting to small pieces it is well not to use the stem end, as the eyes being weak and poorly developed, the crop will be lessened. Never use the stem end of a potato for seed unless the piece is large enough to include one or more strong eyes from the middle of the tuber. By cutting seed lengthwise this is secured."

An experiment to determine the most profitable distances for planting potatoes in the row led to the following conclusions: "Single eyes and quarters of medium sized potatoes may be placed in drills from a foot to

fifteen inches apart; when halves are used, the distance may be increased to two feet; and when whole tubers of medium size are planted, they may be placed at from two and one-half to three feet, and thus admit of cultivation both ways. In each case these are intended as maximum distances. This will require from twelve to fifteen or perhaps twenty bushels of seed potatoes per acre. With well prepared and thoroughly drained soil, and in favorable seasons, the smaller amount might be somewhat diminished with profit, but for the average planter, and in average seasons, the largest would prove best in the long run."

**Distance to Plant Potatoes.**

Further experiments were also made upon methods of cutting.

Potatoes were planted at depths varying from one to five inches. One-inch planting gave best results.

In regard to fertilizers for potatoes, it is recorded that "the slight excess in yield [from various commercial fertilizers] will not warrant the use of fertilizers at commercial rates where manure can be obtained, as it can in most portions of the state, practically for the hauling. Wood ashes can, as a rule, be easily obtained, and for potatoes or any other crop can be used with profit. In addition to the plots mentioned above, four others were used, in which sulphate of potash was tested against unfertilized plots, but little or no difference was noticeable."

**Fertilizers for Potatoes.**

Of forty-three kinds of radishes, the following are recommended: Forcing radishes—Cardinal Globe, French Breakfast, Forcing Nonpariel, White Turnip, Eldorado. Summer radishes—Wood Frame, Scarlet Short-top, Chartier, Celestial, Strasburg.

**Radishes.**

The earliest tomatoes at the Michigan station last year were Advance, Prelude, Earliest, Keyes, King (*King of the Earlies*), Hathaway, Atlantic (*Atlantic Prize*). "Of the second early varieties, Haine's King of the Earlies and Victor (Canada) were most productive. Advance and Hathaway will also give satisfaction. The Victor was obtained four years ago from Germany, and by careful selection the form has been much improved. Of the red varieties, for the main crop, the Ignotum, Cumberland Red, Red Cross, Puritan and Red Mikado were most productive. Perfection, Optimus, Nichols, Volunteer, Red Apple, Belle and Matchless are all valuable. The Mikado (Turner), Beauty, Acme and Potato Leaf were best of the purple varieties, and Sunset and Golden Queen of the yellow sorts."

**Tomato Varieties.**

"*Ignotum.*—Another year's selection has served to so fix the type of this variety that few rogues will be found. It has now been thoroughly tested in all parts of the country, and almost without exception it is pronounced as the best tomato for home use, for market or for canning. Some complaint was received of its rotting, but we found it no more subject to rot than other large, smooth, red varieties. Where the plants received frequent and regular cultivation and were not checked in their growth, little or no rot was observed."

"For three years we have attempted to learn the effects of planting seeds from the first fruits that ripened, as compared with those selected late in the season. The first two years a slight gain in the earliness of the crop was noticed, but it was observed that while this gain was considerable in the case of varieties of the angular type, it became a loss when the smooth apple-shaped sorts were considered. This year the results show, as an average of fifteen varieties, that the plants grown from early selected seeds gave ripe fruits in $143\frac{4}{5}$ days, while those from the main crop were $145\frac{2}{15}$ days, a difference of $1\frac{1}{3}$ days in favor of early selected seeds. As in previous years, the angular sorts show a marked difference, while in the apple-shaped sorts there is, if anything, a slight average loss in earliness."

**Tomato Selections.**

Sweet Potatoes and Garden Vegetables. *Bulletin No. 11, Georgia Experiment Station. By Gustave Speth.* Experiments were conducted by Mr. Speth upon the best distances apart for planting sweet potatoes. They were tried $1\frac{1}{2}$x4 feet, 2x4 feet and $2\frac{1}{2}$x4 feet. 2 x 4 was found to be best. Concerning fertilizers for "this justly so highly-prized vegetable," the following conclusion was reached: "That the yield of sweet potatoes is governed by the amount of potash in the fertilizer; that single rations gave the greatest yield over half and double rations; and that a fertilizer, as in the experiment, analyzing eight per cent. phosphoric acid, three per cent. ammonia and ten per cent. potash, is the most effective for sweet potatoes."

**Sweet Potatoes.**

Fertilizer tests upon the tomato in Georgia resulted as follows: "(1) That the application of nitrogen alone gave no increase over unfertilized plot. (2) That minerals produced a marked increase. (3) That nitrogen in single ration, in combination with mixed minerals, showed a decided gain over mixed minerals alone. (4) That the largest yield was attained by the application of double rations of nitrogen and mixed minerals. (5) That the effect of nitrogen depends upon the presence of mineral elements, phosphate and potash. (6) That earliness is in proportion to the effectiveness of the fertilizer."

**Tomatoes in Michigan.**

"The varieties indicating the greatest yield are Prelude, Cumberland Red, Essex, Golden Queen, Ignotum, Optimus, Puritan, Red Cross and Table Queen." Among the causes which tend to produce new varieties of tomatoes, Mr. Speth gives this: "Seemingly new varieties are discovered owing to the tendency of the tomato to revert to former types, caused by insufficient care in selection of seed." We believe that the facts are just the opposite of this—that careful selection and the disposition of the tomato to respond to it, are the most potent means of securing new sorts.

Tabulated records of trials with cabbages, peas and beans are also given, and also a list of fruits.

COMPARATIVE TESTS OF SMALL FRUITS AND VEGETABLES. *Bulletin No. 7, Oregon Experiment Station. By George Coote. Pp. 12.* This is a pointless collection of tables and superficial observations upon tomatoes, strawberries, peas, cauliflowers and a raspberry. The raspberry report is as follows: "We have at this date, Oct. 28th, 1890, growing out at the college grounds, Turner's raspberry, perfectly ripe and of good flavor, and very highly colored. We regret to say that we have but two plants of this variety, but shall propagate for a more extended trial as quickly as possible." [!]

**Oregon Notes.**

STRAWBERRY PESTS. *Bulletin No. 31, Kentucky Experiment Station. By H. Carman. Pp. 27. Illustrated.* This is a good bulletin. Mr. Carman has made useful experiments upon the leaf-blight or leaf-scald of strawberries, and he has kept it in check by the liberal use of Bordeaux mixture. When the berries had been picked, all the old and blighted leaves were removed, and the plants were then sprayed seven times with Bordeaux mixture, at intervals from June 30th to Sept. 1st. Eau celeste, liver of sulphur and even London purple were beneficial, but less so than Bordeaux mixture. Mr. Carman finds that in Kentucky the removal of the diseased leaves early in the season without later use of fungicides is a positive detriment.

**Remedy for Strawberry Leaf-blight.**

Mr. Carman makes the following record of the behavior of certain varieties in reference to blight: (1) Blight very rare—Daisy, Eureka, Jewell, Triumphe de Gand. (2) Blight rare—Belmont, Lady Rusk, Scarlet Queen. (3) Blight frequent—Annie Forest, Bomba, Bubach, Burt, Captain Jack, Covill, Crawford, Cumberland Triumph, Dutter, Gandy, Gold, Gypsy, Haverland, Henderson, Itasca, Jessie, Lida, Logan, Mammoth, May King, Miami, Ontario, Parry, Pearl, Phelps, Pine-apple, Primo, Summit, Sunset. (4) Blight abundant—Barton's Eclipse, Cloud, Gandy Prize, Great America, Loudon's 15, Piper. (5) Blight very abundant—Monmouth, Ohio, Photo, Sanafee, Warfield.

**Varieties and Blight.**

The strawberry leaf-roller—which is at least three brooded in Kentucky—"can be almost exterminated in a field by mowing the plants while larvæ and pupæ are in the leaves, allowing the mowed leaves to dry a short time, then burning over the bed, perhaps with the aid of a little straw or rubbish. This can be done without the slightest injury to the plants. Some growers even burn over their beds more than once during a year, but considering the evil effect here on young leaves of the hot sun, I do not think this advisable. For all ordinary cases, it is probable that burning over in October will suffice. Treatment at this time is especially to be recommended, because it will serve for both blight and leaf-rollers."

**Strawberry Leaf-roller.**

Other strawberry pests discussed in this bulletin are crown-borer, false-worm, white grubs, root-worms, smeared dagger and tarnished plant-bug.

WINTER PROTECTION OF PEACH TREES, AND NOTES ON GRAPES. *Bulletin No. 14, Kansas Experiment Station. By E. A. Popenoe. Pp. 10.* Professor Popenoe found that tying up peach trees very securely in evergreen boughs would not protect them in Kansas. But the trees can be laid down with ease and profit. "To facilitate the bending down of a tree, the earth was removed on the opposite sides of the trunk, preferably north and south, and on these sides the larger roots were cut off near the base, those on the right and left being allowed to remain, as far as possible, undisturbed, to keep the tree in unbroken connection with the soil. Now, as the tree trunk was inclined toward the earth, the lateral roots, by twisting slightly, offered no resistence to the operation. When the tree was sufficiently inclined, forked stakes were driven over the branches into the earth, to keep all in position. The soil was then heaped well over the roots and base of the trunk, to a depth sufficient to protect them thoroughly against drying out, and finally the entire tree was covered with whatever of suitable material was at hand."

**Laying Down Peach Trees.**

Peaches from these trees sold for fifty and sixty cents per 10-pound grape basket. "The cost of putting down seventy-one trees in the fall, including labor and hay bought, with the expense of replacing them in the spring, amounted to about twenty cents per tree, the labor being paid at the rate of ten cents per hour, and the hay costing two dollars. The average yield of the trees, accounting for fruit gathered and sold and allowing by estimate for some stolen, was not far from one-half bushel each, leaving, at the prices obtained, a net return of not far from one and one-half dollars per tree."

Notes are made upon many varieties of grapes.

THE CULTIVATED ORANGES AND LEMONS, ETC., OF INDIA AND CEYLON, *with researches into their origin and the derivation of their names, and other useful information. 2 vols. Pp. xix, 384. Plates 259. By E. Bonavia. London: W. H. Allen & Co.* There are probably no fruits concerning which so much has been written or of which there are so many diverse views of origin and botanical relationships, as those of the genus citrus. The present work is eminently satisfactory, however, because it deals with the species and varieties at or near their original homes, and the author has expended an immense amount of effort in collecting specimens and facts. "This work gives in detail not only the history of the citrus in India, as far as it can be made out, and its mode of cultivation in different places, but also outline drawings of every variety of orange, lemon, citron, lime, pummelo, etc., to be found in India, with the places at which they can be procured." Anyone who expects to study citrus fruits carefully must possess the work, and it also has a peculiar value to the orange growers of our Gulf states, because it details the cultivation and the varieties of fruits which must soon compete with ours in the London markets. The work is especially strong upon the historical and morphological sides, and the

**Asian Citrus Fruits.**

study of aboriginal names, as throwing light upon the origins of varieties and types, is the best we have seen. The probable history of the Seville orange—which was the first sort to reach Europe—is as follows: It commenced in China or Cochin China and found its way to the Malay archipelago. Thence it went to south India by means of traders, where it became naturalized and assumed the name of *nàrtun*, on account of the fragrance of the flowers, rind and leaves. It eventually went to Persia, where it appears to have taken the name *nàrandj* or "pomegranate-like." Under this name it reached Syria, Africa and Spain, and *nàrandj* became *orange*. The pomelo—or pummelo, as Dr. Bonavia writes it—probably originated in southern China or Cochin China, probably from *Citrus Aurantium Sinense* of Gallesio. The author thinks that some of the large citrus fruits have come from the union of two distinct ovaries in times past. The morphology of the citrus fruit is discussed at length, and an entirely new hypothesis is proposed, of which we shall have more to say hereafter. The author inclines to the opinion that varieties or species of citrus rarely cross, and that most, if not all, of the intermediates are simple variations. When will some of our experiment stations in the south give us some light upon this knotty question? It is time that definite knowledge was obtained.

THE NEW POTATO CULTURE, *as developed by the trench system, by the judicious use of chemical fertilizers, and by the experiments carried on at the Rural grounds during the past fifteen years. By Elbert S. Carman. New York: Rural Publishing Co.* At last we have a good potato book. It is not a monograph of the subject, nor is it a systematic treatment of the sum of potato culture, and for that reason it is peculiarly valuable. Some books are so rounded and definite in their outlines that the reader accepts them as final authorities, and they seem to cover the whole subject. But Mr. Carman's book irresistibly awakens a desire for more knowledge, and the reader's first impulse is to become an experimenter too. The author tells everything about his experience, failures as well as successes, and every point teaches a lesson. It is a book which the farmer will read several times, and at every reading a flood of new suggestions will crowd upon him. We predict that it will make more experimenters upon the farm than any book yet written in this country. Valuable as its information is, we think that the great value of the book will be in awakening and directing the experimental faculty. The number and scope of the experiments which it records are surprising. We know of nothing like it. We doubt if the experiment stations will equal it in many years.

**Carman on the Potato.**

The gist of the book is the trench system of potato culture and the use of mulch and complete fertilizers. Mr. Carman is the originator of the trench system. This system plants the tubers in trenches, with manure in the trench, and practices level culture. Its chief advantages are the conservation of moisture, the deep pulverization of the soil and the application of the fertilizer to the right place. "A common plow may be used to form the trenches, by plowing both ways, forming an open or dead furrow,—or a shovel or listing plow may be used. Let the bottom of the trenches be 10 inches wide at least. This bottom should be mellowed, and the seed potatoes placed one foot apart. Cover them with two inches or more of soil. Then apply the mulch, scattering it evenly over the surface soil of the trench, and then sow the complete potato fertilizer at the rate of 500 pounds (or more) to the acre. Finally, fill the trenches as lightly as possible with the return soil, and give level cultivation." The indifferent results from applying incomplete fertilizers, especially upon poor soils, is emphasized. A mulch of chopped hay in the trench is found to conserve moisture. The book is full of hints and directions upon many things connected with potato culture, collected from the actual experience and correspondence of many years, from the time of cultivation and the ways of fighting flea-beetles to the methods of cutting tubers and ways of getting new varieties. But it is nowhere encyclopædic, and the reader wishes that more methods had been discussed rather than not so many.

FUNGUS DISEASES OF THE GRAPE AND OTHER PLANTS AND THEIR TREATMENT. *By F. Lamson-Scribner. Pp. 136. Little Silver, N. J.: J. T. Lovett Co.* This little book is made up of contributions which Professor Scribner has made to *Orchard and Garden* during the last few years, and consequently it lacks that connection which a continuous effort would have produced. It discusses various diseases, particularly the grape diseases, in a clear and easy way, and of course the author's reputation is proof of its authority. It is a good book so far as it goes, but any book on plant diseases for general use should discuss a broader field. We miss any reference to strawberry diseases, potato blight, tomato blight, gooseberry mildew, pear blight and other common difficulties, and the results of last year's work are not so fully discussed as we might wish. But it is the first book to give the cultivator a concrete knowledge of what fungi are, and the general principles of the destruction of the injurious species. The title should have used *fungous*, rather than the substantive form of the word. L. H. B.

**Book on Plant Diseases.**

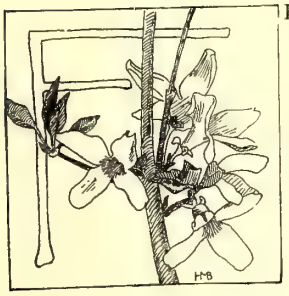
Lawson Valentine.

*Born 13 April, 1828.*
*Died 5 May, 1891.*

# The American Garden.

*Vol. XII.* *JUNE, 1891.* *No. 6.*

## THE GARDENS OF NEWPORT—I.



FEW PLACES, probably none in America, have so many extensive villa grounds and delightful gardens as Newport, Rhode Island. This little city by the sea enjoys a world-wide distinction as a watering place, though it has few great hotels, and is visited by no such crowds, during the season, as are found at many less prominent seaside and mountain resorts. As if by common consent, the town has been selected as a place of summer residence by many of the wealthy and cultured classes of the great cities; and these have done, and are still doing, much to increase its attractions and promote its prosperity. The old town is quaint and perhaps dull, but rich in historic treasures and local traditions; the new is a grouping of cottages and villas, substantial, costly and ornate; and for nothing is it more admired than for its trees, its shrubs and its flowers.

As the city is situated on an island, and favored with perceptible influences from the Gulf Stream—which is said to approach nearer to this point than any other on the New England coast—the climate is soft and the atmosphere humid, affording, in this respect, conditions most favorable to the perfection of lawns and the growth of vegetation in general. Many of the estates include several acres, divided between the closely shaven grass, the beds of flowers and the borders of shrubbery and trees. The town is largely built upon a terminal strip of land, from one to two miles in width, and jutting out into the sea; so that between the ocean on the one side, and Narragansett Bay on the other, the winds from every point of the compass come freighted with the influence, not to say fragrance, of the salt water. On the ocean frontage are the famous Newport cliffs, which extend from the bathing beach, in a southerly direction, nearly two miles, to a point where the shore line turns sharply and extends westerly. These cliffs are rocky and abrupt, and are said to be the highest to be found on the mainland coast between Florida and Maine. Bellevue avenue, the chief pleasure drive, runs nearly parallel with the cliffs, and a part of the distance but a few hundred feet therefrom; and in this space are located many of the finest and most extensive villas in the city. It was once supposed that trees and shrubs could not be successfully grown in such an exposed locality, but the contrary is now fully demonstrated, as the finest gardens in Newport, with all their wealth of native and exotic plants, are to be found in such high and exposed situations.

In writing of the Newport gardens, one is embarrassed by the abundance of material at hand rather than from its paucity; and the more so as the collections, especially of the hardy sorts, are made from all parts of the world. It is on this class of shrubs and trees that the landscape artist, in almost every case, now relies for the best as well as most permanent effects; and in doing so he has his reward. The old topiary methods are wholly avoided, and in passing through many of these grounds the visitor is more impressed with thoughts of the forest than of beds of flowers. It would not be just to say that the methods are not artificial, for such gardening would be impossible. But the art and skill employed have been put to their best in copying nature in her multiform variations, and

combining in small space the fruitage of the rough hillsides and the rich valleys in their best conditions. And yet there are a few exceptions, where especial attention is bestowed upon some particular department of floriculture to the exclusion of most others.

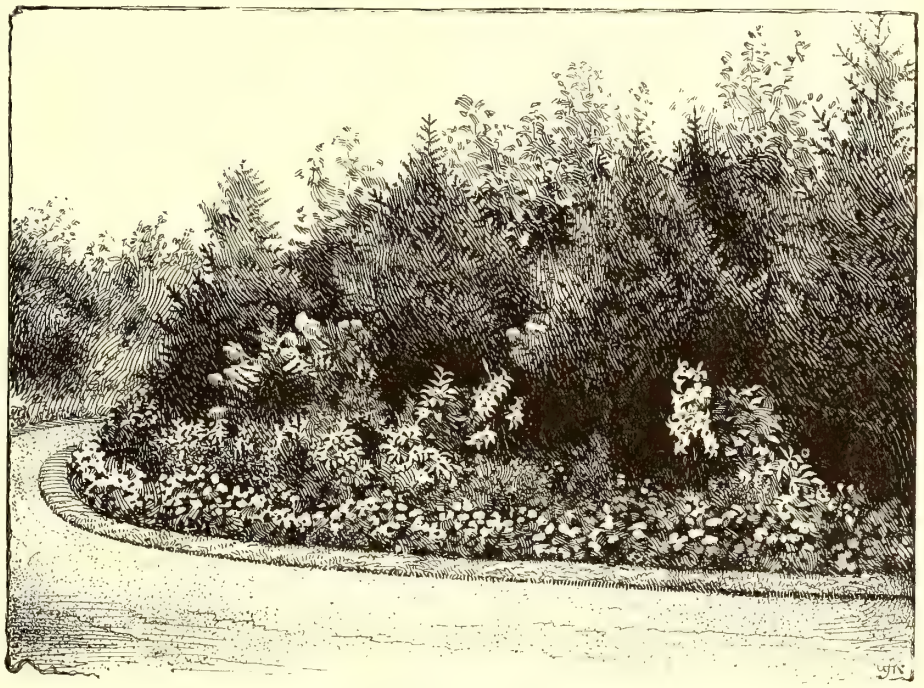
The most distinguished and successful of such specialists, whose work adorns the cliffs, was the late George Bancroft, whose celebrated rose garden has attracted so much attention and been so often described. For many years Mr. Bancroft made Newport his summer home, occupying one of the choice locations on the cliffs, and dividing his time between his books and his flowers. This garden was largely the work of his own creation. It is situated in one of the most exposed positions on the coast, and extends to within a hundred feet of the open sea, whose spray sometimes falls within the enclosure. The dwelling, less pretentious than many in the vicinity, stands a few hundred feet from the shore, and is embowered with trees and vines, except in front, where the verandas and broad piazzas afford an unbroken view of the ocean. The well-kept lawn is skirted on either side, as the ground slopes seaward, with long, narrow rose beds, cut in the grass, the whole being protected by outside borders of thickly planted trees and shrubs. In these grounds are representatives of the rose family from all parts of the world, including hundreds of species and varieties, all hardy and remaining out of doors during the whole year. A few of the beds, filled with the more delicate tea roses and the like, are always covered in winter and guarded with more than ordinary care; but with this exception, the whole is as exposed to sun and frost as is an open field. Mr. Bancroft, with the weight of advancing years upon him, added few or none of the new varieties during the past two or three summers, but it is estimated that about four thousand plants are in blossom each season, a collection not often paralleled in this country. In this quiet retreat, so full of romance and so clothed with beauty, the venerable historian long sought and found needed rest and recreation amid his severe labors on the great historic work that must carry his name to future generations; and it would be difficult to tell how much he was indebted to his garden for the physical and mental vigor that enabled him to work on until more than ninety years of age. It would be impracticable to attempt a detailed account of such a collection in an article like this. It is simply a garden of roses massed in the most favorable conditions for effect, and comprising most of the varieties at command, has always been greatly admired.

One of the especially attractive villas in Newport is that of Mr. Fairman Rogers, of Philadelphia, who spends his summers here and his winters in sunnier climes. Mr. Rogers has a fine yacht, the Magnolia, in which he "roams the seas," and which affords him pastime and pleasure both north and south. When in Newport, he drives his tally-ho, and is always a prominent figure in social festivities. His estate is situated near the elbow of the shore line, at what is known as Ochre Point, and is thus exposed to the full force of ocean winds and storms. The higher ground bordering on the street slopes gradually to the water's edge, so that it is almost impossible to secure protection for trees and shrubs, such as they are supposed to need. And yet the partial shelter afforded by his buildings, and his judicious system of planting, enable him to produce and perpetuate some fine arboricultural and floral effects. As in many other cases the California privet, *Ligustrum ovalifolium*, occupies an important place as a wall of defense, the hedge at one point being from ten to fifteen feet in height, and affording an almost impenetrable barrier against the fierce winds which come sweeping in from the Atlantic.

THE LATE GEORGE BANCROFT'S RESIDENCE.

On entering these grounds one meets, directly opposite the open gateway, a circular wall of shrub-

bery and trees, bordered by bulbous plants and showy annuals, as seen in the illustration. The group contains some well formed specimens of conifers, mostly spruces, behind which is a collection of deciduous trees extending nearly to the house. In front of the evergreens, and facing the street, may be seen a showy collection of annuals especially adapted to the situation. The carriage-way, which extends entirely around this group, is bordered, first, by a line mostly of lobelias and pansies ; then come geraniums, marigolds, scabiosas, chrysanthemums, etc., of various forms and colors. The larger flowers shown are specimens of the golden banded lily, *L. auratum*, and the white lily, *L. candidum*. These rise above those in front and blend beautifully with the wall of green against which they are banked. The collection is so arranged that the border is never dull, while the constant succession of flowers affords a freshness to the picture, whenever viewed, from spring to autumn.

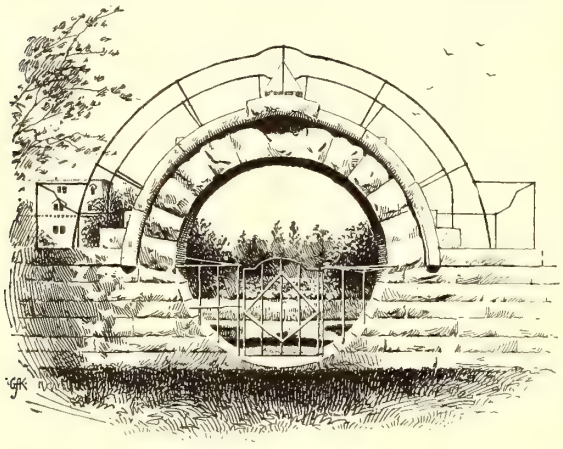


"A Circular Wall of Shrubbery and Trees"—Entrance to Mr. Rogers' place.

One of the special features of interest in these grounds is the culture of the hardy aquatics, in combination with shrubs, perennials and annuals. At a little distance from the house is an artificial lily pond, sixty feet in length and ten in width, with walled banks and granite copings (see page 326). This is bordered on all sides by a strip of closely shaven grass five feet wide, which, in turn, is surrounded by another strip eight feet wide devoted to foliage and flowering plants, making a plat thirty-six by one hundred feet in its total dimensions. These water lilies, of which there are many species and varieties grown in Newport, are found throughout the whole northern hemisphere, a few appearing also south of the equator. The name nymphæa was applied because of their growth in water, thus connecting them with the fabled water nymphs of antiquity. They all have thick, tuberous roots, with a tender stem extending from the soft and porous bottom to the surface, where the large, cordate leaves attached float upon the water. The flowers are also large and showy, consisting of four sepals and numerous petals. They are of many colors—white, pink, yellow and blue. Nearly all the species are of easy cultivation, and come to perfection with but little care, when once provided with the proper conditions. The species most largely cultivated here is the Old World white lily, *Nymphæa alba;* it is one of the largest and best known of all. The flowers are often six inches or more in diameter, white and almost or quite without fragrance.

There is a variety of the species, *N. rosea*, much the same in its general characteristics, except that the blossoms are rose color. It is grown in this pond in connection with the original, and makes a pretty contrast. There is cause to doubt the superiority of this foreign plant, however, over our American pond lily, so common in our ponds and partially stagnant streams. This, *N. odorata*, has the advantage of being delightfully fragrant, as well as exceedingly beautiful, and by many it is preferred to all others. Its petals are creamy white, usually tinted with pink, and in some of the ponds in the vicinity of Cape Cod and in Rhode Island there is a variety in which the whole flower is pink. These

have been distributed, and are cultivated to some extent, but are not yet widely known and fully appreciated. In Mr. Rogers' pond are to be seen also

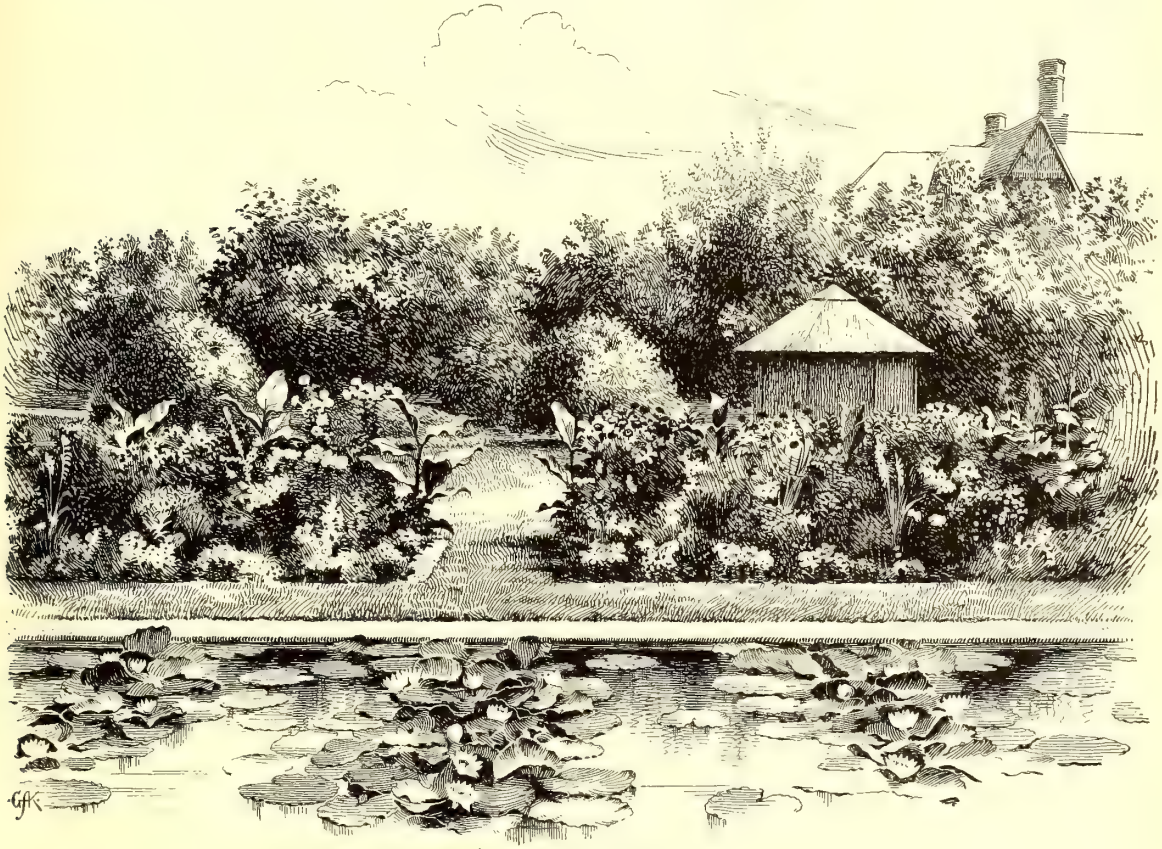


A Garden Gate.

though somewhat sparingly, the blue pond lily, *N. cærulea*, the large pond lily, *N. dentata*, whose flowers are sometimes nearly a foot across, and which is really a variety of the lotus; the yellow species, *N. lutea*, and the *N. Zanzibarensis*, a native of Zanzibar, with deep blue petals and violet anthers, and very striking in its appearance. This is not quite as hardy as the others, and should have winter protection for the best results. In all cases the roots should be deep enough in water to prevent freezing, or be otherwise sufficiently covered to afford protection against the action of frost. Such a pond as this is a thing of beauty, and can never fail to be an object of admiration. And in this case the interest is greatly increased by the immediate surroundings. I have already spoken of the wall of flowers on every side, which is an essential feature in the completeness of the picture. The lily pond is as a rare gem set in a border, studded with diamonds and pearls. In the cultivated strip mentioned are found attractions that fairly equal those of the water plants. A description covering the several species and at the same time indicating the order of arrangement and combination would fill a moderate sized volume. In this floral band were found, last season when these notes were taken, more than 2,000 plants, and it may be suggested that without the most skilful and artistic handling, such a collection might be a mass of incongruities. But in this case nothing of the kind appears. The arrangement is made with reference to color of foliage, time of blossoming and habits of growth; and it is true that only a master of floral art could meet the requirements of the situation. Many of the specimens are of our most common native or best known imported sorts; others are recent and rare introductions. For instance, here are, all in variety, 200 asters, 50 carnations, 100 dahlias, 200 phloxes, 100 zinnias, 200 marigolds, 25 roses, 50 pansies, 50 lilies, 50 verbenas and many others of the common garden species. There is also a free distribution of cannas, irises, spireas, retinosporas, tritonias, veronicas, hollyhocks, delphiniums, helianthuses, campanulas, columbines, salvias, chrysanthemums, etc. The foliage plants occupy an important place in the combination, as they must do everywhere on correct principles of landscape gardening.

Near by is a small, but not less interesting artificial pond devoted to the culture of the Egyptian lotus, *Nelumbium speciosum*, than which few plants in cultivation can be more interesting. When standing in its presence one is all the more impressed in recalling the fact that this is the old "rose of Egypt," and the famous growth of the Nile regions which, from earliest antiquity, has made its impress on the world's literature, religion and art. Among the Egyptians, as far back as the time of the Pharaohs, it is known to have been worked into garlands and wreaths which were symbolically placed on the brows of beautiful women, or held in their hands and pressed for its fragrance. In architecture it adorned the capitals of columns and the prows of boats, while in hieroglyphics it was everywhere the emblem of beauty and the symbol of purity. The Egyptians held it to be sacred to Isis, and gave it a prominent place in the worship of that deity. The Hindoos regarded it with equal reverence, and many of the thrones of their gods were modeled after its form, either as a full grown plant, or as an expanded flower. So, also, has it long been one of the sacred plants of China and Japan. In those eastern countries the lotus appears with some variations as to form and color, but not more than would naturally be expected in such diverse locations and through so many ages. In Egypt, the flower is usually spoken of as pure white, while in India it is known to have been sometimes white and sometimes red; a legend explaining that the latter color came from the blood of Siva when Cupid wounded him with his arrow. But irrespective of these traditions, the lotus is the most attractive aquatic plant in cultivation. It is quite hardy, and will often blossom the first season after planting, remaining in constant flower most of the summer. As cultivated here, it grows best in shallow water, when its stalks extend from four to six feet above the surface. The great round leaves are sometimes from twenty to thirty inches across,

and present a striking appearance. The flower-buds are in shape something like those of the tea rose, but several inches in circumference, and when partially opened, tinted with bright carmine. As the buds expand, the petals are creamy white, sometimes delicately shading off to pink, and when fully grown measuring eight to ten inches across. The seed-pod is, as might be expected from the size of the flower, large, and somewhat in the form of an inverted funnel, the numerous seeds in each being about the size of kernels of corn. In the east they are often used as food, this being



SIDE VIEW OF THE LILY POND.

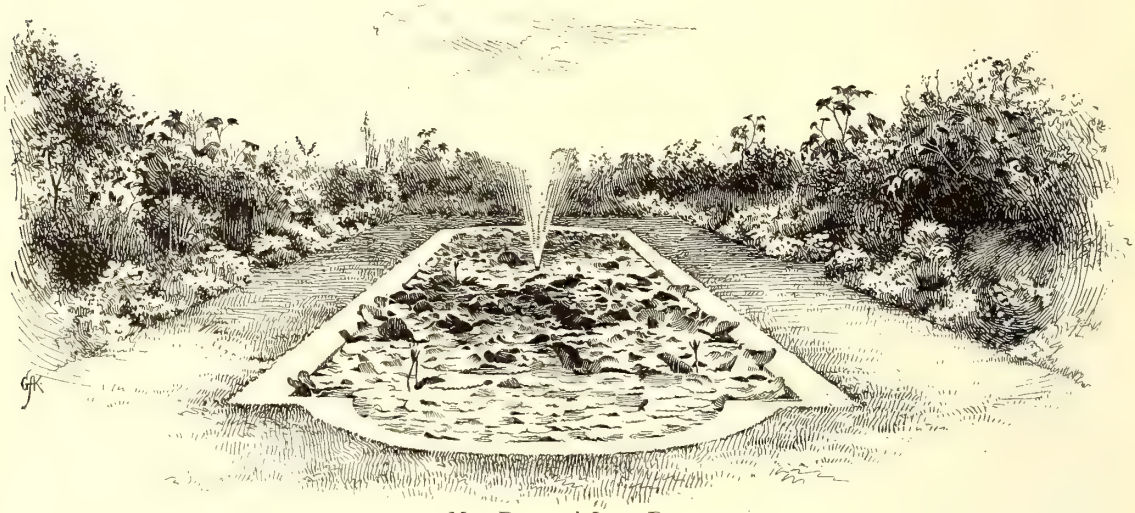
the Egyptian bean of Pythagoras, though not the lotus fruit of fable and story, of which the world has so fully heard. This circular pond, not more than eight to ten feet across, furnishes flowers during a large part of the summer, and is always beautiful. There is around it, planted in earth, a border of the new low-growing French cannas, above which rise the lotus leaves and blossoms, giving a combination of colors worthy of the highest admiration.

The summer residence of Mrs. Paran Stevens, though situated on the line of Bellevue avenue, is almost hidden from observation. The illustration, page 327, shows the walk, between the avenue and the cottage, which is bordered with trees, mostly tall spruces with interlacing branches which afford a dense shade at all hours of the day. The house itself stands in the broad sunshine, and its immediate surroundings afford fine displays of floral skill. A frontiersman might speak of the place as "an opening in the woods," so dense are the tree growths on every side, but he could scarcely find words to describe the garden and small lawn. This point once reached, there is revealed a collection of rare and rich flowers, native and foreign. Here more than in most places the greenhouse plants predominate. There are, comparatively, very few flowering shrubs and no attempt whatever to make use of bright and curious foliage for the production of desired effects. If the wall of trees on every side were made to present a greater diversity as regards form and color, the picture would be still more striking. This defect appears in many other gardens which were planted twenty or more years ago, for not until

within a few years has the attempt been made to improve the opportunities afforded for the introduction of color in such situations.

There are numerous bits of garden culture and landscapes that are to be considered for themselves alone, one of which is the gateway and entrance from a side street to the estate of George Peabody Wetmore. The ample grounds of this estate are enclosed by a massive stone wall, and the illustration on page 324 shows a combination of gate and stile, with a seat at the highest point of the circle, giving a fine view of the owner's and of neighboring premises. It affords, also, a glimpse of what is to be found within, where there are as fine specimens of gardening as can be seen in Newport.

L. D. DAVIS.



MR. ROGERS' LILY POND.

*[A full page view of this lily pond will be printed in the July* GARDEN.*]*

*I gazed upon the glorious sky*
*And the green mountains round,*
*And thought that when I came to lie*
*At rest within the ground,*
*Twere pleasant that in flowering June,*
*When brooks send up a cheerful tune,*
*And groves a joyous sound,*
*The sexton's hand, my grave to make,*
*The rich, green mountain-turf should break.*

*There through the long, long summer hours,*
*The golden light should lie,*
*And thick young herbs and groups of flowers*
*Stand in their beauty by.*
*The oriole should build and tell*
*His love-tale close besides my cell;*
*The idle butterfly*
*Should rest him there, and there be heard*
*The housewife bee and humming-bird.*

—BYRANT.

A Garden Walk.—Mrs. Paran Stevens.

# THE SOUTH IN SUMMER.

A TRIP in summer due south for a thousand miles, making no pause until the blue waters of the Mexican Gulf mirrored back upon my vision the blue of the southern skies, passed the comprehension of my friends. The secret of the journey lay in my long repressed desire to visit the south in summer, when it might be seen, so to speak, under normal conditions. The northern visitor to the south in mid-winter does not see it under normal conditions. He has, to some extent, the feeling of going into an artificially prepared climate, like that induced by entering a florist's shop on a winter day. There, "the warm, sweet smell of the jasmine flower," the closely confined air of the house, artificially heated and heavily laden with the volatile odorous principle of the flowers, is not in the least illusory, does not for a moment tempt one to believe that he has stepped into a summer land. So Florida in winter (I name Florida only as a synonym for all the south which is included in the region of "winter resort") produces no illusion. Through the medium of the Pullman car we step from December's snow and storm into the land of flowers and palm trees with scarcely more ado than from the city street into the florist's shop. We know well that winter is outside, waiting for us again with his grim clutches. To-morrow the calendar will say that spring has come and we shall go back to the north where winter still lingers in the maiden's lap, blowing his shrill breath to chill our unaccustomed blood.

To go south in summer is a different thing. Now these effects of heat, of glaring sunlight, of hot shimmering waves of air in place of winds or breezes, are all legitimate. They belong here to the place and the time, and to the place for all time; we will see them at their best.

A journey due south for a thousand miles, from the fortieth parallel of latitude, through the eastern central portion of the United States, brings few startling changes of landscape. A few hills—no mountains unless one travels as far east as the Carolinas—long stretches of undulating levels, the same flowers by the roadside, the same trees in the woods, the same crops in the fields. Thus it is for the first day. When the Ohio river is crossed, perhaps the aspect of the landscape becomes less trig and trim. There are not so many thrifty villages, and farm fences, and buildings have a less intimate acquaintance with paint and whitewash. The farms are larger though, the buildings more extensive, and there seem evidences of a larger, freer and more generous existence.

Tobacco fields are so frequent that they impress one as a "feature," and hemp to some extent takes the place of corn. There are, too, wider stretches of meadow and pasture. It is the sign of the blue-grass country. Farther along, black faces begin to be more frequent than white, and mules are seen in place of horses, and there are more saddles than wheeled vehicles. A few new forms of vegetation appear: magnolia trees, mainly in the yards and in village streets, cypress vines with their starry flowers clamber over fences, almost hiding them in a green, feathery mantle; and as far as the eye can reach the line of the railway track is yellow with sneeze-weed. This, a fellow-traveler assures me, was one of the gifts brought to the south by the federal army. When I saw how it usurped every vacant place—the wayside and village green, and fields that were "layin' out," I bethought me how "one woe doth tread upon another's heel, so fast they follow." Weeds in the wake of war! another chapter in the story of "how weeds travel!" The evil is hardly less than that of the invading army. We are in Alabama, the land of rest! Now it is king cotton instead of king corn that covers all the fields. "Not so very different from a jimpson weed," says one.

Next come the pine forests, and as we enter their domain we leave behind us the last of the beeches that we shall probably see until we turn northward again. Thus, one by one, trees and vegetable forms with which we are familiar disappear, and strange growths take their place. It is a long way through the pines, but the pine forest never tires, though it is always the same. Through its sombre isles the wind whispers—but not of sombre things. It tells of health and healing, and bears hope upon its wings. This is the region of the long-leaved pine, and, as the train stops, we step out and gather a handful of the long needles or leaves and measure them. One is eight, another nine, ten, thirteen inches long. No wonder they are beginning to utilize this splendid fibre, weaving it into matting and carpets. But

I think it will never again be so lush and velvety to to the foot as here upon the floor of the forest.

"Poor soil, this," says some one scornfully, thinking of the black muck of his Illinois prairie. Aye! but in this glorious climate you can grow herbage from a rock, or a pot of sand. The railway company below here has an experiment farm, and from the white sand of these pine lands they grow wondrous potatoes and cabbage. And for fruit—why, we stand on the threshold of the home of the fig and the scuppernong. Are not these names to conjure with? Where in song or story will you find me better? But to-morrow—. It is to-morrow, and I stand by the shore of the Mexican Gulf, and from

"From wide and open woods I now and then catch glimpses of the blue Gulf."

a tree whose roots are almost washed by its blue waters, I pluck a pomegranate. Behind its tawny skin hide dreams and visions of dark-eyed eastern women; the odors of "Araby the blest" arise, and I hear the tinkling of a lute, and castanets upon the feet of the dancers. From wide and open woods I now and then catch glimpses of the blue Gulf. The white-sailed sloops are brown-sheeted lateens, and rough, black-bearded fellows man them, the buccaneers of story!

It is the land of romance and of story. There is no dull page in its chronicles, from the time of Iberville until now. The annals of history have been written upon every foot of its soil. This portion of the gulf coast, the portion lying between Mobile and New Orleans, now occupies a rather unique position toward society and the world at large, as it is one of the few places in our broad land which seems equally desirable as a summer or winter home. Certain points, of which Pass Christian is the most famous, are largely sought in winter by northern tourists and health-seekers, while in summer, the residents of New Orleans find here a resort convenient to their homes and business, where they may enjoy sea air, bathing, driving and the freedom of life of a summer watering place without going far afield to seek it. In one long street facing the gulf at Pass Christian, these summer houses extend for a distance of nearly five miles. Most of them are quite unpretentious, being constructed in the southern style of architecture, which plans for as much space as possible on the ground floor, and are built with a view to comfort rather than display. Yet many are picturesque and attractive, being suggestive of idyllic, lounging ease. In front of each and extending well into the gulf are the long bathing wharves, with bathing houses at the end. A clean white road, overhung with wide-spreading live oaks, skirts the shore. Trees and plants of semi-tropical habit, the magnolia, China (or umbrella) tree, crape

myrtle, huge Spanish daggers and a profusion of blooming plants add their attractiveness to the door yards. Hammocks swing in every shady nook, and the spirit of afternoon rests upon it all.

It was the last of August when I reached the coast, and the weather was very warm. The mercury, however, did not cover so high a range by nearly ten degrees, as it had in my Ohio home during June and July. And by an examination of the record I found that the mercury had not, earlier in the season, ranged much higher there than it then did. But the period of hot weather is much longer than in the north, beginning in May and continuing until October. The mornings and evenings are almost always cool, and I know of no spot where an early morning stroll is more delightful than along that beach.

But it was not of its attractions for the money spender, but of the money getter, that I was thinking when I began to write. The horticultural resources of that section are vast and as yet practically undeveloped. The soil may not be as generally prolific, nor so capable of supporting a general agriculture as elsewhere, but for fruits adapted to the climate, and for market gardening, it offers fine opportunities. Among the fruit industries which might be profitably followed, I would place fig growing first. The fig tree grows there rapidly to maturity. With the slightest care it produces most abundantly. At Biloxi and other points are factories which will use the entire available product at good prices, for making preserves, jams, etc. At New Orleans the figs are in demand for making candied fruits. For eating in the fresh state, the better varieties are delicious, but owing to their scarcity are almost unknown in our northern markets, as are the preserves also, except in the larger cities.

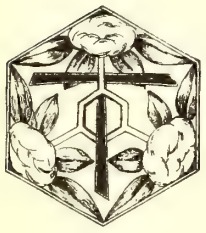
The industry which I would give second place, on the score of profitableness, would be that of growing pecans. The principal drawback to this is the time required—about twelve years—for the trees to come into bearing. But one good crop will repay for long waiting. A good tree will produce many bushels, and in September new-crop pecans were selling in New Orleans at 40 cents per pound. The scuppernong grape is being successfully cultivated for wine, but regarding this I shall have more to say in a future paper.

Market gardening, while in many sections largely carried on for the purpose of supplying northern markets, seems to have been overlooked here, where a good market is close at hand. The growth of the hotel business and the constantly increasing number of people who visit this coast both in summer and winter, afford the best possible opportunity for gardeners; yet, many hotel men told me that they were compelled to depend almost wholly upon New Orleans and northern markets for fresh vegetable supplies. Land is cheap; the climate permits outdoor labor the year around, and the gardener has two distinct seasons of planting and reaping in each twelvemonth. Within a generation, as the waste places of our land are taken up before the needs of an ever increasing population, this whole littoral will blossom under cultivation like the rose garden of Saadi.

JAMES K. REEVE.

# ECONOMIC PLANTS OF JAPAN—VI.*

PERSIMMONS.



THE GENUS diospyros (family Ebenaceæ) contains a number of valuable species, mostly good-sized trees with fleshy berry-like fruits, and several of them produce also a heavy, black heart wood which is known in commerce as ebony. We have a well-known representative of the genus in this country in our common persimmon, *Diospyros Virginiana*, which is native to a large portion of the United States. The Japanese persimmon is merely another species of the same genus. It has been named *Diospyros Kaki*, the word *Kaki* being the native name of the fruit.

It is a fair-sized tree, attaining a height of some forty feet, or occasionally more. While young it is of rapid growth and upright habit, but later becomes crabbed and spreading, with a rather broad and rounded head. The leaves are rather large, shining dark-green, and the flowers small greenish-yellow. The heart-wood of large trees furnishes a kind of ebony which is highly prized by the Japanese, who use it extensively for cabinet work and for all purposes similar to those for which ebony is used here and elsewhere. It is dark, heavy, and takes a splendid polish. But the proportion of black wood is somewhat variable in different trees, it being probably influenced both by peculiarities of the variety and by the nature of the soil. Nor is the heart-wood always or even generally solidly black. It is often variegated, the black color fading away into lighter shades, or it is interspersed with patches and stripes of white or yellow. This gives the wood a

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singular and unique effect when worked into furniture and decorations. If an adequate supply of this wood could be obtained, it would doubtless soon become fashionable with cabinet-makers in this country. This leads to the suggestion why it might not become profitable to grow the Japanese persimmon for its ebony as well as for its fruit. It can be grown throughout the entire southern half of the United States, where it is already pretty well distributed. Its propagation from seed is easy and simple, so the cost of trees for plantations should not be prohibitory, and the fruit, even from seedling trees, would more than pay the interest on the land and the cost of culture. In twenty years, or upwards, such an ebony plantation would be of untold value. The wood would practically be without a rival in the market. The species which furnish the genuine ebony, *D. Ebenum* and *D. melanoxylon* are natives of Ceylon, Southern India, and other tropical countries, and if they can be grown here at all the area of their successful culture must necessarily be very limited.

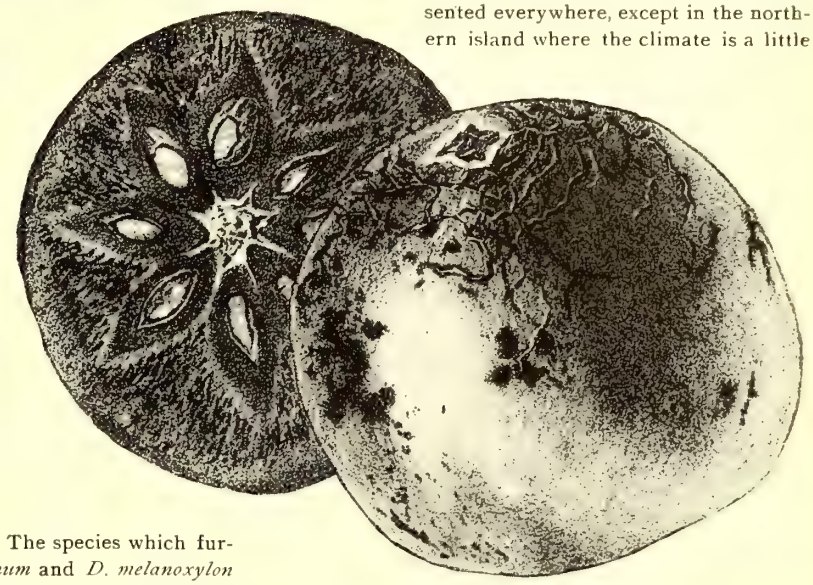


FIG. 1. ZENJI-MARU.

This, however, is but a side issue, at least at present. The main interest in this tree attaches to its fruit. The Japanese have no other fruit that is so universally cultivated. The orange is limited to the south; grapes and pears are grown in certain districts and not found in others, but the kaki is well represented everywhere, except in the northern island where the climate is a little too severe for its successful culture. It is appreciated by all; it is *the* fruit of Japan.

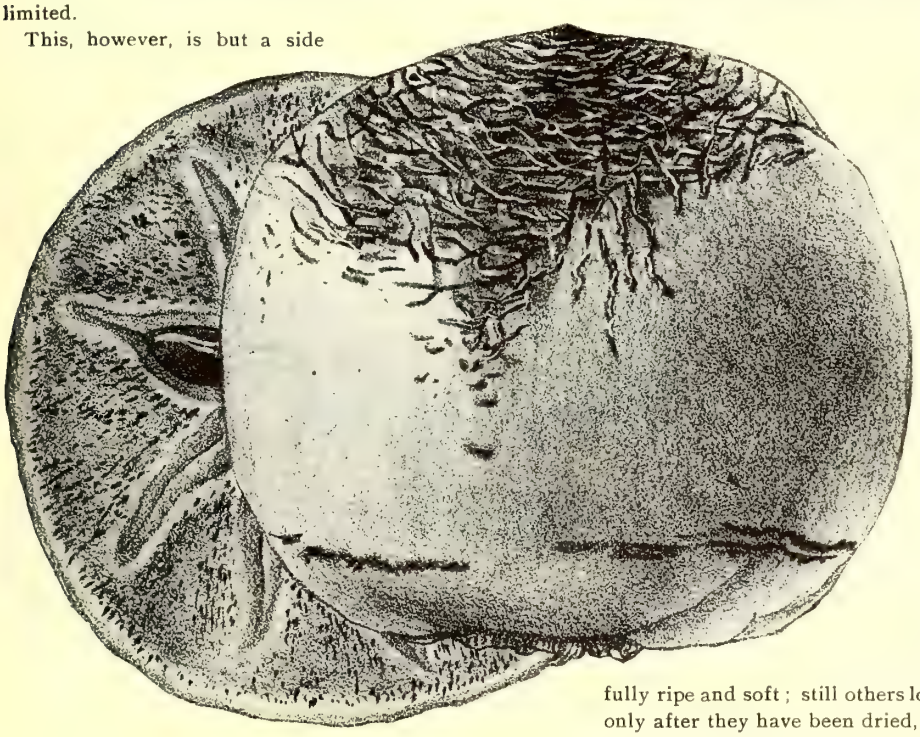


FIG. 2. HIYAKUMÉ.

There is much variation in the character of the fruit. Some varieties are not astringent at all and are edible in early autumn while still hard and green. I learned this, with some surprise, during my first persimmon season there, when much sympathy, which could have been spared, was wasted for people whom I saw eating green persimmons. Several kinds never soften at all till they decay; others are edible only when fully ripe and soft; still others lose their astringency only after they have been dried, and some so abound in tannin that their juice, when expressed, makes a valuable varnish for the preservation of all kinds of wood work.

The trees are not often planted in regular orchards.

By far the most common practice is to scatter them irregularly about the dwelling with but little regard for distances and surroundings. I have seen some commercial orchards set out with regularity and care, but such establishments are not numerous. The small farms, most of which are less than two acres in extent, and which are cultivated on a system of mixed husbandry, do not afford room for many trees. Most growers have but from half a dozen to a couple of dozen trees, and these scattered about in places where they will be least in the way. Nevertheless the markets are chiefly supplied by these small growers, who by their many small contributions make up in the aggregate what they individually lack in quantity. In most cases the crop of each may be packed in a few baskets, and the proprietor then proceeds to market it by suspending a loaded basket from each end of a pole, which is then slung over the shoulder and thus carried to town. Here the ownership is transferred to a middleman, who sorts and packs the fruit for shipment to the larger cities, and who generally also retails what he can dispose of in the home market. To bear shipment the persimmons must reach their destination before they begin to soften, and this necessitates, in the case of many varieties, that they shall be picked before they are ripe. For shipment to distant places they are packed in tubs which will hold about a bushel and a half each. The tubs used for this purpose are of the same size and shape as those used to hold their *saké*, a fermented liquor (rice wine), and the kaki are frequently packed in old saké casks, as it is thought they improve the flavor of the fruit.

FIG. 4. GOSHIYO-MARU.

It will be observed that the culture of the kaki on this small scale by many growers is not conducive to much systematic improvement of the fruit. No one grower has sufficient interest involved to warrant him in expending much time and trouble on the development of varieties, or in experimenting in culture. There are some sixty, or possibly more, distinct varieties scattered over the country, but this list is small when we consider that the kaki has been their chief fruit for ages, and certainly very small when compared with our lists of apples, pears, or any other favorite fruit which admits of equally ready culture.

The Japanese commonly graft their persimmon trees, the stocks being raised from seed. After being grafted, they are grown in nursery rows for a couple of years before they are planted out. The young trees grow off well, but they branch all too readily, and the side branches require removal from the start in order to form the trunk. Beyond this they are not pruned much, and they receive no artificial training.

VARIETIES.—The nomenclature of the kaki is not in a very satisfactory state because several varieties go by different names in different parts of the country. The following list comprises the leading kinds:

*Zenji-maru*, Fig. 1. A small to medium sized round variety, much grown about Tokio. It takes its name from the villages called Ozenji, and is identical with a variety called *Enza-gaki* in other places. It is the earliest kaki brought to the Tokio market, where it appears in September. It is then yellow, hard, crisp and not very inviting, but nevertheless sweet, with but little astringency. It improves as the season advances, becoming dark red with purple flesh, which has numerous very dark, almost black spots scattered through the whole fruit. It has a flavor which reminds one of carrots. Seeds numerous.

*Hiyakumé*, Fig. 2. The name means "hundred mommé," a weight equal to four-fifths of a pound, and

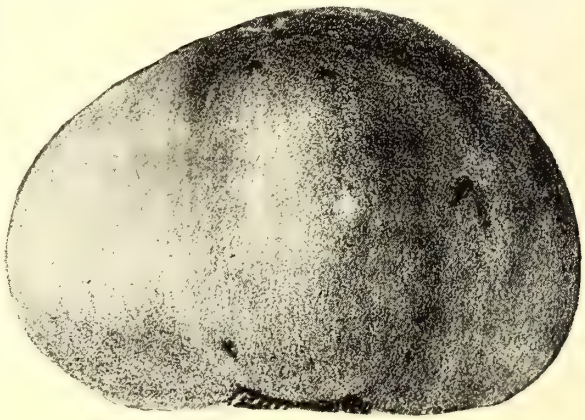


FIG. 5. GOSHI-GAKI.

referring to its size. The fruit is very large, slightly oblate. Skin vermilion, with a thick network of black at the apex, when ripe. Flesh rusty-brown with many

purple or dark spots, and but few seeds; juicy and good; medium early.

*Yemon*, Fig. 3. Fruit is large, oblate, more or less square in outline, folded at apex. In color, yellow to orange red. The flesh is light yellow, with few or no seeds, rather firm, but not crisp. It ripens in the latter part of October, but it improves by keeping a few weeks, during which period it is often packed in saké casks. When thus fully ripened it is perhaps the most delicious kaki extant.

*Goshiyo-maru*, Fig. 4. Fruit medium to large, oblate, somewhat square in outline; color bright red with short, wavy dark lines; flesh reddish-brown, with many black dots; core large, seeds few.

*Tsuro-no-ko*, Fig. 8. Fruit small to medium, oblong, pointed; color bright red, marbled with purple about the apex when fully ripe; flesh rusty, thickly spotted with purplish-black dots, soft; ripens before frost.

*Hachiya*, Fig. 9. Fruit very large, oblong, somewhat pointed toward the apex; color bright red, with some dark markings about the point; flesh yellow, soft and jelly-like when ripe, but not very sweet; seeds few, long and narrow. This variety is nearly always dried by the growers, as it is too soft to ship after it is ripe. It is

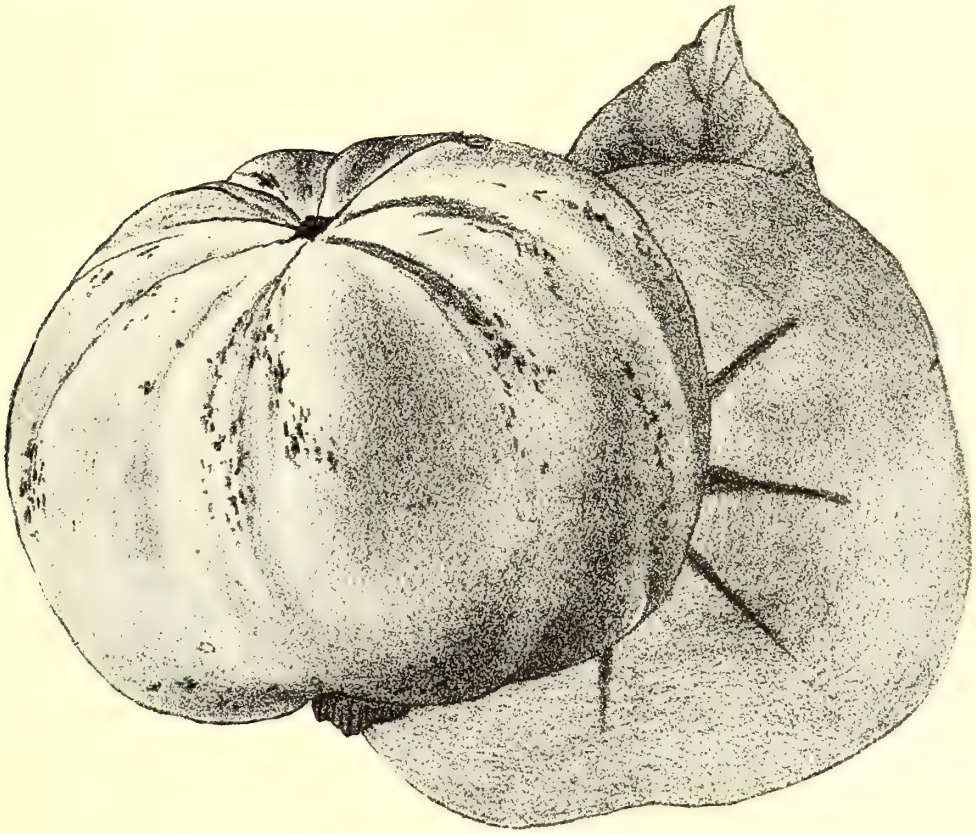


FIG. 3. YEMON.

black markings about the apex. Flesh hard, crisp, rusty colored, with many purplish-black dots scattered through it; sweet and juicy.

*Goshi-Gaki*, Fig. 5. Fruit medium, oblate, rather flat; color bright red; flesh light orange colored, with but few seeds.

*Yedo-ichi*, Fig. 6. Fruit medium, slightly oblong, flattened at base and narrowing toward the apex; color red, with a few purple markings about apex; flesh rusty-brown, with purplish dots, crisp; ripens early in October.

*Giboshiu*, Fig. 7. Fruit medium, oblong, pointed; color bright red, the upper half marked with horizontal

chiefly this kind that is exported to this country as dried kaki, and can, in that form, be obtained in our larger cities during the winter. It is inferior to the Yemon and many others.

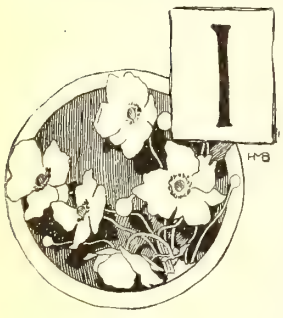
*Dai-Dai-maru*, Fig. 10. Fruit very large, round, oblate, somewhat flattened; color yellow; flesh moderately firm, light yellow, juicy and good, with few or no seeds.

*Tane-Nashi*, Fig. 11. Fruit very large, broadly oblong, pointed; color yellow, marbled darker colors; flesh yellow, soft, with few or no seeds, somewhat astringent, unless it is well ripened. This variety is used for drying.

*Kansas Agricultural College.* C. C. GEORGESON.

*(Persimmon discussion continued next month.)*

# GRAPE EXPERIENCES IN SOUTHWESTERN MICHIGAN.



IN THE SPRING of 1880 I set a vineyard of 2,000 vines —1,000 Concord, 500 Delaware and 500 of various varieties, including Moore's, Champion, Hartford, Ives, Lady, Martha, Worden, Brighton, etc. The location was a high, steep, southern exposure, with a mixture of all kinds of soil, and very stony. It was new land covered with stumps, some of which were pulled out, but most of them were left until they became rotten enough to pull easily. At present about a dozen of the old settlers still defy all efforts to loosen them.

The vines were set 6 x 8 feet, and the ground occupied was 2⅓ acres. No crop was planted between the rows, but the vines were kept well cultivated and hoed. The second spring they were staked at a cost of about one cent each, last year's growth cut back to two buds, and given clean cultivation until the first of August, when several days were spent picking up and drawing off loose stone. The third spring the vines were all pruned to one cane, long or short, according to their strength. Every year the cultivation has been the same, beginning about the middle of April and cultivating every week or ten days until the middle or last of July. The vineyard has been thoroughly hoed twice and sometimes three times each season. On account of the steep side hill and the tendency of the soil to wash, the vines have been trained to stakes and cultivated both ways. The aim in pruning has been to leave the strongest and best ripened wood (new growth) each year, cutting away weak canes entirely, leaving the old wood or main stock from two to four feet high, and at each hoeing breaking off all suckers and sprouts near the ground. The pruning has always been very close, cutting away from ¾ to ⅚ of the growth.

In the Concords I have experimented with several systems of pruning, following it up year after year. In two rows the two longest new canes were left, cutting everything else away. For the first few years these vines bore large clusters, but lately they fail to make sufficient wood growth. In two other rows four to six new canes were cut back to about two feet long, but aside from being a bother to keep so many short canes tied up, I could see no difference from the rest of the vineyard. In the next two rows all the canes were cut back to two buds, leaving the old wood each year. This system has made so much old wood that I have had to cut away considerable in the past two years in order to get between the vines with horse and cultivator. Vines pruned this way have too many small clusters. In the next two rows a bush was formed about one foot above the ground. From this three or four of the strongest new canes were left at each pruning, about four feet long, the last year's bearing canes being cut away and other new canes being cut back to two buds. This plan gives the best results. The clusters average better, and the vines seldom fail to produce good canes for the succeeding crop. If I were starting a new vineyard to be trained to stakes, I should follow this manner of pruning; but unless the ground is very steep and hilly, I prefer training to posts and wires on many accounts.

Three years ago I applied half a ton of bone meal to the poorest spots. Fearing it would be washed away on the steep hillside if applied broadcast, it was put in holes made by a hop bar, one pint in each hole, or one pound to the vine. I have been disap-

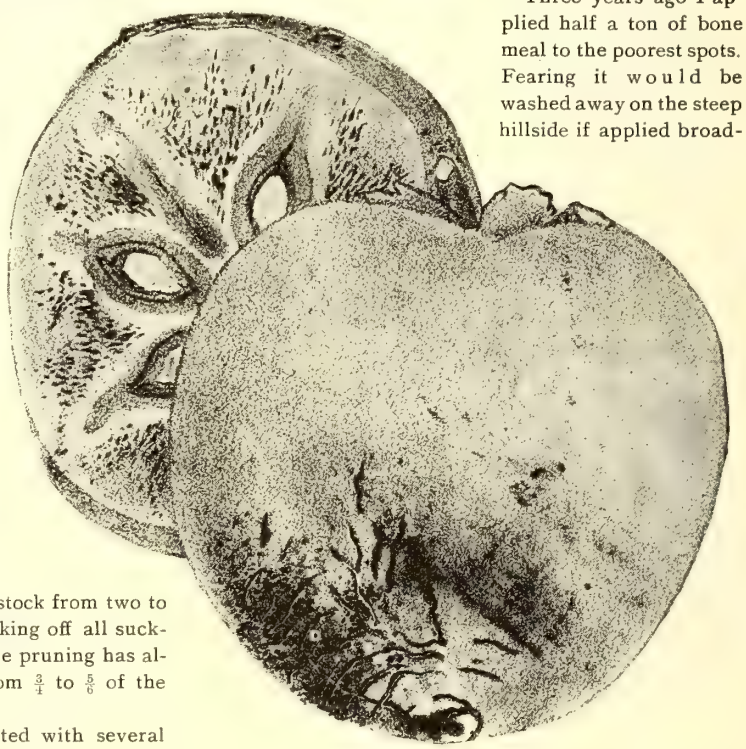


FIG. 6. YEDO-ICHI.

pointed in the result. The bone is still in the ground. The grape roots have clustered around it more or less, and perhaps benefit may come in the future. Nitrate of soda

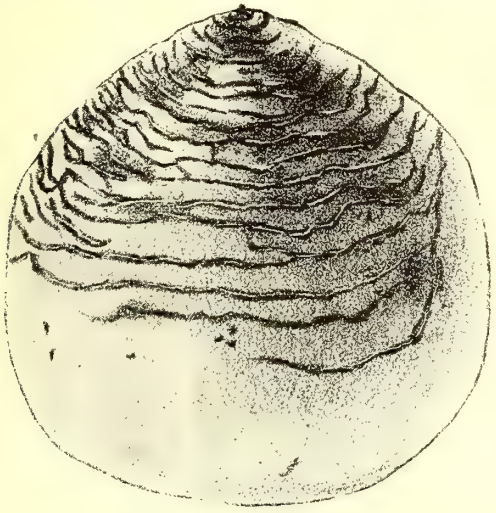


FIG. 7. GIBOSHIU.

and muriate of potash were applied in portions of the vineyard last spring, but with questionable results. I have used wood ashes more or less at different times, and have about come to the conclusion that the soil does not need potash. A cat-hole near by had filled up with the wash from the adjacent hillside. This dried mud was drawn up the hillside on a stone boat and spread among the vines, with the best results. When the wood growth is deficient there is nothing like barnyard manure, well rotted, but it will be a year from time of application before you will get any benefit; too much manure is a detriment. Stakes last from three to six years. Every spring, in pruning, stakes which will push over or break off are removed, and new ones take their place. I cut stakes eight feet long; when they rot off they are still long enough to set again. After a hard wind, just before the grapes ripen, many vines will blow down, and if not picked up the grapes seldom ripen up well.

With me Champion, Hartford and Ives yield about the same quantity as Concord, but the quality, especially of Champion, is inferior. Moore's does not yield paying crops. Worden is almost like Concord, is sweet as soon as colored, but will not keep so long. Brighton is the sweetest grape, but an uncertain cropper. Martha and Lady have usually borne fair crops, and are of good quality. Salem, Wilder, Agawam and Lindley I usually put away in the cellar for winter. They have never paid as market grapes.

I am naturally fond of figures, and when planting this vineyard I opened a separate account with it. In these figures no estimates have been made. Every item of expense and every hour's work has been charged up. Of course it would be impossible to enter into details in a short article like this. To make it brief, I have prepared a table giving the total annual yield and sales, expense and profit of the 2,000 vines.

The land ($2\frac{1}{3}$ acres) cost $175; the vines $100.64 (vines cost more ten years ago than now); and the cost of plowing, setting, cultivating, etc., was $42.94, making a total of $318.58 the first year. The expense for the second year amounted to $74.25, making the cost $392.83 to January 1st, 1882, and no receipts.

| | *Yield grapes, lbs.* | *Net sales grapes.* | *Cost of pruning, cultivating, harvesting, etc.* | *Profit.* |
|---|---|---|---|---|
| 1882 . . . . | 4,400 | $195 99 | $132 73 | $63 26 |
| 1883 . . . . | 4,500 | 218 72 | 97 29 | 121 43 |
| 1884 . . . . | 8,750 | 312 36 | 117 77 | 194 59 |
| 1885 . . . . | 7,875 | 245 62 | 122 09 | 123 53 |
| 1886 . . . . | 6,050 | 182 71 | 135 60 | 47 11 |
| 1887 . . . . | 20,655 | 621 63 | 251 28 | 370 35 |
| 1888 . . . . | 9,180 | 278 06 | 140 14 | 137 92 |
| 1889 . . . . | 4,255 | 137 70 | 114 28 | 23 42 |
| 1890 . . . . | 18,000 | 559 93 | 207 14 | 352 79 |
| | 83,665 | $2,752 72 | $1,318 32 | $1,434 40 |

In the spring of 1885, I planted 1,000 Concord vines with a view of seeing how cheap I could grow grapes. The location was high and free from frost, but not steep enough to wash; soil a strong gravelly loam, which would produce 25 bushels of wheat or 100 bushels of corn to the acre. A clover sod was turned under and fitted as for corn, marking 4 x 4 feet, and one-year vines set at every alternate mark, making them eight feet each way. Two weeks later, corn was planted, except at the marks where vines had been set. The field was kept thoroughly cultivated and hoed the rest of the season, and the corn gathered more than paid for the cultivation. The second spring the vines were staked, and corn again planted. In

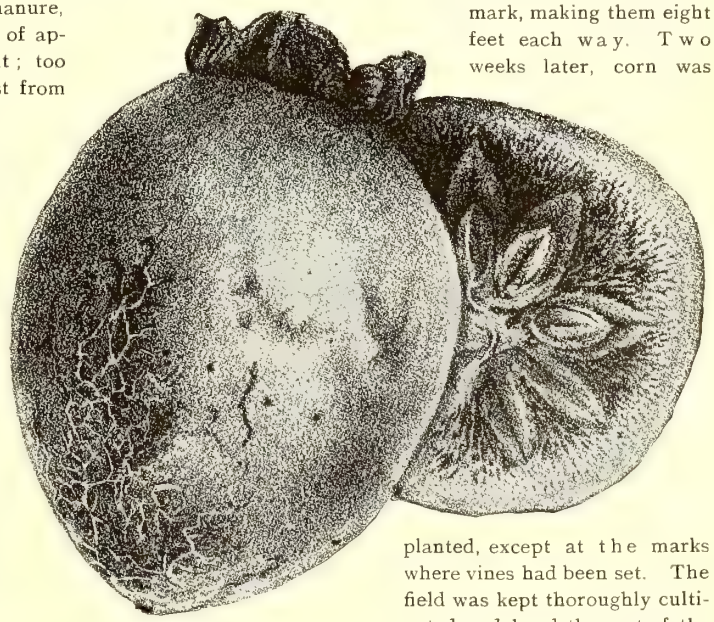


FIG. 8. TSURO-NO-KO.

hoeing, the two strongest shoots were tied to the stakes and all others rubbed off. This left the vines in good condition to bear the second season; but for some reason the crop was very light, and the receipts for grapes was less than what the corn crop had been the previous year. The fourth spring, posts and wires were set, the bottom wire $2\frac{1}{2}$ feet and the top 5 feet high. On the strongest vines four canes were left in pruning, two for the bottom and two for the top wire; but many of the vines were so small that only the two bottom canes could be left. The crop this season was good, averaging 12 pounds per vine. We picked and shipped about one-third of the vineyard, and the balance sold on the vines at 12 cents per basket (about 8 pounds). The west side

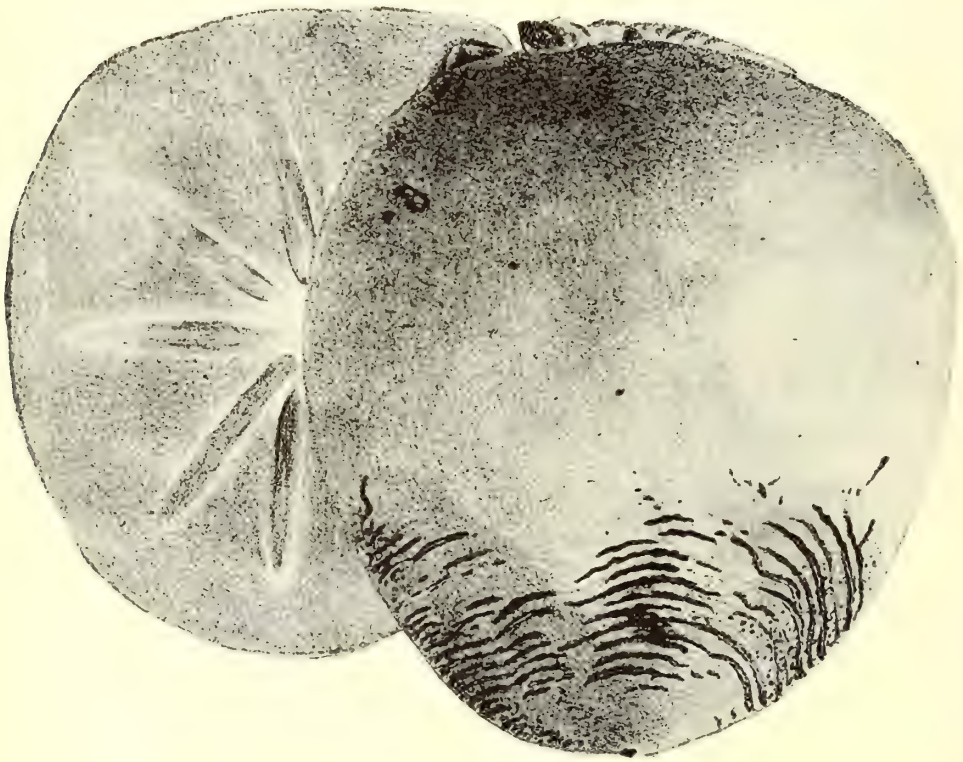


Fig. 9. Hachiya.

bore the heaviest crop, where the soil was the lightest. In order to equalize matters, I sowed 400 lbs. bone meal on this side the following spring. The fifth year (1889) the crop was again light—only $4\frac{1}{2}$ pounds per vine, but the vines made a tremendous growth. Last spring we cut back to four canes, except where a vine had made an extra rank growth, when six canes were left. I do not know of a vineyard in the county that was cut back closer, but the crop was all the vines could carry. The average was over 23 pounds per vine. This year the east part bore the heaviest crop, averaging fully three baskets to the vine, while the yield on the west side, notwithstanding its previous dressing of bone, was noticeably lighter.

Until this year we have always picked in holders, drawn the grapes to the packing-house and packed the following day. This gave them time to wilt, and a good packer could easily make her baskets weigh ten pounds. This year local buyers came in, and a basket was a basket with them, provided the grapes were good and the baskets packed full. If very lightly packed, they would shade the price a trifle. Considering this, we determined to pack direct from the vines, and were well satisfied with the result. By close figuring we could bring the cost of picking, packing and delivering at the depot to two cents per basket, but it could not be done with inexperienced help. One hundred baskets is a good day's work for a packer, and one man can cover for about five packers.

To give the figures for the six years: The land occupied was $1\frac{3}{5}$ acres; total cost the first year was $135.75; the second year increased the cost to $156.75; the third year the crop of grapes amounted to 1,800 pounds, and netted only $25.60. However, this paid expenses and $1 over, the reason being that very little work was put on the vineyard; other and better paying fruit demanded attention. The fourth year, on account of wiring, the expense was $63.14, but the net sales of grapes amounted to $186.42, leaving a profit of $123.28. The yield was 12,048 pounds. The fifth year a cold rain storm mixed with snow came, the 30th of May, when the vines were in blossom, and blighted the crop. The yield was only 4,575 pounds, but they sold for $110.55, leaving a profit over expenses of $41.71. The sixth year (1890) the expense of pruning, cultivating, hoeing, etc., was $30.34. It cost $75 to market the crop, and the baskets (2,709) cost $94.82. 1,630 pounds were sold by weight to home consumers, which if packed, would have made a total crop of 2,012 baskets from 1,000 vines. The entire expenses for the year were $200.16; receipts, $655.92; net, $455.76—about 250 per cent. on the investment. Who wants to go to California?

Nearly every variety of grape requires different treatment, either in pruning, distance apart, or in richness of soil. Moore's Early requires a rich soil, and as yet, I have not been able to make it produce paying crops. The cut-worm, steel beetle, thrip and rose chafer prefer Moore's to Concord, and I have sometimes thought that this might be the trouble; but aside from this they make a poor growth. Delawares need plenty of room, notwithstanding they are slow growers. The past season, vines set 6 x 8 feet produced 8 pounds per vine, 8 x 8, 9 pounds per vine, while a row of 40 vines, 8 feet apart and 20 feet from the next row, produced 19 pounds per vine. Concords at the latter distance produced a less

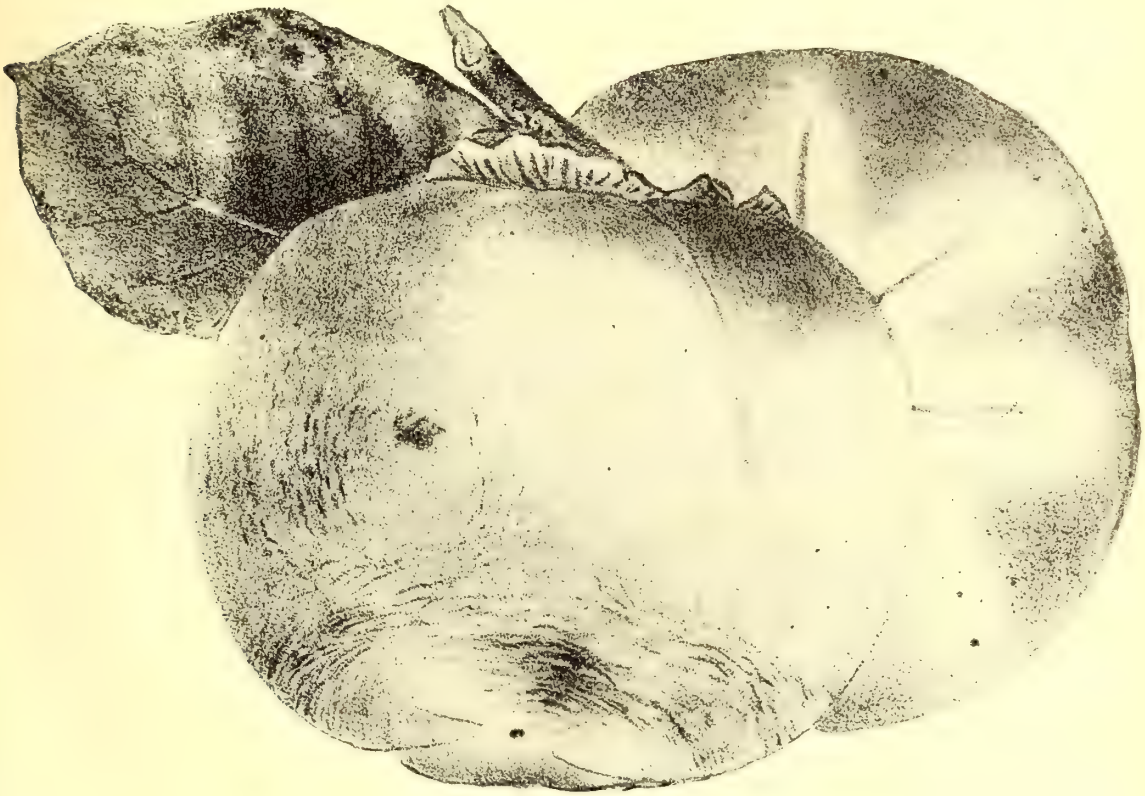


FIG. 10. DAI-DAI-MARU.

number of pounds, but ripened their crop so the vines were cleaned at the first picking. This would indicate a proper way of planting where even ripening was desirable. Of the Niagara I have had but little experience; 100 vines set two years ago bore only 15 pounds of grapes this year. I have been unable to keep them in good condition, while Empire State, picked at the same time, kept in good condition for several months after being gathered.

It is often stated that grapes pay at 2 cents per pound. The average net price received for Concords in 1886 and 1887 was only $1\frac{7}{10}$ cents per pound, picking and packing to come out of this. In 1888 it was $1\frac{8}{10}$ cents per pound; in 1889, $2\frac{2}{10}$ cents; in 1890, $2\frac{4}{10}$ cents; in 1885, $2\frac{6}{10}$ cents; in 1882, $2\frac{9}{10}$ cents; in 1884, 3 cents; in 1883, $3\frac{6}{10}$ cents per pound.

The net price received for Delawares was, in 1882, 7 cents; in 1883, 6 cents; in 1884, $6\frac{1}{2}$ cents; in 1885, $5\frac{9}{10}$ cents; 1886, $4\frac{1}{2}$ cents; in 1887, 4 cents; in 1888, 5 cents; in 1889, 4 cents; in 1890, $4\frac{1}{10}$ cents per pound.

On account of the scarcity of other fruit this season, grapes have sold well, considering the enormous crop all over the country. At Lawton, local buyers came in and the bidding was sharp, resulting in very little fruit going to Chicago on commission. Grapes shipped to Chicago Sept. 10th and 11th netted 17 cents per basket; 12th, 18 cents; 13th, 20 cents. Sept. 15th I received a telegram from Chicago: "Grapes selling for 26 cents; ship all you can." 26 cents in Chicago would net 20 cents at Lawton; but I sold for 23 cents at Lawton, and the price held at 22 to 24 cents to the end of the season. At the same time Chicago quotations were all the way from 20 to 27 cents.

What the future of grape growing will be, with its rapidly increasing acreage, no one can tell. Competition will be strong, and only those localities having favorable soil and good shipping facilities can make it profitable.—A. H. SMITH, *before Western Michigan Fruit Growers' Society.*

# REGISTRATION OF NEW FRUITS.

REPORT OF A COMMITTEE ON REGISTRATION OF THE PENINSULA HORTICULTURAL SOCIETY.

AT THE last annual meeting of this society* your committee was instructed as follows: "Suggest a plan of action, in case it is found to be feasible and proper to register new varieties of fruits."

The evils against which registration is thought to be a remedy affect originators, nurserymen and growers. Originators seek protection similar to that afforded by patents. Respectable nurserymen feel that their business is impeded, and that an unfair rivalry is established by certain disreputable practices—noticeably by the sales of old varieties of plants under new names. Experienced growers have become outspoken in their condemnation of the tendency to create varieties on distinctions too fine to be seen by disinterested people. They feel that steps should be taken to hold sellers responsible for any claim, providing it misleads and causes either financial losses or annoyances. In a spirit of fairness, they admit that a number of trade irregularities may have been caused directly by a lack of information on the part of growers—a lack of information which sometimes takes the form of an intense eagerness to buy anything which is said to be either new or novel in the fruit line.

FIG. 11. TANE-NASHI. (See page 333.)

It is clear that all these complaints would cease immediately if the true value of the plants or trees actually sold was at once apparent to the purchaser. But from the very nature of the case, this value can be known to the originators or nurserymen alone; hence, following ordinary business rules, the seller should be forced to give a guarantee, and if this be broken, damages can be collected.

*Comprising Delaware and the remainder of the Chesapeake peninsula.

The fertilizer trade offers a parallel case. There is no way by which the sense of sight, of smell or of taste can become a true guide to a purchaser of phosphates. Hence, the more recent state laws now require that the seller shall register, with a duly appointed official, a guaranteed statement as to materials used in making said phosphates, their chemical composition, etc. If this guarantee be broken by the manufacturer, serious consequences follow.

In formulating any plan for the consideration of this meeting, it must be remembered that the Peninsula Horticultural Society is not an incorporated body; that it can neither sue nor be sued. Then, too, its membership is drawn from three states, and many difficulties might be experienced if special legislation were sought, consequently any plan, to be of immediate benefit, must rest upon laws found in the statute books of every state.

The following plan is feasible, in case the society has strength, and the interest felt in this movement is sufficient: Let every one dealing in nursery stock be requested to register with some duly appointed member of this society, and let his registration be in the form of an affidavit, covering the following points:

1st. The name of each variety offered for sale.

2d. The name of its originator.

3d. The history of its discovery.

4th. The history of the efforts made to determine the permanence of the type.

5th. The claims made by the originator or the seller as to the valuable peculiarities of the variety and the tests upon which these claims rest.

It could be made the duty of the official who received these affidavits to tabulate, print and circulate them

among the members of this society for their information and benefit.

In purchasing, each grower could demand a guarantee that the plants or trees actually furnished were directly descended from the certified stock. This plan makes it incumbent on the grower to study claims and use judgment. It demands from the seller or the originator information which should certainly be within his reach. People make affidavits only in case personal interests warrant or necessities force them to this step. How, then, can sellers be induced to register? For pressure and for interest, as well, let members of this society refuse to purchase, and let Experiment Stations refuse to test unlisted stock.

It requires several years time to determine by actual test whether a variety is true to name and up to its guarantee. During this time sellers may have disappeared. The longer the time which elapses before trees or plants produce, the greater the losses in case of fraud, and the heavier the possible damages. This alone should lead men to deal with responsible firms.

It is unpleasant for an individual to bring suit, and involves expense and annoyance. Let this society attend to that matter. In case of apparent fraud, let it appoint a prosecuting committee and stand the expenses of a test case brought in the name of an individual loser. It should do this, for the benefit which would follow a victory would accrue to all who are engaged in the fruit industry.

A. T. Neale,
J. W. Kerr,
James S. Harris.

## FRUITS AND VEGETABLES IN WISCONSIN.

I HAVE failed to find any state where the wide-awake, enterprising and progressive farmer or gardener lives better or more comfortably than in Wisconsin. Even as far north as we are, 44½°, we can grow good crops of almost every fruit or vegetable that is grown in the gardens about New York city. For instance, last spring we started the plows on the 22d of March, commenced selling spring-grown onions (bunches) April 15, pie-plant the 20th, asparagus 23d, radishes May 13, spring-sown spinage 15th.

The first sowing of peas began to bloom May 17, and with favorable weather are fit for market sometime between the 5th and the 10th of June. Strawberries come on about the same time. I have twice picked peas for market upon the 5th of June, and twice picked ripe strawberries upon the 6th of June. Generally, we expect to pick our first ripe berries from the 10th to the 14th of June, and our first peas about the same time. We expect to have our first heavy fall frost from the 6th to the 12th of October. Twice during the thirty years that I have been gardening here I have had all tender vegetation killed in September; two or three times frost did no damage until the latter part of October.

All of our northern varieties of grapes, that are not later than the Concord in ripening, do well. I have never seen finer Delawares than some of those grown in this part of the state.

The revolution in small fruit growing in northeastern Wisconsin within the last twenty years has been remarkable. Twenty years ago there were almost none of the small fruits grown in this part of the state, except strawberries, and not a sufficient quantity of them to supply the demand at home, and the lumber and iron district north of us. Now, I believe that the value of the small fruits grown in northeastern Wisconsin, commencing with strawberries and ending with grapes, will run into hundreds of thousands of dollars annually.

Not only are the home and the northern markets supplied, but fruits are shipped both south and west, in some cases as far west as Dakota. The culture of raspberries and blackberries has been confined almost entirely to the last ten years. Previous to that time, the wild ones grew in immense quantities where the forests had been cut off and the land left uncultivated, but now wild raspberries have almost entirely disappeared, and blackberries will soon follow suit.

The Wilson is still my favorite strawberry; the Crescent comes next. With me the Manchester is the only one of the very many newer varieties that has ever given indication of excelling. Hereafter I think that something better than a mere catalogue reputation will be necessary to induce me to invest in the new varieties.

If I could have but one raspberry, I should not hesitate to take the Cuthbert in preference to any that I have seen or tested. With the Marlboro or Hansel for an early red, the Cuthbert for late, the Souhegan for the early black cap, and the Gregg for late, it seems to me that we have an almost perfect assortment of raspberries for the season. There is no break between the strawberry and raspberry season. Last season we had both upon our table together for a number of days. The Cuthberts being late and long continued bearers, will last until the blackberry season comes on. The Ancient Briton is taking the lead of all other varieties of blackberries in this part of the state; they are somewhat later than either Stone's Hardy or the Snyder, but are fine large berries and great bearers; like all other varieties, they need winter protection in our long cold winters. This great bugbear of winter protection is a cheap, safe and an almost certain guarantee of good crops of all of our small fruits, currants excepted. I believe that I have never yet seen a fruit bud of the currant killed by a hard winter.

J. M. Smith.

# THE HOUSE GARDEN.

PLANTS FOR THE WINDOW, AND HOW TO HANDLE THEM.

CAN SAY, from practical experience, that no plants are so suitable for window gardening as ornamental foliage plants, for no others are so easily managed, if once they are started right. Flowering plants have a greater tendency to become straggling and top-heavy, to have many dead leaves which must be removed, or they present a most untidy appearance. Foliage plants are much more compact, graceful, and ornamental in appearance; and another point in their favor is that, while a bright, sunny window is indispensable to full success with flowering plants, a partially shaded position is much better for ornamental-leaved kinds. In fact, if they are placed in a south window, it will be necessary to provide a curtain to shield them from the direct rays of the sun, as the days become warmer in the spring.

The first requisite for success is to select plants which will be as attractive as possible, which will be able to stand a considerable amount of rough usage, and such as are not too straggling in habit, for economy of space must be considered in the selection of window plants.

To avoid the sudden drying out, which is so injurious to the health of most plants in dwellings, I would suggest that a box be made the size required, and then lined with zinc. Have a pipe from the bottom of the box to carry away the water which will soak through when watering. Place the plants in this box with the rim of the pots a little below the top of the box; fill in between the pots with moss, which will keep the plants from drying out, and will tend to prevent their becoming infested with red spider. If the plants are to stand separate, the pots can be placed inside of others, two sizes larger, and the space between filled with either moss or sand. Plants so treated are not much trouble, as they will not require so much watering. Never water unless the plants are dry; then give enough to thoroughly soak the soil. The speed with which water will evaporate from the soil of a porous pot fully exposed to the dry air of a dwelling is something astonishing, and the plants are almost certain to suffer thereby at times. By the means indicated, this is largely avoided and the plants make a more satisfactory growth.

Sponging off the leaves occasionally with tepid water will greatly improve the appearance of the plants, and besides, it is very beneficial in preventing the attacks of red spider and other insects. Plants well cared for are much less liable to suffer from insect pests than those which are neglected. If troubled with scale, make a thick suds of whale-oil soap and rub this on the plants. Let it remain some time, then carefully rub it off with a sponge, or syringe with clean water. It is necessary to use care not to get any of the solution on the young leaves, else it will injure them and cause them to fall off. If the plants are properly cared for, sponging off the leaves occasionally, this remedy need not be applied. In my opinion, clean water is the best insecticide if used in time. For the green-fly, tobacco stems may be steeped and the decoction syringed over the plants, if fumigating with tobacco smoke is undesirable, as it usually is in living rooms.

In summer time your plants can be put out-doors, and those which need repotting attended to. Have the pots well filled with roots before the plants are taken into the house in the fall. If you have a partly shaded place near the house, you can plunge the plants in the soil; if nicely arranged they will give a very satisfactory effect, and the plants will do better.

Always have some good potting soil on hand. It should be composed of leaf-mould, decomposed manure, sand and rotted sod. See that your pots are well drained, for no plants will remain long in a healthy condition unless the drainage is perfect. The following is a list of plants, all of which will, in my judgment, prove satisfactory as window plants:

Aralia elegantissima.
" Guilfoylei.
" variegata.
Araucaria Cookii.
" Cunninghami.
" excelsa.
Areca lutescens.
" Madagascariensis
Aspidistra lurida, var.
Aucuba Japonica.
" bicolor.
Achryanthus Herbstii.
" Lindenii.
Cycas revoluta.
Curculigo recurvata.
" variegata.
Carludovica atrovirens.
Chamærops excelsa.
" Fortunei.
" humilis.
Cyperus alternifolius.
" variegatus.
Dracæna terminalis.
" Baptisti.
" Brasiliensis.
Euonymus Japonica.
Farfugium grande.
Ficus elastica.
" repens.
Kentia australis.
" Balmoreana.
" Fosteriana.
Latania Borbonica.
Pandanus Veitchii.
" utilis.
" Javanicus.
Pepironica argyræa.
Panicum variegatum.
Phorium tenax.
" variegatum.
Retinospora plumosa.
Tradescantia discolor.
" zebrina.
Yucca filamentosa, var.
" aloifolia, variegata.
Begonia, Countess L. Erdody.
" Rex.
" Louis Chretien,
" Queen of Hanover,
" Queen Victoria.
" manicata, aurea.
" O'Donoghue.
Selaginella cordifolia.
" Wildmorii.
" Kraussiana.
" Martensii, variegata.
Asplenium bulbiforum.
" aculeatum.
Nephrolepis exaltata.
" davallioides, furcans
Pteris cretica, alba lineata.
" serrulata.
Platycerium alicorne.

*Cornell University.* R. SHORE.

THE HOUSE GARDEN.

ERDODY BEGONIA, PANDANUS AND TRADESCANTIA.

# THE NOVELTIES.

THEIR VALUE—DISAPPOINTMENTS—OPINIONS AND EXPERIENCES.

EVERY now and then we find some writer "pitching in" indiscriminately against all sorts of novelties in the fruit and vegetable line, because he has happened to get bit by some pretended novelty that did not turn out according to promise. We find, too, that there are always men ready to denounce the most valuable of newly introduced plants, because they have not turned out in their hands as the introducer described them. They take no account of the variations of fruits in different soils and climates; and perhaps their own treatment of the plant was at fault. Yet, all the same, they rush into print to denounce the distributors of new plants as arrant humbugs. Doubtless there are many new things sent out every year that are fraudulent in their claims. But the people generally caught by the frauds are those who fail to make themselves fully acquainted with plants, and who take the statement of some tree peddler, with his gorgeous books, as gospel truth, and are never well enough posted to know that the article offered at big prices is worthless, or that it is a kind that can be bought from the neighboring nurseryman at one-tenth the price the tree agent asks for it.

It is generally these men who are making it so fashionable, nowadays, to denounce the nurserymen for sending out novelties. The fact is, that progress in horticulture can be made in no other way. Nurserymen of energy are constantly engaged in trying all things, and holding fast to that which is good. If they did not try the various plants that are introduced, how would their value be ascertained, and how would the great advances that have been made of late years have been possible? A nurseryman's collector in a foreign country finds something which he considers of value, and sends it home. The nurseryman gets up a stock and catalogues it with the description received, and hopes to make it reimburse him for the heavy expense in looking up new things. The plant may turn out of great value in its new home, or prove valueless. The great result, however, is that in a series of years great advances have been made, and notwithstanding the failures, the balance to the community at large is on the right side. Nurserymen lose more money in importing new things than they get out of their customers on the worthless ones.

Take the strawberry, for instance. We have many complaints of the worthless character of many of the new sorts; but does any one doubt that we have made a great advance in strawberries adapted to our climate since the day when Hovey's New Hautbois was sent out? It took our growers a long time to learn that the species of strawberry suited to the English culture and climate did not suit ours, and I know of one of our best nurserymen who for years persisted in importing the best foreign sorts, with high sounding names, in the vain effort to find a sort equally good here.

It is not a great many years, it seems to me, since in reading the *Gardeners' Chronicle*, of London, I noticed an inquiry by a reader as to the best mode of packing and shipping strawberries, The editor answered that the best way was to wrap each berry in tissue paper and pack between layers of cotton batting. He went on to say that he had heard that strawberries were grown on a large scale in this country and sent to market in wagons, and that as many as ten large wagon loads were sometimes taken to market in New York in one day! They know a little more about us over there now.

But, to come back to our subject—do not denounce novelties in fruits, flowers and vegetables merely because they are novelties, and held at a high price. If you can not afford to risk a little in experimenting, do not do so. Watch the results with these new things at the experiment stations, and let them, or more enterprising neighbors, try the novelties. But I have noticed that those growers who are the most enthusiastic and successful in their business are the ones who test all the novelties, and are always in among the first with a really good thing while the price is high, and who pocket the losses on the worthless ones with a good grace, content to make a good thing out of the average. And it is through the efforts of men of this kind that a constant advance is being made all along the line. Our fruit lists are doubtless burdened with too many varieties, and many are kept on that were good in their day, but we have gotten beyond them. Many new grapes are brought out annually that may be, and probably are, better than the native sorts we started with, but the advance in this fruit has been so great that the public are more critical than they were when the Isabella was our sole reliance, and our native grapes are now so good that a new sort, to become standard, must be very good indeed. So, while we denounce the frauds, let us hold up the hands of those earnest workers who are laboring intelligently to improve our fruits, even if they are occasionally mistaken in their judgment.—W. F. Massey, *Raleigh. N. C.*

Novelties, Oddities and Stand-bys.—The writer has a vivid recollection of a time, long ago, when he cultivated pentstemons, and rank, weedy looking plants they were, with dingy, microscopic flowers. Contrary to the bent of his ardent temperament, he never became very enthusiastic over them, for the reason that they pos-

sessed no salient points of merit upon which to hang the slightest shred of enthusiasm, and he soon abandoned them.

At that remote period he had just entered, a buoyant but unsophisticated neophyte, into the broad realm of floriculture, and his initial exploits therein were carried on with the same unflagging zest and enjoyment, which he still derives from "digging in the dirt," notwithstanding the many occasions on which the practical outcome of divers promising theories proves that hope often hovers on the border-land of illusion. When in the happy chrysalis condition of youthful amateur, he then, as now, dabbled extensively in experiments, and the certainty that he had found his true vocation was evident in the fact that the leading catalogues then in vogue swayed him with the same subtle, irresistible power that their florid successors of the present day still maintain. Inspired by their persuasive eloquence (and the minimum price of the packets, five cents, which was an economical consideration not to be overlooked in those pioneer days), he first became practically acquainted with those peerless flowers, abronia, argemone, bartonia, calendrina, carduus (or was it simply cardus?), crepis, bachelor's button, collinsia, datura, godetia, nemophila, leptosiphon, linum, malope, saponaria, silene, podolepis, whitlavia, zea, etc. Yet, notwithstanding the influence of the potent charm of novelty and the optimistic ardor of youth, the effect of the combined loveliness of this rare collection was not sufficiently powerful to chain his allegiance to the proteges of the blithesome catalogues for more than a couple of seasons or so, and in his garden to-day, this galaxy of beauty is conspicuous from its absence.

In making his selections—that occupation so full of charm—he was often more moved by the classical euphony of the names than by the fervor of the descriptions; for who could resist, for instance, names so replete with rhythmic melody as calendula, calendrina, cedronella, nemophila, etc.? though to be sure, he was disenchanted to discover that *Centaurea cyanus* was an old acquaintance, and that malope, datura and saponaria grew in sturdy independence all along the roadside, while his grandmother had, from time immemorial, devoted a patch in the paternal garden to carthamus, but the matter-of-fact old lady, in her primitive way, had always called it saffron.

In spite of all this, however, he rejoices that the conservative seedsmen still retain all these old flowers, weedy and commonplace though they be, for they may be termed the alphabet of floriculture, the rudimentary elements, and serve a purpose as progressive steps, by which the youthful amateur is gradually conducted, and later on, is initiated into the more intricate methods of cultivating flowers of superior merit.

The flood-gate of memory lets in such a rush of reminiscences that the writer is in danger of wandering completely away from the subject proper, which at the outset was pentstemons. As he has said, the pentstemons of earlier days were eminently mediocre in quality; hence, when four years ago, in looking over Victor Lemoine's catalogue his attention was arrested by the heading, "*Pentstemons, Collection d'èlite,*" he was profoundly surprised; and in the light of his previous experience he mentally observed, "surely there must have occurred a wonderful revolution in pentstemons if the high-flown phrase '*Collection d'èlite*' can be truthfully applied to them."

Lemoine occupies a foremost place in French horticulture, and has scored many triumphs in originating and in improving flowers in various species. His only weak point is the habit of occasionally bestowing odious radical names on the lovely productions of his professional skill. Among instances of this we find that "old original Jacobs" of the spirit of revolt, Lucifer; also his worthy disciple, Voltaire, the cynical old sophist; Renan, the utopian sentimentalist; Jean Jacques Rousseau, whose "confessions" alone would infallibly condemn him to the stocks in any self-respecting community, and the hollowness of whose gushing love for humanity was revealed by heartlessly consigning his own offspring to the foundling asylum. If any specialist should happen to originate an especially ugly and rank smelling specimen of chenopodium, otherwise known as "pig-weed," let him call it Jean Jacques Rousseau; then flower lovers, the general public and everybody else would receive their due—with the exception, perhaps, of the unfortunate pig-weed.

Those modern apostles of minutely analyzed nastiness too, are honored. Richepin, Catulle-Mendes, Bourget, Maupassant and others, though, thank goodness, he has not as yet, in selecting names, reached that lower type of literary degradation, the ignoble Zola. After the fashionable Tolstöi and Ibsen fads, we are now threatened with a Maupassant craze; but this graceful author is not to be judged by deodorized translations; in the original he is often painfully crude, and all the more dangerous from being a writer of power and felicity.

As regards translations, a writer in a recent issue of one of the leading magazines gives us a graphic glimpse of the manner in which this literary "poudrette" is prepared for the American market. Speaking of a lady principally known by her able adaptations from the French, he says: "As an adapter she stands with the first, for she can take the central idea of an extremely risque story, and so filter, embroider and transpose, that without injury to the creator's individuality, she makes a piece of work irreproachable for magazine use."

Manipulating "extremely risque" stories from the French naturally strikes us as a rather delicate occupation for a lady; that is to say, delicate on the very rare occasions in which it would not be a highly indelicate occupation, and one eminently fitted to rob the feminine peach of its womanly bloom. The conclusion to be drawn from this candid extract amounts, in other words, to this: "Slush from French sewers, when adroitly passed through a complicated and ingenious American filter, becomes a very refreshing beverage, highly satisfactory to the most critical American palate."

Why should we not be content with our own pure, sparkling, wholesome brands, which never leave a head or heart ache—Howells, Aldrich, Lathrop, Craddock, Hardy, Phelps, Stockton, Harte, Woolson, Wallace, Warner (C. D., of course), and a host of others, too numerous to mention ?

Fancy the fate of the pure, sweet flower doomed to bear the unsavory name of George Sand, a woman gifted with genius of transcendent order, yet who wilfully and recklessly prostituted her brilliant intellect to the vile mission of rendering immorality attractive by the magic art of her wondrous pen ! The small minority of her works written in purer vein are her masterpieces, and prove that her career would have been crowned with unqualified success, had she not unfortunately obeyed the perverse instincts of her lawless nature, while her shameless life was an active, realistic outrage on moral law and social decency. Her cultured apologists protest that she shall be honored, because, forsooth, the possession of genius atones for moral obliquity, no matter how flagrant, on the part of those privileged beings, whose exalted qualities exempt them from an observance of those salutary laws which form the safeguard of morals and of society ! Such doctrine sounds rather paganish for the nineteenth century.

Before going back to pentstemons, it may be well to say that after all, the matter of names resolves itself into a simple question of taste, which will not admit of argument ; consequently Lemoine must be granted a perfect right to honor whomsoever he chooses. And we, in the meantime, can quietly draw ample consolation from the fact that, no matter how odious the names may be, his flowers are always beautiful, oft-times to an original and extraordinary degree.

The writer had on several occasions received plants from him, which produced flowers of exceptionally fine quality ; therefore his confidence in Lemoine was unbounded, and his next order included a packet of pentstemon seed, *collection d'èlite*. They were sown early in April in shallow window boxes, from which they were subsequently transplanted to open ground, and, at the end of the season, this is what he wrote to a dear, dainty little periodical — now, alas, defunct ; or rather, it has ceased to exist as an entity, but whose floricultural soul has happily transmigrated to the pages of THE AMERICAN GARDEN, which has proved to be the horticultural elysium for the disembodied etherial essence of several similar publications—and truly they could not have found a happier "hunting ground." He said : "I discovered this season that the pentstemon is a very desirable flower. Among a lot of bulbs and seeds received from Victor Lemoine last spring, was a packet of pentstemon seeds. They were sown in April, and the plants were in full bloom in September, thus showing it to be an annual as well as a perennial. The lovely open, gloxinia-shaped flowers came in various shades of crimson, purple, maroon, carmine, mauve, pink and vivid rose ; some with white throats, others self colored, delicately veined and mottled. The spikes of loosely arranged flowers possessed the graceful habit and simple refined beauty so characteristic of lovely wild flowers, while the great size, the symmetry and brilliant tints betrayed the high-bred qualities fostered by careful selection and the patient art of the skillful professional florist. Those familiar with the pentstemons of ten years ago will be surprised to note the vast improvement intelligent culture has accomplished."

Every season since, he has made it a point to have a generous supply of pentstemons from the same source, and his experience sustains him in confirming the verdict given four years ago.—F. LANCE.

SOME LAST YEAR'S NOVELTIES IN THE HANDS OF AN AMATEUR.—Buying novelties and investing in a "grab-bag" are kindred experiences. The difference is really in favor of the latter, because it involves but the paying of five or ten cents a "grab," while, when grasping after novelties, one is far more likely to pay a half-dollar, or more, every time he makes an effort to secure something new and really valuable.

Lessons from experience, these ; still, I think it is possible to so learn the characteristics of the various firms, to become so familiar with their various degrees of ecstasy over new things, as to be able to form a very close estimate of the probable value of the new candidates for public favor which they describe. Those firms which are so conservative that they never place novelties in their lists the first year that the new claimants are offered at retail, and those which are careful to state that they give the originator's description, can be trusted ; others, which plunge deeply into the pool of praiseful adjectives and ladle them out in their proper qualifying positions with scant regard, or none at all, for that truth which is indeed rarer, if not stranger than fiction, when spoken of novelties, would better be tested with a few grains of salt.

Plants of a number of the finest chrysanthemums of the previous autumn exhibitions—most of them then sold at retail for the first time—were sent to the writer in the spring of 1890. Although from a first-class house, they were thickly inhabited with that serene squatter, the black aphis, and no after efforts sufficed to completely dislodge him. Hence the plants suffered to some extent. Shasta alone, with its low stocky growth and its large white blooms so thickly set with needle petals, was fully satisfactory, although Lilian Bird and Mr. H. Cannell would no doubt have been so had they not been lifted at the most critical time, which caused the blooms to come deformed. Snowball bloomed well, and the blooms were perfect, although of scarcely more than one-third the size that it showed on exhibition. Alaska, Belle Poitevine, and above all, Mrs. Hardy, grew so poorly as to be practically worthless. Mrs. Hardy was lifted early, but the few buds set blasted without an effort to open ; now the wiseacres are just beginning to tell us that my lady must not be planted out at all, but kept potted throughout the season.

In spite of the claims of later varieties, one house describes H. Cannell as "perhaps the finest large

yellow variety extant." It was somewhat of a relief to me to find that the flowers in the store windows of this firm last fall averaged little better than my own. There were, however, some magnificent exhibition blooms of Mrs. Hardy and Louis Boehmer. The great ado made over the latter last season, which is now being repeated, reminds one of "much ado about nothing." Of course the pink ostrich plume is, in one sense, an advance, as it gives promise of still other varieties of this class; but it suffers by comparison with Mrs. Hardy, as the color is a dull pink, by no means pleasing to my mind. Sunnyside, a beauty on exhibition, is so poor a grower that the firm to whom I applied for it advised that it be left severely alone, saying that they could scarcely get cuttings from it to supply their trade. Nevertheless, it is being greatly praised.

Among geraniums, the "absolutely perfect" Bruant, the "flowering-at-all-seasons-most-profusely" Mary Hill, the "best-single-pink-bedding-geranium-ever-introduced" Katie Schultz, the "grand" Bastien Le Page, the "novel and magnificent" Souvenir de Mirande, all came to me. I was satisfied with all but Bastien Le Page, which may have been "grand" in size of floret but was of a detestable color, a dull magenta. Why was this color ever discovered! As far as my knowledge goes, but one or two firms secured Souvenir de Mirande last year; this year they all have it, and all are in ecstasies—the same ecstasies, by the way—over it. "No engraving or description can do justice to its rare beauty." The strangest part of the story is, that there is really no discount on this geranium. It is a true instance of a "good grab."

Among begonias, Countess Louise Erdody is one to attract the masses who see the description of the triple spirals formed at the base of each leaf. The young growth is beautiful, but as the leaves mature they develop a bad fold or bend in the center which injures their appearance greatly. The catalogue descriptions fail to note this, and the cuts ingeniously conceal it. Gloire de Sceaux has not grown or bloomed well for me, although its great claims to favor were fine growth and freedom of bloom; it is of a fine color. Clemence Denisart is a lovely double pink tuberous variety, but the beauty could not hold up her head at all, so slender was she.

The carnation Tidal Wave was free in bloom and of excellent growth. It has been constantly in flower throughout the winter, but the color is not pleasing nor the size satisfactory. My specimen has the curious fault, also, of having the leaves stick together at the tip of the shoots, so that the buds have to fairly bend or force their way out. At first this was thought to be the work of insects, but proved not so. Wm. Swayne, although now a year old, has not deigned to give a single bloom as yet. Many of the roses are never heard of after the first year. Madam Andre Duron has come over to this year, and is greatly praised; with me it had but two good points: it is very sweet and a free bloomer. The form is not pleasing, and the color is decidedly indifferent. Captain Lefort is an excellent bloomer, but small; I could see no reason why it should have been sent out. Madam Schwaller did as well as any rose I have ever grown. Clothilde Soupert also promised well, and though the promise with all was better than the performance, I may say in their defence, that the season was a bad one, and our soil unsuited to roses.

An uncertain investment in a new vine proved certain as far as the fact of its entire failure went. *Antigonon leptopus* is its name, and it was to grow rankly and to bear lovely racemes of rose-colored flowers; but flowers of the future they are still. I could nowhere find a hint as to its proper treatment, and, therefore, do not condemn it entirely; but the fact that the firm that fathered it last year is silent with regard to it this year is not re-assuring.

"*Glechoma hederacea*" utterly refused to flourish in sun or shade, in heat or coolness, in house or open ground, although it grew luxuriantly in a greenhouse where I saw it.

A survey of the above notes shows that out of twenty-seven carefully selected novelties, less than one-third the number proved worthy to have "satisfactory" written after their names.—Myra V. Norys, *New Jersey*.

A Talk about New Plants.—Every year brings something new in the plant domain, obtained by what is called "sports." I am aware that many look with distrust upon all novelties in this line, but the choicest flowers we have were at one time novelties. We must not be too ready to denounce the florist as dishonest because he baptizes some old-time plant with a new and taking title, writes it up in his catalogue with high-sounding words, and by affixing a fancy price realizes a large income from its sale, until the purchaser finds out that he has been sold as well as the plant.

But the unprincipled florist suffers loss in his reputation eventually. There is, of course, a strong temptation to set forth in too strong colors the attractiveness of a novelty, so that it may attain a great sale the first year, when the price is high; but one must not forget the fact that a florist cannot offer a new plant when the stock is limited, at what seems to the public a reasonable price.

Again, the purchaser who fails to bring his dearly bought seeds or plants to perfection must not hastily blame the florist, for the amateur, as a rule, is far from possessing those advantages which enable the florist to produce plants which may be fully up to the standard he describes. My own experience has taught me not to be hasty in judgment, for the very seed sown at one time with failure, may at another be successful. A few years ago I had a package of Celestial pepper seed from a florist in whom I had perfect confidence. Wishing to share with my neighbors, I gave some to three, and saw them sown in good soil. I sowed some in two places in my own garden. Not one plant came up in any of the four gardens. Surely there was good reason for doubting the goodness of the seed, yet some of the same sown in July came up well and thrived! I have sown seeds in my hot-bed which failed to grow, while many others,

sown at the same time, came up quickly, and the seed that failed, sown later out of the same packet, germinated readily.

The reader may think I am making quite a plea for the florists. Well, what if I am? We are greatly indebted to them for the rare and beautiful flowers which adorn our gardens. Our leading florists are reliable men, and, as a rule, the plants they send out are what they profess to be, and are generally offered at reasonable rates. I think that the most of our failures result from our own ignorance, carelessness and want of suitable advantages. If I sow pansy seed in sandy soil and a very sunny position, I have no reason to expect flowers an inch across. If I sow portulaca seed in a moist and shady place, I must not expect the bed to be brilliant with flowers; but if I reverse these positions and give to each due care, I may expect success. If I plant very fine seeds an inch beneath a hard, coarse soil and they fail to come up, I have no right to complain of the seed, nor if I sow it on the surface of a soft, fine soil, and neglect to keep it moist. Some people think that putting seed into the soil, whether it be sandy, clayey or mellow, is sowing. There are many beautiful things which can not be grown successfully outside of a greenhouse, and it is not best for those who have none to try to cultivate them.—Mrs. M. D. Wellcome, *Maine*.

# A PLEA FOR PROTECTION.

EING a misguided free-trader—probably the result of a feminine inability to understand national politics—I look with distrust on the very word protection, especially when it applies to bonnet-trimmings and such small gear, but there is one protective law I strongly plead for, and that is a statute for the protection and preservation of rare native plants. Many of the loveliest species of our native flora are disappearing year by year, not only in the vicinity of large cities, but also out in the open country, especially in the haunts of the summer boarder. It is, no doubt, a picturesque and poetic sight to see a flower-laden train returning from woods or mountains, bearing armfuls of drooping "posies," but to a real flower lover it is an absolute slaughter of the innocents. It is not so harmful when the irrepressible flower picker can be persuaded to treat the plant as Isaak Walton did his bait, to handle it tenderly, as if loving it. But unfortunately, the flowers are usually gathered after the fashion of a dentist extracting a refractory eye-tooth, and the plant is fortunate if it escapes without permanent injury.

A little knowledge is a dangerous thing, and this truism applies very freely to the amateur botanists afflicted with the herbarium mania. The collection of an herbarium is thoroughly praise-worthy and commendable in itself, but when an entire class is fired with a unanimous determination to collect all the rare specimens to be found in a district the local flora seems likely to be seriously diminished. Orchids and ferns are usually the greatest sufferers; among the latter the dainty native maiden-hair, the climbing fern (*Lygodium palmatum*) and the walking fern (*Camptosorus rhizophyllus*) are the greatest sufferers. Their beauty and rarity makes them the prey of collectors both botanical and the reverse, and it really appears as if their total extinction would soon be accomplished. The walking fern is always rare and local; I myself have seen it but once, though accustomed to woodland tramps. On this one occasion I met with a patch nearly a yard square, growing over a boulder; I did not touch a single leaf, but just admired it with the hearty appreciation one gives to a rare plant in a greenhouse—the fantastic little loops taking mincing steps from place to place, covering the gray rock with living green. I returned to that place a month or two later, to find that some vandal had literally skinned the poor old boulder, dragging up my cherished plant by the roots, leaving baldness instead of beauty. This is but one instance; there are many like it, and ferns are among the greatest sufferers from those who can not admire a plant or flower unless it is actually in their possession.

Adiantum and lygodium are very often destroyed by enthusiastic young women with a weakness for pressed ferns; they are both scarce and local, and have already disappeared from many of their old habitats. Between the destruction of the shelter afforded by woodlands and the destruction of the plants themselves there seems very little chance for the survival of the fittest.

Is there a lovelier native shrub than the kalmia, with its shiny leaves and faintly blushing flowers? Look at it in the winter, with the glossy green showing against a background of snow; or in the summer, when the stamens spring from the sides of the delicate cup, as they discharge a regular volley of pollen at the pistil. It is always beautiful, but year by year it is diminishing. Every winter the kalmia is stripped for Christmas greens; the growth is utterly spoiled, even where the plant is not killed. Add to this the destruction caused by forest fires, and one may imagine that within two or three decades we shall have to go to Central Park to see the only kalmia within a large radius about New York.

Between flower hunters in summer and evergreen hunters in the winter our flora seems in rather hard luck—but what can we do about it? Legislative action would be as inefficient as the laws for the protection of song birds, which will remain practically a dead letter,

so long as all the pot-hunters, who shoot at everything from a humming-bird up, are allowed to carry a gun.

How can we best teach some respect for the rights of plants and flowers? Perhaps our schools might teach a knowledge of plants far more useful than a smattering of botanical science; a real love of nature which would make wanton destruction a crime. Assuredly that will be a botanical millenium—if it ever arrives, and every real flower lover can do something for this reform, just as the Audubon Society directed attention to the wrongs of our song-birds.

EMILY LOUISE TAPLIN.

# CHRYSANTHEMUMS AT EXHIBITIONS IN PARIS.

THE EXPOSITION in Grenelle street was as usual a success, for the number of exhibitors last year (1890) was very large. This year there will be another chrysanthemum exhibition; the exhibitors will no doubt be still more numerous, and the confusion that will result may already be imagined. It cannot be denied that the hall in Grenelle street, even with the additions now existing, is too small for future exhibitions. Even this year the plants had to be squeezed together, so that all could be received, and it was hard to tell whether certain flowers belong to one exhibitor or another, and it was only by having raised benches that room could be made to receive all the plants, which numbered over a thousand.

The collection of Mr. Forgeot was perhaps the largest. For others than horticulturists, a large collection is rather unsatisfactory; for in looking after the arrangement of the whole, individual plants are necessarily neglected to a certain extent, and cannot be seen at their best. Among the older varieties that received particular mention at the exposition are the following:

Baronne de Prailly, anemone, rose-lilac; M. Ducasse, clear rose; Le Cygne, white, tinged with rose; Pelican, incurved, pure white; M. Cannell, yellow. The rays of this variety are interlaced in such a manner that the flowers have a very peculiar appearance. Comte de Germiny, incurved, of two colors; the inner surface of the rays is purple and the outer are burnt sienna. L'Automne, incurved, yellow amber, superb.

Among the novelties, I found the following in a collection from Grenoble. I have forgotten the name of the grower:

Ètienne Recourat, mahogany; a Japanese variety having the rays straight and revolute. Marie Recourat, pure white. The head is enormous, with anemone rays, hooked at their free extremities.

The following are in the collection of M. de Reydelet:

Mrs. Alpheus Hardy. This variety, about which there has been so much discussion, now descends to the level of ordinary varieties. It is a white, incurved chrysanthemum. The rays are furnished with fine, scarcely perceptible hairs, rather widely separated on the larger flowers. The chrysanthemum is a weak plant, due probably to the fact of its forced propagation.

Suzaka Sakakè. This chrysanthemum is half double, the rays being very large, long, supple and slightly revolute. Their color is a pale yellow, tinged with rose. It is probably the most original flower in the exhibition, and the gaudy abundance of its rays gives it a magnificent appearance. The novelties ticketed as 949,678, and 789, also deserve mention.

The permanent exposition of the Jardin des Plantes was held in the open air, and consequently possessed decided advantages in regard to light, space and ticketing, and observers could easily see all parts of any plant, and judge of its characteristics, its carriage, height, vigor, power of resisting cold and rain, etc.

The following varieties are interesting both on account of their merits and their origin:

Admiranda. Incurved, pale rose; it is a sport of Empress of India, which has white flowers.

Golden Empress of India. Pale yellow; this is another sport of Empress of India and sometimes partially returns to the parent form. The plant in the museum bore a pure white flower by the side of the yellow ones.

Panache de Henri IV Prècoce. This variety is a sport of Panache de Henri IV, and was discovered by Mr. Henry, superintendent of the gardens at the musèum. It flowers two weeks before the parent form.

One of the most interesting customs at the Jardin des Plantes is the employment of hardy chrysanthemums for the fall decoration of flower beds. The following varieties are the ones principally used. Most of them belong to the pompone section:

| | |
|---|---|
| Julia Lagravére | deep purple. |
| Rose Tavernier | lilac. |
| Marguerie | yellow. |
| Mont d'Or | mahogany, tinged with yellow. |
| Leopard | mahogany. |
| Riquiqui | yellow. |
| Inez | white. |
| Samson | bright yellow. |

These chrysanthemums are at first grown in beds, but when almost ready to flower, they are transplanted to the desired position, with as large a ball of earth as possible; their growth is scarcely checked when treated in this manner.

The city authorities would do well to have the parks and boulevards also decorated with these late autumn flowers.—*G. B., in Le Jardin.*

# ENCOURAGEMENT OF AMATEUR GARDENING.

IT IS surprising that in so vast a territory as the United States more interest is not taken in the cultivation of flowers, vegetables and fruits, and especially the small fruits, by artisans and others living in the suburbs of cities and towns, and more astonishing is it that these useful and wholesome articles of every-day life should be neglected by the rural population. Strange it does appear, but it is true in too many instances, that the farmer and his laborer should be content to buy the stale and insipid fruits of the stores when they have every facility to grow them in sufficient quantities to last their families a whole year. The quality alone, in the home grown fruit, should be of itself sufficient incentive. This apathy to the good things so near at hand in the village community must be deplored by all citizens who are interested in the development of their country, and it behooves all to try to find a remedy. In Great Britain almost every cottager has his currant and gooseberry patch, at least if no patch is visible, a few bushes are sure to be found, planted generally by the sides of the walks, and a struggling apple or pear tree is also generally to be observed. In many cases more fruit is raised than is required for the supply of the household; the surplus is generally sold to aid in the maintenance of the family. If the above is true of that country, ought it not to be doubly so of this?

To educate these different classes up to the necessary point is a very difficult task, yet strenuous efforts should be made to do so. All our efforts must be expended with a distinct object in view, otherwise it must fail. The first great effort must be to get rid of the indifference, to things horticultural, by the working classes; the next to show, however complicated the culture of fruits may appear on the outside, the thing is in itself a matter of great simplicity. To encourage the cultivation of fruits, efforts must be made to destroy the feeling of unrest that pervades so many classes by creating a love of home, and to assist all to the greatest possible extent to make their dwellings beautiful by surrounding them with trees and flowers, and thus awaken a love for the beautiful in all members of the family. In after years the memories of the roving sons and daughters of the family will thus be led often to revert to the ivied porch or rose bedecked veranda; to the pleasant summer house with its honeysuckle and clematis, to the well kept lawn where they played many a happy game of tennis or croquet. Memories will thus be awakened by the sight of a carnation, pink or gilliflower that otherwise would have lain dormant, and the wanderer will thus be led to gather around him plants that have a memory attached to them, and the garden of the old home becomes again a reality; he will gather his family around him and never tire of telling them stories connected with his plants, and so instil into their minds lessons that will never be forgotten.

The question will be asked, "How is this to be accomplished?" The ways to set about it are not numerous, it is true. The first course would be for the horticultural societies to offer prizes for fruits grown by cottagers and others, having small holdings. The prizes, for the first few years, would have to be very substantial ones so as to lead the artisan and others to compete. At all the horticultural shows and state fairs there should be classes in the fruit, flower and vegetable sections set apart especially for the accommodation of the classes referred to. The artisan or villager cannot be expected to patronize these big shows if he is to compete with the best known growers in the country, but give him classes to himself, and you will be surprised by the amount of interest he will take in them. The large shows are excellent institutions, but they are not likely to do much to encourage a love of horticulture among the masses. To cause the villagers to interest themselves, a system of local shows should be organized. I mean by local shows that every town and village should have its own horticultural society. Every village should be able to support one show a year, while the towns could have two, one in spring and the other in the fall. The village shows should be held during the months of August, September or October. In the village shows only people belonging to the village should be allowed to compete, but the town shows should be open to the villages. To set these shows on foot, a few of the most prominent men of the town or village should meet together to discuss the subject and then canvass the town or village for the necessary funds. It would, perhaps be difficult at first to get the people to compete, but when they see that every thing is fair and square, they soon come forward. Nothing aids more to make these small shows successful than the prompt payment of the prize money. At all the shows leaflets could be distributed, detailing in the plainest language the simple rules to be observed in the cultivation of fruits and flowers, and setting forth the varieties best suited to that particular district. The expenses might be defrayed by the societies themselves, or a league might be formed having for its object the encouragement of fruit growing among cottagers and others. The horticultural press might aid by offering prizes to its readers for the best speci-

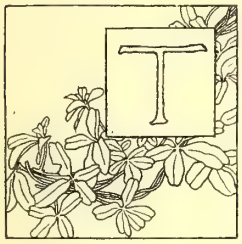
mens of fruit sent to their offices, giving prizes at their local show

Next to the show system would be the plan of sending well instructed men on lecturing tours through the various states to teach what may be considered the most essential points. These men could call at the various houses that came in their way. If this is considered impracticable, the next best step would be to try to get the gardeners in the different districts to hold, say monthly, meetings when papers could be read on the different subjects. During the winter months an effort should be made to form a class composed of the young men and women of the village for the study of rural economy. In the spring an examination could be held when a certificate, or other suitable prize, might be given by the society who had the working of the system, to those who had proved themselves diligent. The offering of prizes for written articles would not succeed, as too few would enter for the prize, and unless some expense was incurred to print and distribute these articles, no good would be done. The experimental stations might also do much for this cause in various ways. In the village schools the seniors might receive a course of lessons in the principles of fruit growing before leaving school. If the teacher was incompetent to give these lessons, some fruit grower or gardener in the neighborhood might be found who would undertake the task. When the simple methods of culture became understood, and it was found that a year or two only was spent in waiting for the trees to become fruitful, and that the worms might be dealt with in a variety of ways, interest would be awakened and every country urchin would be seen regaling himself with rare ripe fruit.

Every cottager should have attached to his home at least half an acre of ground. A quarter of this could be set apart for the small fruits, and the spaces between the trees might be planted to some crop during the first year or two. Apples and pears should be on dwarfing stocks, and raspberries, blackberries and vines should be trained to a permanent trellis. A portion of the garden should be set apart for a strawberry patch, and all pruning should be of the simplest kind. This could not fail to be of vast benefit in many ways.

*Louisiana.* H. W. SMITH.

# CROSSING RASPBERRIES AND CUCURBITS.



THERE is, perhaps, nothing connected with fruits and flowers which yields a keener enjoyment to young or old, than the art of crossing and hybridizing. The uncertainties and possibilities of results lend an attraction which leads those engaged in it steadily onward toward new attempts. Although it is a field surrounded with mystery on all sides, its operations are perfectly simple and easily performed by anyone willing to be patient and careful. The method must be varied, of course, according to the structure of the flower worked upon; but the principle is the same everywhere, namely, to securely guard the stigma from every particle of pollen except that which it is proposed to use. This involves removing the stamens from the flower to be crossed while the anthers are yet so green that they cannot burst and scatter any of their pollen; also carefully covering the flower in such a way as to prevent other pollen from being brought to it by the wind or insects. This covering should be done just before the flower opens. The one from which the pollen is to be taken must be covered in the same way, to prevent the possibility of the pollen becoming mixed with that from other plants.

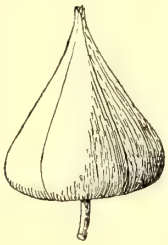


FIG. 1.

The method of procedure may be well illustrated by the raspberry, with which the writer made extensive crosses the past season. Here, as in all members of the Rosaceæ, the stamens are very numerous, and to attempt to remove each one separately would be a slow and troublesome task; but fortunately, another character of this order comes to our aid, for they are all borne on the calyx, and far enough from its point of connection with the receptacle to permit cutting away the whole calyx with a pair of sharp-pointed scissors, thus removing all the stamens at once. Figs. 1 and 2 represent the general appearance of a flower bud of the right age, before and after this operation. Removing the calyx in this manner has another advantage in serving to mark the fruits which have been crossed, in case the label should be lost, or later buds should be developed in the same cluster. It is best to emasculate only buds which are of about the same age, removing all younger ones, open flowers, or fruit already set from the cluster, which should then be carefully covered and left for the stigmas to ripen. For this covering, ¼-lb. manilla bags are most convenient. Put a hole through the double fold on one side, toward the top; run in a short, small piece of raffia or other convenient tying material, and give it a single tie around one of the folds, to prevent the string from losing out. Wetting the tops of the bags when going into the field will aid in making them fit closely to the stem when tied on.

FIG. 2.

Two days after emasculating is usually long enough

for raspberry stigmas to ripen in readiness to receive pollen, if the bud was just about ready to open when the stamens were removed. At this stage it will have something the appearance shown in Fig. 3. It will have grown somewhat, the styles will be longer and more spreading, while the stigmas have a rather shining sticky appearance. My experience seemed to indicate that the blackberry requires more time than this to properly ripen its stigmas, three or four days not being too much. Most of the work among the blackberries was with the later blossoms; these generally appear to be feebler than the earlier ones, and it may be that this, together with lateness of the season, had something to do with the slowness of the stigmas in ripening. Some of these, treated with raspberry pollen, produced achenes which reached nearly full size, but never ripened, remaining in that condition till frosts came.

FIG. 3.

Getting the pollen in just the right condition to work nicely appears to be the most difficult part of all, for the work is slow and uncertain if it is so green that it must be broken out and laid on the stigmas to ripen. Removing buds just ready to open at the time of emasculating those of the female parent, and keeping them in a safe place while the stigmas are ripening, is an advantage. Perhaps carefully covering them on the plant would be still better. When the pollen dusts out freely, it is a very easy matter to bring the stamens in contact with the stigmas, leaving an abundance of pollen adhering.

After this is done, the cluster must again be carefully covered for a week or more, for if the pistils have not been properly fertilized, they remain in a receptive condition some time, waiting for the opportunity to perform their natural function. After this danger is fully past, the paper bags may be replaced by others made of mosquito netting, to protect the fruit from birds and from being picked. These bags admit light, and also aid in finding the clusters, being more readily seen than the label.

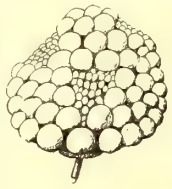


FIG. 4.

Fig. 4 gives a general idea of the appearance of a mature fruit which has been crossed. The absence of the calyx, which ordinarily covers the base of the berry, is readily noticed, and usually there will be parts in which the achenes remain undeveloped, although in some cases perfect specimens will be obtained. As a rule, we cannot expect to equal nature's methods in pollinating. An apparent exception to this occurred in the case of the dewberry, which here produced only irregular, knotty fruits; but in some instances, when crossed by the blackberry, perfect specimens were obtained.

Over eighty clusters, averaging probably five or six flowers in each, were crossed in the Cornell gardens in the summer of 1890, and some excellent results obtained so far as seeds were concerned. What the outcome will be in the way of plants and the fruit which they will bear, of course, remains to be seen. It is quite probable that in some cases of violent hybrids the seeds may not have enough vitality to germinate, even when perfectly formed, or the seed coat alone may have been developed. Seeds were obtained from crosses between the blackberry and dewberry, red and black raspberry, American and European raspberries, raspberry and blackberry, etc.

A single attempt to cross the Shaffer with *Rubus odoratus*, the wild purple-flowering raspberry, failed. This, however, brought to notice the fact that a large portion of the buds of this species were completely destroyed by the presence in great numbers of small, white maggots, larvæ of a fly. So far as I could learn, little or nothing is known of this enemy. Should its attacks ever spread to cultivated species, it might prove very serious.

As a check upon the reliability of the results obtained, three clusters were left covered after emasculating, and no pollen given; these developed absolutely nothing. This same method of procedure applies to the strawberry, and as most of our larger fruits also belong to the rose family, the flowers have the same general structure.

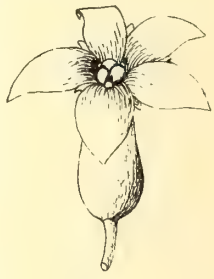


FIG. 5.

Among the simplest plants upon which to do crossing are the cucurbits, or melons, squashes, etc. In this order the plants are generally monœcious, *i. e.*, the stamens and pistils are in separate flowers. These can always be readily distinguished before opening, for the female flowers bear the young fruit, plainly visible at the base of the bud.

In crossing these it is only necessary to apply the pollen to the stigma of the female flower, taking the necessary precautions against mixing or allowing other pollen to reach the stigma. By a little observation, one can tell in the afternoon what flowers will open the next morning, and the pollen from flowers of the same age may be applied then; or, both may be tied up to prevent their opening by a single loop of raffia around the tip of the corolla, and the pollinating done the following morning. To do this, simply cut away the corolla near the base with scissors or knife, plow the pollen out of the anthers with a small pin scalpel, and apply to the stigma. If ripe enough to dust out freely, the stamen column itself may be touched to the stigma, leaving the pollen. A word of caution may be needed against leaving the flowers tied in this way long in the morning, for insects readily eat through the corolla and perform the pollinating to suit themselves.

While the rule of entirely separate male and female flowers is a general one in this order, there is an occasional unruly variety, among the musk-melons at least, which does not obey the botanist's rules, and bears stamens in the pistillate flowers. These are so nearly concealed that, unless on the watch for them, they are likely to be overlooked and the value of the cross entirely lost,

or worse than that, a fruit regarded as a cross which is only self-fertilized.

Fig. 5 represents a flower of this kind, showing the position of these stamens alternating with the three lobes of the stigma. In the flower they are not so prominent as shown, however, being almost entirely hidden in the tube with the style. The whole work is both interesting and important. FRED W. CARD.

# DO SOUTHERN PRODUCTS DESTROY NORTHERN MARKETS?

THE BOSTON Market Gardeners' Association at its meeting of February 21, discussed the question "Do southern products materially interfere with our native products." The subject was opened with a paper by the president, W. W. Rawson, an extract of which paper is here given.

"The sending of southern productions to our markets has been practiced for about 15 years and is constantly increasing. About the first article to arrive is spinage; it comes some time before ours, and the people use it freely. When ours comes in, that is about gone. The use of spinage has come to be extensive, and our crop comes in with an advanced price over the other and larger quantities can be sold. But if the southern had not preceded ours and stimulated the market we could not sell as much, and therefore we derive a benefit rather than otherwise. The same remarks apply to tomatoes. We do not receive less now than formerly; for our first bushel of tomatoes we always receive from $10 to $15; and the use of tomatoes has become so large great quantities can be sold for $2 to $3 per bushel, while the southern are bringing only from 50 to 75 cents. The same is true of cucumbers; but many will say that the southern crop is a great injury to ours. It is well-known to the buyers that fresh cucumbers are very much better than stale ones, and they will always buy the fresh ones if in the market. Many think that higher prices would be obtained, but there is a limit to the price that a large number of buyers will pay for a cucumber or a peck of spinage, which a few years ago they would not think of buying at all. This is easily shown by the occurrence every year when, while cucumbers are bringing from 5 to 6 cents each, the quantity gets short on account of a small set on the vines, and the price goes up to 9 and 10 cents each.

"Look at the prices our melons have brought the past years, and look at the amount of southern ones sent into the market. Does it affect them? Not at all. It will be acknowledged by all that our market has increased very much in demand for all these vegetables, and the number of dealers has more than doubled in the last fifteen years, so that it takes a large quantity of produce to supply them, just for the stock which they are obliged to have on hand. Would there have been so many of them but for the southern produce? No. Then each one of them has parties in other cities that they supply and have built up a large trade, which could not have been but for the early southern produce. Our produce supplies the later demands.

"Then there is another thing that looks rather strong to me. There comes from the south 2,000 bbls. of spinage; it is all sold for $2 to $2.25 per bbl. But let our own teams bring into the market in one day 1,000 bbls. of spinage and what will it bring? Not over $1 per bbl. Does this show that the southern productions affect our market? No, but rather that our way of selling is not correct. They sell to the highest bidder at a good price; we sell to the first bidder at about one-half the price, and all bidding against ourselves. I think that a new system should be adopted, whereby we can sell our goods for more money at less expense. We need larger markets, more room to sell our goods and nearer and closer connections of these markets.

"The constant supply of and production does not decrease the market, but rather increases it, and in no place in this country is it plainer shown than in our market at Boston, which is the best market in this or any other country. The southern produce helps us to keep the market supplied and thus increases the quantity used. Not only does it increase the quantity by lengthening the season, but by increasing the quantity used at all times.

"The price of strawberries has not diminished. When our fresh berries come in they bring from 20 to 30 cents per basket, and sometimes as high as 40 to 50 cents. This shows that the prices are as good as ever, and the demand much more. If no southern produce was raised and sent into our market, much more would be grown here, and at times it would be diffcult to sell it at all, which is sometimes shown us by the large quantity of green corn in our market, and with no sale for it."

Mr. Sullivan, of Revere, considered southern products a great benefit to the commission man and the retail store-keepers, but to our local producers they are a great detriment. We have striven to compete with southern truck by the erection of greenhouses and hot-beds, and have, in a measure, overcome the difficulty. Perhaps this competition has been more strongly felt around New York city than around Boston. It is a fact that the competition with the south has driven many men from the business of market gardening around Boston. Mr. Sullivan does not strive to have stuff early, as southern competition leaves him no profit. He thinks that there is more money in later productions.

V. Frost, of Belmont, did not agree with the essayist, and was surprised to hear him talk as he did. Mr. Frost stated that he had been in the market gardening business for forty years, and was able to judge of the question. He admitted that during the civil war prices were much higher than now, but he would go back before that event.

It was not an uncommon thing then to receive $10 per barrel for our first early peas, potatoes $5, and our entire crop of cabbages of the Early Jersey variety, which are quite inferior to our Henderson Early now, would net us, on an average, $16 per hundred. According to a conversation had with the late Peter Henderson, just before his death, Mr. Henderson stated that it was easier to make $5,000 per year 20 years ago than it is to make $1,000 now, all because of the competition of southern truck. Mr. Frost stated that from the year 1850 to 1872 a sash of glass containing nine square feet would return, during a season, $5. Now $1 would be a good return.

Mr. Derby, of Revere, considered southern truck no detriment to our native produce, owing to the poor condition in which southern truck was received in Boston. In fact, the poor southern crop only sharpens the appetite for our better quality. Mr. Derby thought the net income from our market gardens now was as large as 20 years ago, but, as in all other business, now the individual volume is larger. He stated that northern commission men advance much of the money to the southern truckers, taking a mortgage upon their lands. Thus, the southerner is obliged to send his productions to the mortgagee, and it is often the case, from poor seasons or destruction in transit, that the crop does not net the producer enough to satisfy the mortgage.

Mr. Tapley, of Revere, stated that he had been in 17 different states, and he considered that gardening pursued around Boston gave better results than anywhere he had traveled. He had investigated gardening in Virginia and Maryland, from which locality much produce is sent to Boston, and he could not see where those pursuing the business could make much money. An illustration of their difficulties was related in the case of the production of sweet potatoes. He had traced the cost of transportation and charges of selling, and it figured up to 95 cents per barrel. For the barrel alone they pay 35 cents, for which they get nothing back, where we eceive an empty barrel for every barrel of produce.

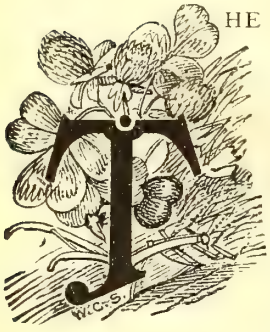
Warren Rawson, father of the president of the association, who has spent much time in the vicinity of Norfolk, Va., thought that owing to the slovenly way truck is grown there and put up for sale, that it did not materially interfere with our produce. He thought that if a gardener could not make money within 10 miles of Boston now, he had better quit the business.

Mr. Allen, of Arlington, considered southern truck a detriment to him. Before the war, and before much southern stuff came north, he was able to receive $1 per dozen bunches for his first beets; now he gets 50 cents per dozen. White onions from sets were 50 cents per dozen, now 25 cents per dozen, and every other vegetable in proportion.

In order to get the sense of the members as to whether southern truck materially interferes with our prices, a vote was taken, which resulted in 26 voting that it does, and six that it does not.

E. P. Kirby.

# TOMATO GROWING IN THE SOUTH.



THE CULTURE of the tomato in Louisiana must differ in many points from the methods usually employed in the north. Vegetation starts much earlier here, and the summers are very much longer; besides, we are subjected to prolonged spells of drought, and the rains are much heavier. The tomato requires plenty of sunlight, but if the plant is to grow rapidly, moisture must also be supplied abundantly. If the moisture be excessive, the plants run to vines and produce but very little fruit. The night temperature must also range near 60°, if the plants are to produce a full crop.

The tomato continues to grow here until late in the fall, the warm days being well suited to it; but the nights are too cold, and, although the plants blossom very freely, they fail to set any fruit. To produce a plentiful supply of tomatoes during November, December and January in this latitude, requires but small outlay and but little skill in ordinary seasons. The first sowing of seed should be made on a spent hot-bed during the first week in January. The heating material for this bed need not exceed twelve inches in thickness, and the frame may be covered with pieces of board, old sacks or straw matting. The frame will need to be covered nearly every night to protect the plants from frost, and it should be covered before the plants appear, whenever there is an indication of a heavy shower. If no heating material is at hand, choose a piece of ground well sheltered from the north and northeast. Pulverize the soil thoroughly, and place your frame in the desired position. Cover with a sash or any other material, and sow the seeds during the evening of a sunny day. As the young plants grow, keep them well thinned and they will be fit to set out in their fruiting quarters the first week in March. Twice as many plants should be grown in this first lot as are really needed, so that if those first set out should be destroyed by a late frost, other plants will be at hand to take their places. The young plants should be pinched back when they have made three or four leaves, so as to cause them to throw out side shoots as soon as possible.

When the weather appears settled, set out your plants two feet apart, in rows four feet apart, planting on the level, but having a furrow between every sixth row. To every plant put two stakes about nine inches apart, and be careful to keep the stakes in the row; stout canes answer well for this purpose. Instead of staking as

above, a post might be driven in at intervals of twelve feet, and long canes tied in a horizontal position to these posts. This also forms an excellent trellis.

Allow only two shoots to grow from each plant, and nip off all others as soon as they appear. When the plants are about four feet in height, nip off the tops of the shoots, and keep all side shoots down. This, to some, may seem troublesome and expensive, but if you follow this method you will be able to put your tomatoes in the market first; you will have ripe tomatoes in April. When all danger of frost is past, the plants still in the frame should be set out. The tomato will be found to fruit earlier if transplanted two or three times before setting it out in its fruiting quarters.

Another sowing may be made at the end of February to succeed the plants set out in March; they will fruit early in June. A sowing made towards the end of March will give ripe fruit from the end of June to the end of July. A sowing should be made about the end of May to carry you through August and September, and you should sow again about the last week in July, or the first in August, for fruit during October and the early part of November; and if you have a greenhouse and want tomatoes at Christmas, you must sow again about the middle of September. The method of training first described will answer for the several crops, but if it is thought advisable, wire may be employed instead of the canes. The plants may be set three feet apart in the rows, leaving four feet from row to row. Tie in four shoots from each plant, and allow no other shoots to grow. Tomatoes so far south as this rot badly if allowed to spread over the ground; and besides, it is very difficult to apply fungicides successfully. When the plants are spread over the ground, they prevent the surface of the ground from becoming dry, and thus keep up a continued dampness very favorable to decay. When staked, the cultivator can be kept going among them, and thus the soil is always in a loose and open condition, and so forms the best natural mulch possible. When grown in rows and neatly staked and tied, a patch of tomatoes, when loaded with ripe or nearly ripe fruit, is a very beautiful sight.

After the crop has done its best, it should be cleared off as speedily as possible, and some other crop put in. Sweet potatoes or corn are good to follow the first crop, and beets, carrots, turnips, peas, snap beans, Irish potatoes or cabbage might follow the crop cleared off in August.

I would plant the following varieties of tomatoes; I name them according to earliness and excellence. Dwarf Champion, Prelude, Ignotum (this variety must be staked to succeed in the south); Jones' Hybrid, Mayflower, Livingston's Beauty, Market Garden, Acme, Lorillard, Alpha, Matchless, Cleveland, Optimus, Brandywine, New Jersey, Golden Queen, (this is a yellow tomato of good size, and it is a most abundant bearer, but the color is against it). The Shah is another smooth yellow-fruited variety; the fruit is shaded with red. Mikado is a variety much lauded, but it is so deeply furrowed and otherwise deformed as to be nearly useless as a market fruit. When growing tomatoes for market, the aim should not be to produce very large fruits; those weighing about four ounces have been found to sell best.

*Louisiana.* H. W. SMITH.

# FERTILIZERS FOR STRAWBERRIES.

FEW weeks ago we reproduced an article from THE AMERICAN GARDEN by Mr. Joseph Harris, in which nitrate of soda was highly recommended as a fertilizer for strawberries. Stephen Powers, editor of the *Dispatch*, who is considered the best authority on all matters pertaining to strawberries in Florida, says in the last issue of his paper:

"We hope none of our readers will follow the advice of that eminent authority (for the north), Joseph Harris, and use nitrate of soda on their strawberries. If they do, they will be extremely likely to hear from their commission merchants that unwelcome report, "received in bad order, soft, mouldy, rotten." Nitrate of soda will make an admirable growth of foliage in the fall or early winter, but it is potash the plants need now, to develop fruitfulness and render the fruit firm and of a good shipping quality."—*Florida Agriculturist, Feby. 11th.*

REMARKS OF JOSEPH HARRIS.

If potash applied in Florida "now," or when the fruit is formed will "develop fruitfulness and render the fruit firm and of a good shipping quality," it is an important discovery.

The English strawberry growers near London, who produce large berries by the free use of liquid manure, find that it will not do to continue its use beyond a certain time in the growth of the fruit or the quality will be injured. And it is found that a large dose of nitrate of soda after the fruit is formed may have the same effect.

The first time I used nitrate of soda on strawberries I was afraid to put on too much and so I sowed broadcast, perhaps about 200 lbs. per acre. Finding that it did not injure the plants I sowed about as much more, and continued sowing about every time it rained, or I "felt like it" till I must have put on an enormous dressing. It was an old bed, and the effect was wonderful. Of course I do not know whether the fruit would have carried from Florida to New York, but I know it was very good on our own table. And since that time I have used nitrate of soda every year on our strawberries.

It certainly improves the size and appearance of the fruit, and no one ever found fault with the quality. Mr. Powers says it "will make an admirable growth of foli-

age." This is precisely the effect it has with us. The plants are large and grow with great vigor, and are "full of sap." They will stand drouth well and keep far longer in bearing than plants on poorer land. We set out plants in the spring and give the land a dressing of superphosphate and nitrate of soda, say 500 lbs. of each per acre. If the soil was poor and sandy we would use potash also, or buy a superphosphate containing potash. Keep the land free from weeds or the weeds will devour the nitrate. Then the next spring sow another 500 lbs. of superphosphate and nitrate, each per acre, broadcast over the whole land. Sow as early in the spring as the frost is out of the ground and keep the land clean with shallow cultivator and hoe, and if other conditions are favorable I believe you will have a fine crop of strawberries of the highest quality.

Please observe that the nitrate and superphosphate are sown early in the spring—not when the fruit is forming.

# A TRUCKER'S REWARDS.

CROPS THAT PAID AND CROPS THAT DID NOT PAY.

AFTER READING the result of Theo. Baker's experience in THE AMERICAN GARDEN last year, on $\frac{1}{22}$ of an acre, whereon he made a profit of some $18, one would suppose that gardeners should all be rich by this time. But such is not the case, with this gardener at least. I give you below my experience with a few crops last year. The reader must bear in mind that the crops were sold at retail, that the season was quite unfavorable, and that we had frosts in May and September. This makes the season shorter than Mr. Baker's.

Plot No. 1, $\frac{1}{17}$ of an acre; soil, sandy loam. Crops, lettuce, cabbage and celery. This ground was plowed April 14; after harrowing, the plot was marked out in rows 12 inches apart. The first row I set with cabbage, 2 feet apart, and between the cabbage a lettuce plant. The next three rows with lettuce, 12 inches apart; fourth row same as first row, and so on; all set April 14.

The varieties of lettuce were Tennis Ball and Early Curled Simpson (black seed); of cabbage, Early Jersey Wakefield, the seed of which were sown in flats under the staging of the greenhouse, February 22. The lettuce was transplanted into other flats and set two inches apart, about March 15. The cabbage plants were thinned out to the same distance. I cut the first lettuce May 24; it was all cleared off June 26. I cut the first cabbage July 10; it was all cleared off Aug. 17. The lettuce was cleared off before the cabbage needed the room. After clearing the lettuce I plowed the ground between the rows of cabbage, the rows being 4 ft. apart, and set the same with celery (White Plume and Golden Heart), July 14. The weather being very dry for a month, the celery did not do very well. The cabbage was cleared off Aug. 17, and I again plowed the ground between the rows of celery, giving thorough cultivation throughout the whole season. Now for the results:

| | |
|---|---|
| 617 heads lettuce | $12 20 |
| 194 heads cabbage | 8 16 |
| 150 bunches celery | 15 00 |
| Total | 35 36 |
| Rate per acre | 601 12 |

The above plot was manured the fall previous with two tons of well-rotted manure, costing about $3.50. As the plot was cultivated at odd times, it is impossible to give the cost of cultivation; and the crops being sold with other produce, the cost of marketing can not be estimated. This plot also supplied my family of six persons with an abundance of the above vegetables.

Plot No. 2, three acres. Soil, sandy loam and gravel; crop, potatoes, five varieties. April 26th I plowed under a heavy timothy sod, and planted the potatoes April 28.

| | |
|---|---|
| 7½ bbls. seed potatoes | $9 25 |
| 800 lbs. phosphate, in hills | 13 75 |
| 500 lbs. plaster | 1 50 |
| 2 lbs. Paris green | 50 |
| Digging | 3 50 |
| Ploughing and cultivating | 10 00 |
| Interest on land | 15 00 |
| Total expenses | $53 50 |

RESULT.

| | |
|---|---|
| 23 bbls. marketable potatoes, @ $2 | $46 00 |
| 5 " seed potatoes, @ $1 | 5 00 |
| 5 " small potatoes, @ 30 c. | 1 50 |
| Total receipts | $52 50 |

The profit I leave to the reader to figure for himself, as I have done.

A CROP THAT PAID LITTLE.—In the spring of 1889, a plot of $\frac{3}{10}$ of an acre of corn stubble, which had been manured the year previous, was plowed under and planted with strawberry plants, as follows; 900 Parry, 900 American and 1,200 Sharpless. The plants did well, and by fall almost covered the ground. They were covered as follows: the Sharpless with manure, the Parry with tomato vines, and the American with corn stalks. When uncovered in the spring, I could not see that one variety looked any better than the others, thus satisfying me that the covering is of little importance. At blooming time the Sharpless looked the best, being well loaded with blossoms, so much so that a neighbor of thirty years experience in the berry business thought the Sharpless would yield twice the number of quarts that the American would. Everything looked promising for a good crop, when the heavy rains set in. I am satisfied that these did a great injury, as they destroyed much pollen, causing many blossoms to blast. I commenced picking June 17 and finished July 6, during which time no rain

fell, thus cutting off the crop still more. The berries were small and ill-shaped. The following is the result. The matted row system was used; the rows were 4 feet apart, and the plants 12 inches apart in the rows. At this rate 10,000 plants per acre are used. The cost of cultivation was $25 per acre, which is about the average cost.

| | |
|---|---|
| 900 Parry | 21 quarts. |
| 1200 Sharpless | 77 " |
| 900 American | 154 " |
| Total | 252 " |

CR.

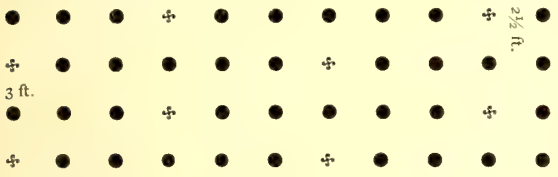
| | |
|---|---|
| 252 qts. berries, @ 11c. | $27 72 |

DR.

| | |
|---|---|
| Cultivation and setting | $7 50 |
| Picking 252 qts., @ 2c. | 5 04 |
| Interest on land—1 year | 1 35 |
| Marketing 252 qts., @ 1c. | 2 52 |
| Total | $16 41 |
| Profit | $11 31 |
| Rate of profit per acre | $37 70 |

The reader must bear in mind that this crop occupied the land for the best part of two years, which, if taken into account, reduces the profit still more.

A CROP THAT PAID BETTER.—The following is my experience with a piece of sandy loam of $\frac{1}{6}$ of an acre, planted with sweet corn and squash. The first week in May, 1890, I applied seven loads of stable manure on sod and plowed it under. After harrowing, I marked out the piece into rectangles two and one-half by three feet, on May 12, and planted it with white Cory corn and squash. I took a one-horse load of well-rotted manure and dropped a good fork-full in every sixth hill of every alternate row, in this manner:*




* The mark (✣) indicates the squash.

I put four kernels of the corn in each of the remaining hills, and then dropped a handful of hen manure and wood ashes, one part of the former to two of the latter, directly on the corn, covering the whole with about two inches of soil. I then covered those hills intended for squash about four inches deep, and planted a part with Early Prolific Marrow and the balance with Hubbard and Butman. I had a hard time with beetles on the squash vines, but managed to save three-quarters of the hills. The piece was hoed twice by hand and twice with a horse-hoe, and the corn finally hilled. The corn, I consider, was a fair average crop, but the squashes were below the average. August 5 the first corn was picked and August 13 the stalks cut. The result was as follows:

CR.

| | |
|---|---|
| 1,275 ears corn | $13 50 |
| 165 squashes | 17 64 |
| Total | $31 14 |

DR.

| | |
|---|---|
| 7 loads manure | $6 00 |
| 1 one-horse load rotted manure | 75 |
| 2 bbls. hen manure and ashes | 1 00 |
| Seed | 75 |
| Cultivation, etc. | 4 00 |
| Interest on land | 1 00 |
| Total | $13 50 |
| Profit | $17 64 |
| Rate of profit per acre | $105 84 |

The corn and squashes were marketed with other produce, and the cost of marketing cannot be estimated properly.

This last crop was about right in its profit yielding, though by no means as good as it might have been.

*New York.* JOHN JEANNIN, JR.

[Truckers who will keep accurate accounts, like Mr. Jeannin's, with their operations, cannot fail to obtain some most valuable data. Too often there is wonder as to why the general results are not sufficiently profitable, and no knowledge as to where the leak is.—ED.]

# NOTES FROM A WOMAN'S GARDEN—JUNE.

"It is the month of June,
The month of leaves and roses,
When pleasant sights salute the eyes,
And pleasant scents the noses."
—N. P. WILLIS.

AS WE like to have our beloved garden look pretty, as well as be useful and interesting, all the overflow from the regular flower garden finds a place here. Old Levi says "it makes awful hard hoein'." Very true, no doubt, but the bright colors of lhe flowers do add so much to the beauty of the garden.

In front of a long, rather low grape vine trellis is a row of stately foxgloves, whose spikes of purple and white bells look lovely indeed against the deep green of the grape leaves. Later, when the blossoms fade and wither, the rapid growth of the grape vine will hide them. Here is a place where no vegetable will grow well; but hollyhocks, in variety, bloom year after year. There is a great clump of the old-fashioned striped grass, which the captain says is "a regular nuisance, and will run over the whole garden"; but by having it carefully cut around each year, the bunch never gets much larger, and it presents really quite a striking appearance when in full bloom.

In the deepest shade of the pear trees, close to a stone wall, the graceful mountain fringe grows luxuriantly, often climbing to the very top of a tree. The foliage is so delicate that it does no harm, especially as only one vine is allowed to a tree. We have had these vines for several years, never having to plant them since the original seed, gathered in New Hampshire, was used. It

sows itself, growing one year as a low, spreading, fern-like plant, running and blooming the next. It dearly loves a cool, shady, damp spot.

In some of Levi's "katty-cornered places" the seeds of the common nasturtium are generously sown, making bright spots of color almost the entire season. Then there is a bed of hardy roses, so beautiful just now. In the shade of an apple tree is a small bed of pansies. Bachelor's buttons, coreopsis and larkspur come up anywhere, and are bright and pretty; but when we found hundreds of the latter plants in our strawberry bed, we felt that it was a case of "too much of a good thing."

But we must spend no more time admiring the garden. There is much work to be done; incessant watchfulness as regards weeds and insects during the month of June is very necessary—is the price we must pay to insure happy results in the future. There is little planting to be done, except of corn and late squashes, etc., but oh, how fast the plants grow these lovely June days! but alas! the weeds grow even faster. Levi, in spite of his seventy odd years, can hoe more continuously and vigorously than many a younger man. Hoeing is his great strong point, and he keeps at it day in and day out, as long as a weed is to be seen; and early hoeing is most beneficial to the welfare of the garden. We weed too, but by hand, or with a trowel.

Woe betide us if we use Levi's favorite hoe and any soil is left on it! "Gals! gals! that's a purty way to leave tools, ain't it now, etc., etc." Then the insects! their name truly is "legion." Sprinkle the currant bushes again with hellebore. Watch for the saw-fly, which begins about the first of June to nip off the tops of the new branches. Cut off at once all bitten branches at least an inch below the bite and burn them; in this way getting rid of the eggs, which soon turn into destructive worms.

The early peas should be ready for eating by the middle of the month. We usually get three or four messes from the first planting. Last year, an enemy new to us, appeared on the pea vines—masses of small greenish worms, which ate voraciously. By isolating and marking the infested places, sprinkling well with hellebore, this pest was destroyed before doing serious damage. Of course, the peas thus treated can only be used for seed.

A similar worm, attacking the grape vines, succumbed to the same treatment.

Old Levi doesn't believe in killing the tent caterpillars, as so many do, with fire, but fastens a sponge full of kerosene on a long pole and rubs it well into each nest when "the pesky things is all to hum," at noon often.

Our strawberries begin to ripen the first week in June, and the robins come from near and from far to make sure of getting the first taste of the delicious fruit. We fight them a little; but after a few days of sunshine, there are berries enough, and to spare, for the birds and ourselves. By a careful selection of varieties, our strawberry season extends into July, a little way. The old fashioned Cutter is a great favorite with us as being very early, and having, more nearly than any other variety, the real wild strawberry flavor.

We pick our strawberries whenever we wish, from very early morn until dewy eve, and so far have seen no ill effects result. We cannot understand why some people persist in gathering strawberries under the hot sun; for the market it may be necessary or advisable, but for the home table it is surely needless. Our garden is full of delights in June—the flowers, the fruit, the vegetables.

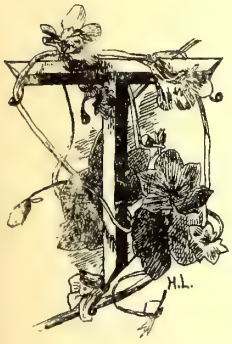
There is no month in the year when one can almost *see* things grow as in June. It is a daily pleasure and wonder to observe this growth. But nothing is absolutely perfect (even in our garden) in this world of ours. It is not really delightful, albeit on the loveliest of early June mornings, to rise with the sun and go out to kill squash bugs by the primitive way of rubbing shingles together, which, having lain under the vines all night have trapped many of these unsavory creatures. But we know no sures way to dispose of these troublesome bugs.

Early in the morning, too, we must examine the beans, melons, sometimes sweet peas; dig wherever you see a plant cut off, and catch master cut-worm; "make two of him" a friend advises, but we find crushing him under a heavy stone just as efficacious, less repulsive. To find 15 or 20 of these worms in one row of beans is not a poor morning's work. Even one cut worm left undisturbed will make great havoc in a long row of plants. Fortunately they are not always with us; it is early in the season that they do their deadly work.

We are firm believers in the virtue of mulching, and mulch as soon as possible with green grass, hay, leaves or straw, not only the edges of the strawberry beds (we grow our strawberries in matted beds), but the currant, gooseberry and raspberry bushes. Unless this is done we find that when July comes a great deal of our fruit is dried and uneatable.

*Plymouth Co., Mass.* M. E. VIGNERON.

# "MAD AS HORNETS."



THIS is a mild expression for the irate temper of the great mass of American horticulturists over the appointment of Walter S. Maxwell as manager of the Horticultural Department of the World's Fair.

The societies of New York, Massachusetts, Pennsylvania and Connecticut have been prompt in protesting against his confirmation. Their objections being that he is not sufficiently acquainted with the needs of such a department. Even the papers of Los Angeles, California, Mr. Maxwell's home town, have "bitterly opposed him on the ground of his entire unfitness for the position !"

This contest has been mainly triangular between the horticulturists, the wine men, and the boomers of self-and-Chicago.

The horticulturists contented themselves, for a time at least, with meeting in conventions, state and national, and passing high-toned resolutions of confidence in Parker Earle, blindly thinking that because they represented the great mass of the people who made the several branches of horticulture their means of living, and the avenues by which they contributed their labor to the world's needs and its happiness, that therefore a hint to those making appointments for "Department B" of the World's Fair would be sufficient. For which conclusion, they had seemingly sufficient warrant in the address of Mr. Thos. B. Bryan, vice-president of the Commission, before the assembled delegates of the horticultural associations of the Union, wherein he assured them that for this purpose, among others, they had been called together, and that the commission desired those delegates to recommend some man ; and Mr. Bryan assured them that the choice of the horticulturists thus represented would receive the appointment.

The wine interest opened the contest with a programme that contemplated a capture, not alone of "Department B," but of whomsoever should be appointed its manager; this was already inaugurated by the "classification" for that department as set forth by said interest.

The boomers inaugurated a more "foxy" method than either of their competitors. The membership postal guides of associations, such as the nurserymen, florists and others were hunted up, and a cleverly worded personal letter was sent to each individual, intimating the necessity of guarding associate and business interests, and making a personal appeal that the individual would sign "the enclosed recommendation" of "Mr. Boomer Foxy" and mail in the stamped envelope accompanying—which, of course, was addressed to the Director General. This was a big scheme, and it came provokingly near success, too ! It is no wonder that the Director General was surprised at such a mass of recommendations which the mails brought for Y. M. Samuels, who with James D. Raynolds divided the honors as to which could most thoroughly boom the interests of self-and-Chicago.

The next move on the chess-board shows the horticulturists, through the medium of the Peninsula Association of Delaware and Maryland, then about to hold its meeting, perfecting a "classification" that should most thoroughly prevent wine from becoming the great *jug*, and all other horticulture only the *handle* in this great exposition. At the same time some machine-made recommendations, along with their accompanying "stamped envelopes enclosed" were sent off to the Director General for his information of how "influence" was being manufactured.

With a contingent of $300,000 voted by California to present the interests of that state properly at the fair, the wine interest centered its enthusiasm around Gen. N. P. Chipman. To quote from the *California Fruit Grower :* "All California clamored for the General's appointment, but when seemingly upon the eve of success, the California commissioners suddenly dropped the General's name without any apologies or explanations, and sailed in for one Walter S. Maxwell, unknown to horticultural fame."

About that time less than a half dozen men in Florida (according to their own enumeration), presuming to speak for the great interests of horticulture, especially in the south, rushed in to commit hari-kari. "A petition was prepared at the office of the *Florida Dispatch*, asking Director General Davis not to appoint to that position Parker Earle, since his rulings at the New Orleans World's Fair in favor of California and against Florida had shown him to be lacking in the impartiality requisite in that high office. This petition was signed by the president and secretary of the (Florida) State Horticultural Society, the secretary of the Orange Growers' Union, and the editors of the *Agriculturist* and the *Farmer and Fruit-Grower.*" These five gentlemen have now opportunity to go to their constituents and learn that they acted in haste and without authority.

These hasty gentlemen of Florida boast in a recent impression of the *Dispatch* of the great undoing effected by the protest sent over their five names ; and the *California Fruit Grower* says : "Florida's protest only intensified, if possible, the contest." Do they like Mr. Maxwell, as he is photographed by his neighbors, better than Mr. Earle for this position ?

Were this the place and now the time to open the merits of Florida *vs.* California, as determined in the New Orleans Exposition, horticulturists could show from the evidence that great credit was reflected on Mr. Earle for the breadth of his views and the minuteness of his perceptions about the points to be considered in judging the orange. It shows that he contemplated a future for this fruit, only dreamed of, or seen as in a haze, by those in controversy. It is, perhaps, not a matter of surprise that in the then early efforts of Florida growers, they had fallen upon untenable points for judgment; but their quick wit has aided them in a total discarding of all those points for which they then contended; and why we ask, live so completely in the past, as to fail to recognize a good intended, and a real good done them and the whole cause of orange growing by the outcome of that New Orleans matter?

W. P. C.

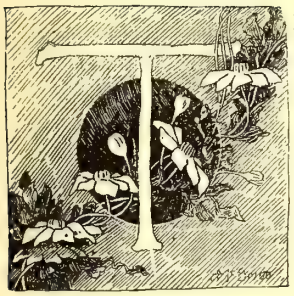
## TWO TIMELY NOTES.

Greenhouse Shading.—One pound of whiting, one ounce of glue and a quarter ounce of bichromate of potash. These materials make, it is said, an excellent shading for greenhouses in summer. Soak the glue for several hours in water and melt in a glue pot, and then dissolve the bichromate in a little warm water and add to the glue. Then stir in the whiting to give it a white color. The whiting is not essential, as any other coloring may be used. The action of the bichromate on the glue is active. The moment the mixture of glue and bichromate is exposed to the light the glue becomes hard and leathery, precisely as albumen, when mixed with bichromate of potash, is affected by light in photography and photo-lithography. The mixture must be applied quickly to the glass, as it sets or hardens as soon as exposed to the light. Without having tried the above formula, it must be remarked that the proportion of bichromate seems to be very large and the skin or shading on the glass will not easily come off, even when it becomes necessary to remove it in the fall. In photography, three per cent. of bichromate is regarded sufficient to form a water-resisting film, and one-fourth the quantity would in this mixture be enough. If the whiting be left out, a pink or rosy tint will be obtained, but probably not as good as a shading

A New Driven Well (patent) employs a chamber at the lower end of the pipe. The water collects in this chamber and forms a reservoir from which the water is pumped through the pipe. The patentee's idea is evidently to save the cost of stoning up the well in the old-fashioned way. He uses a brick-arched chamber at the bottom of the well, places the pipe in the chamber and then fills up the well hole to the surface. Another and cheaper way, and just as effective, and avoiding all patents, would be to dig the well and fill the lower part with large stones. On these place smaller stones and cover with old sods, straw or brush and fill up the well, leaving the pipe in the middle. This would practically make a reservoir at the bottom of the pipe well. Such a well would not be a driven well, as a driven well means literally a pipe driven into the ground, and this is its whole value. The patentee's pipe-well is not a driven well at all, and is very little better than the old stoned-up well, except that toads and children cannot fall into it. An open well, on the other hand, is an 'aired' well. The water is exposed to the air, and with a chain pump the water is "aërated" or charged with air every time the pump is used and this is of value, as dead or unaired water lacks needed elements and is not good for drinking and cooking.

# LAWSON VALENTINE.

(*See Frontispiece.*)



THERE are many men who love nature; men of high and low degree; men of worth and wisdom; men of intelligence and men of ignorance. But all true nature lovers are men of refinement, of keen perceptions for the good and beautiful, of broad minds and generous hearts. Yet few men men possess these qualities in so high a degree as did Lawson Valentine, whose sudden death last month we sadly record. Of a retiring disposition, he made few personal friends; but so strong was his character, so impressive was his manner and method, so noble and public spirited all his ways in life, that now men mourn his death as that of a near friend and are surprised at their sense of great loss. In his country place at Houghton Farm, Mr. Valentine's beautiful grounds, his wild gardens, his care of the landscape, the fine roads that he built, the hills and valleys, the shady lanes, lawns and woods; all bespeak the man's character as a nature lover, an agriculturist, a successful business man, a humanitarian, a philosopher.

Biographically, *The Rural New-Yorker* says: "Born of a race of land holders and farmers of early New England stock, Lawson Valentine's tastes and ambitions from young manhood were ever largely in the direction of rural occupations. Educated in the Massachusetts schools, possessed of sturdy vigor, New England thrift and a rare degree of originality, he early acquired the stamp of a leader among men. In early life he entered the lists as a manufacturer, becoming at the youthful age of 22 a partner in a business house. Never content with a second place, a favorite motto with him was, 'Quality—first, last and all the time,' so that he early determined to make the finest coach varnishes in the world. To be first in the world in any line of honorable effort is to be great, yet Lawson Valentine had other claims to greatness. As a varnish maker, in 20 years he had practically driven the English manufacturers out of the American market, and his goods found ready sale in all countries where fine carriages were used, and carried off the highest medals of merit at several World's Fairs."

Concerning the agricultural side of his life, we quote from Major Alvord's tribute in the *Country Gentleman:* "He loved rural life deeply, and greatly admired all the works of nature. Every rock and stream, every plant and animal was full of interest to him, and it is hard to tell whether he loved them most in their most natural forms or when improved by the hand of man. Recognizing in agriculture the greatest and all-important industry of the country, he believed that its advancement should keep pace with the other industries, and it was his ambition to do something for the progress of American agriculture. He admired the tiller of the soil and grower of crops, and the skillful breeder. While knowing little of the details of their business, he recognized the difficulties with which they contended, and longed to assist them in their work."

He therefore purchased the now famous Houghton Farm, when there were only "half a dozen experiment stations in the country, and the fact that one public-spirited citizen had instituted in America a work similar to that of Lawes & Gilbert in England, was worthy of attention. Once fully enlisted, Mr. Valentine treated the farm with his characteristic generosity. In organization, buildings, livestock, general equipment and land improvements, expenditures were liberal, and nothing withheld which promised to add efficiency. If there was a fault, it was in too lavish outlay and undertaking too much at the outset. The proprietor was a man of large ideas, unbounded generosity and the indomiable energy of Yankee business, which could not well tolerate delay."

Of his many-sided catholicism, Dr. Lyman Abbott says in *The Christian Union* (which Mr. Valentine controlled for years): "No reader could know how pervasive and stimulating was his influence in every department of the paper—an influence, never an authority. It is far less than the truth to say that he never endeavored to direct its least utterance. Even when consulted by the editors on special subjects in which his business sagacity was depended on for counsel, Mr. Valentine invariably refused to pronounce a determining judgment, and threw back the responsibility where it belonged, upon the editors.

"And none the less, rather indeed far more, because he would not dictate, he did direct. There was no one engaged in the preparation of the weekly

issues of *The Christian Union*, from the editor-in-chief to the compositor who set its type or the errand-boy in the office, who did not do his work better for Mr. Valentine's influence. He was the ozone in the atmosphere which we all breathed."

"* * * Himself a large capitalist, his interest was in the world's wage-earners. A man of cultured tastes, his interest was in mission enterprises. * * * Never had Hebrew prophet more absolute courage of his convictions, more of that clear vision which only a great righteousness confers. His intellectual perception of truth was clear and penetrating; but 'the restless disregard of his own interests with which he loooked at questions was more than an intellectual quality.' Yet this passion for truth never made him a partisan or a partialist. He could never have become the advocate of an "ism." He was always hopeful; not because he did not see lions in the way, but because he had too great a courage to be daunted by them. Never man more than Mr. Valentine believed that "one with God is a majority." The greater the difficulty, the more eager he was to meet and overcome it. He would ask prudence how he should conquer a great wrong, but never whether he should give it battle.

"He was not a theologian nor an ecclesiastic. The party contentions which have absorbed so much of the life of the Church had for him no interest. The controversies between Calvinism and Arminianism, Episcopacy and Congregationalism, Old Theology and New Theology, Andover and Princeton, did not concern him. But there was one battle to which his spirit always summoned his associates with a new courage and a new hopefulness. It was the battle for freedom. Whatever muzzled the mouth or manacled the hands of man was his personal foe. And he carried into the long campaign for other men's freedom the same indomitable energy and the same invincible courage with which he would have fought to death any and every attempt to put upon him a manacle or a muzzle."

"He held everything in trust," writes Hamilton W. Mabie in the same paper; "he administered his possessions of every sort as if others had a paramount claim on him. For himself he asked for nothing but freedom and facility for work. His generosities were so varied and so constant that they merge into one continual act of giving; and his gifts always had something of himself in them. His largeness of aim in acquiring and his delicacy and open-handedness in bestowing, disclose his ingrained idealism; he was a poet even in business, and he showed that broad, generous and noble views are consistent with great commercial success. He would have scorned success on any other terms. He was always striving for the universal principle in everything he undertook, for he believed that life was harmonious and that success lay in getting at the heart of things. Strike high enough and success must come, was the lesson of his whole active life. He allied himself with the best things; he was proud of his connection with a great publishing house whose imprint has become one of the stamps of good literature; of his association with a journal which strove above all other rewards to secure the influence which comes of courage, independence, and deep-hearted faith in God and man; of his alliance with intelligent and progressive agriculture, of the identification of his name with supreme quality in manufacture."

As is well known to our readers, he, last year, became a large owner in and president of The Rural Publishing Company, concerning the future of which he was very enthusiastic—and it is the intention of those he left in its management that the company shall go on in the lines which he inspired, and thus insure, in so far as may be, the great success which he anticipated. Their ambition is that the company towards which he contributed so much shall achieve his high ideals.

"Could he have chosen the place of his last illness and death," says *The Rural New-Yorker*, "Mr. Valentine would certainly have chosen to lay down his life on Houghton Farm among the scenes he loved so well. Leaving his winter home in the city apparently a well man, for a visit to the farm (to enjoy the incoming of spring where its advent was most delightful) in advance of the annual family migration, he was immediately stricken with the disease which in three short weeks ended his life. Nature seemed to recognize that this staunch lover of hers had come home to die, and put on her brightest, softest colors to sooth his last hours, and on the day when the simple and appropriate funeral service were held the trees in bloom seemed pyramids of flowers built in honor of Lawson Valentine."

# The Editor's Outlook.

*WORLD'S FAIR.* THERE is much feeling throughout the country over the appointment of Walter S. Maxwell, of California, as chief of horticulture at the World's Fair. The appointment is not confirmed as we go to press, and great pressure is being brought to bear to prevent a confirmation. We fully sympathize with the general feeling. Mr. Maxwell has been appointed amid much opposition, much of it of a somewhat sectional nature, and however pleasant future relations may be, if Mr. Maxwell becomes chief, the horticultural interests start out under an incubus which can never be fully overcome. There are many men upon whom the whole country could unite.

The origin of the trouble lies in the absurd classification of Department B, proposed by Professor Blake, in which the wine interests, which are no part of horticulture, were made the leading features of the schedule. This, besides being unfair and ridiculous, was thought to be an effort on the part of California to control the horticultural exhibits, and whether or no this charge is just, the subsequent behavior of our Pacific friends has not been reassuring.

But our opposition to the appointment is for the reason that it is impolitic. It widens the rupture instead of closing it, and it must certainly lessen the interest in the exhibition. We feel that we shall be called upon to put forth effort, to overcome indignation and jealousies, which we ought to put into the exhibition itself.

We shall not lose our interest in the exposition if the nomination is confirmed. We expect to put all our energies into it, whoever may be chief, and we hope that the exposition will be thoroughly and broadly American; but we are sorry for the present crisis.

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*TRUCK FARMING.* CENSUS BULLETIN 41, by J. H. Hale, is an epitome of statistics of the truck farms of the United States. In common with all other horticultural interests, this business has never before been made the subject of government inquiry, and we therefore have no figures with which to compare its growth. We can only glean something of its present status. But we are handicapped at the outset by the arbitrary and illogical definition of truck-farming, which, without precedent and without any stated reason, is made to include only those farms from which produce is shipped by rail or water. Market gardening is defined as a business "conducted near local markets, the grower of vegetables using his own team for transporting his products direct to either the retailer or consumer." We are not told where those thousands of growers are catalogued who deliver their products both by rail and by team, or even if they are catalogued at all; and such persons supply a large part of the vegetables of the country. It is certainly a new logic which classifies agricultural industries by the way in which their products reach the market, and the arbitrary division here undertaken destroys most of the value of the statistics. We have no clew whatever, even after all this figuring, to the number of acres of beets or cabbages or spinage, or a dozen or more other crops which are grown in enormous quantities in the country, nor can we deduct any figures to show the cost of growing them, or the profits obtained. We have figures of certain farms or regions only, not of crops. And we doubt if the enumerators have been able in many cases to separate statistics in such manner that this new "truck farming" stands by itself. We mistrust that many of the figures, especially those referring to culture under glass, belong to persons who chance to market their truck with a horse. At any rate, it appears to us to be a difficult matter to draw the distinction where none exists.

We should like to make some comparative statements of the relative cost of crops, and profits from them, in various parts of the country, in order to determine if ratio of profit increases with expense or intensiveness of culture; and so far as we can judge, the greatest profits appear to come where the greatest expense is incurred, but we are not sure whether the figures for New England do not include some greenhouse enterprises and are, therefore, not comparable with other regions where such enterprises may have been excluded. Truck-farming, according to the definition, "is carried on in favored localities at a distance from market," and yet the report gives us figures from such unfavored localities in New England that glass must be used to grow the plants profitably. We wonder whether

the vegetable growers at Arlington, near Boston, are truck farmers or market gardeners!

Of course the bulletin contains many valuable figures, even though it does not allow of generalizations. The average wages paid in various parts of the country and the number of laborers employed, the cost of seeds and plants per acre, the kinds and costs of fertilizers, and the figures of shipments from local points, are most valuable. The investigation finds that 534,440 acres are devoted to "truck-farming," and that these are worked by 75,866 horses and mules, 216,765 men, 9,254 woman and 14,874 children, and that the value of tools is $8,971,206.70. The most important truck regions lie in a narrow belt along the Atlantic coast, and along the Mississippi from Chicago to the Gulf. More particular attention might have been given to southern Illinois with profit, as this region is one of the leading trucking centers. The source of supply of vegetables for northern markets advances to the northward during the growing season at the rate of thirteen miles per day.

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*FLORICULTURE.* THE BULLETIN on floriculture, by the same author, is eminently satisfactory. It shows that flower growing has already reached enormous proportions, especially in the older portions of the country and in California. The business is in a thriving condition, as evidenced by the fact that the number of establishments is rapidly increasing. In 1800 there was but one commercial florist in the United States. Between 1810 and 1820 three establishments started; eight more were started in the next decade, 25 in the next, 45 between 1840 and 1850, 96 in the next, 313 in the next, 998 between 1870 and 1880, and 1,797 in the last decade. There are 4,659 commercial establishments in the country now (1890), using 38,823,247 square feet of glass and heated with apparatus valued at $38,355,722.43. Tools are valued at $1,587,693.93. New Jersey has the largest floricultural business of any state in proportion to its size. There is not one establishment, so far as learned, in Idaho, Nevada and Indian Territory. 312 of these establishments are owned and conducted by women and 1,958 women are engaged in the business in the United States. This indicates that women may here find a delightful means of livelihood. The inception of this investigation of the floriculture of the country is said to have come from Mrs. Porter, wife of the Superintendent of the Census, and the following statement has gone the rounds of the press: The bulletin "is understood to be the result of a suggestion made by the accomplished wife of the Superintendent of the Census with a view of opening up a new avenue of employment for women. Supt. Porter, from the day he received his appointment until now, has been worn down by pitiful appeals from women for employment. Without straining facts, it might be said that the proportion of rejected women applicants was as high as ninety-nine out of a hundred. Many of those disappointed took a woman's chance and appealed to the wife of the superintendent, who, seeing so many helpless females in the world, turned her mind to devising some new opening to employment. The result was the special report on floriculture which now appears and which was made at her suggestion."

The total value of the floricultural product for one year was $26,211,805.77, of which $14,175,328.01 was for cut-flowers and the remainder for plants. Of the plants sold, 49,056,253 were rose bushes and 38,380,872 were hardy plants and shrubs, while the total number of all plants sold was 240,272,417. It required 18,805 people to grow these plants and cut-flowers, at an aggregate wage of $8,483,657. All this business required an outlay of $1,161,168.31, for advertising and the issuing of 21,055,694 catalogues, and the estimated freight and express bills on outgoing shipments was $1,086,904.60.

These figures are startling in their immensity. While it has been well understood that floriculture had made great advances, few dreamed that the aggregates would be so great, or that the business had assumed so much importance among the industries of the country.

"Of the plants sold, the demand in the northern and eastern states is greatest for geraniums, coleus, roses, pansies, verbenas, heliotrope, carnations, chrysanthemums, palms, ferns and fuchsias, nearly in the order named. In the south the demand is for roses, chrysanthemums, geraniums, coleus, palms, and ferns; while California shows the demand to be largest for roses, carnations, chrysanthemums, geraniums, palms and pansies. For cut-flowers roses lead, followed closely by carnations."

Wide-spread attention has been attracted to this bulletin throughout the country at large, and most of the great dailies have commented at length upon it editorially. The impression seems to have been made that floriculture is immensely profitable—which will probably surprise many of our florist friends who find it hard to make both extremities connect! Yet many have undoubtedly found great profit in the business.


*** The American Garden *stands for simplicity, good taste and correctness in names of varieties. In general botanical nomenclature it follows Bentham and Hooker and Nicholson's Dictionary of Gardening. In the names of fruits, it adopts the catalogue of the American Pomological Society, and in vegetables the Horticulturists' revision in Annals of Horticulture. In florists' plants, it follows the determinations of the Nomenclature committee of the Society of American Florists. It opposes trinomial nomenclature, and therefore places a comma or the abbreviation* var. *between the specific and varietal names. It uses capital initials for all specific and varietal Latin names which are derived from proper nouns.*

The Bowker Fertilizer Co. has prepared two special cranberry fertilizers—one for old bogs, and one for new.

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Professor Webster, of the United States Entomological Division, for some time stationed at Purdue University, goes to the Ohio Experiment Station. He is still connected with the government work.

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Professor A. B. Cardley, of the University of Vermont, has accepted a position with the Division of Entomology of the United States Department of Agriculture, and will spend the summer in Louisiana.

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F. W. Taylor, of the nursery firm of Taylor Bros., Omaha, has been elected professor of horticulture in the University of Nebraska at Lincoln. He has already assumed charge of the work, but will not move to Lincoln permanently until fall.

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W. N. Irwin, of South Salem, Ohio, was appointed April 1, 1891, a clerk in the Pomological Division of the U. S. Department of Agriculture to take the place of W. R. King, who has resigned to establish a tropical nursery at Patuca, in Honduras.

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Fruit Prospects in Central Indiana.—There has never been a more flattering prospect for fruit of all kinds for many years than we had this spring, but the frosts of the 4th to 6th of May destroyed most of the grapes, where exposed, and a large per cent. of the early strawberries. Orchard fruits were not injured so badly; they were too far along.—Professor Troop, *Purdue University.*

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The Frost in Delaware—Yellows Law.—This cold snap (May 7) has frightened everybody. Monday night ice formed one-sixteenth inch thick, but peaches do not seem to be affected; but tips of vines and young sassafras bushes are black and drooping in places. Snow and hail yesterday.

A mild sort of peach yellows law has just passed the Delaware Legislature. It is said to be an improvement on the first law, but does not include Newcastle county, or the Two Hundreds (townships) in Kent, which are most seriously affected. It was a compromise.—E. F. S., *Dover.*

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Burnham Industrial Farm.—One of the most novel, and apparently beneficent institutions to which our attention has lately been directed, is the Burnham Industrial Farm at Canaan-Four-Corners, N. Y., near the Hudson river. "The farm is to train unruly boys. It teaches simple trade and furnishes a common school education. It is run by a band of unpaid consecrated men who are in training for institutional lives. It receives boys from 8 to 16 years of age."

It is the purpose of the institution to snatch wayward boys "upon whom the ordinary restraints of social life have lost their effect," and to discipline them and direct their attention to farm work and country life.

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Fruit Prospects in Southern Indiana.—In the last week I have carefully examined the fruit crop and find the promise usually good. I wrote you some three years ago extolling the Keiffer pear. I cannot do so to-day; it is proving almost a failure with us, by the too early opening of the fruit buds and their loss by cold weather. Can this be remedied? If so, the Keiffer is the most profitable pear to grow. The Bartlett is the best pear we have; closely following comes the Anjou. Howell is always safe to plant; so is the Sheldon. I visited a pear orchard set out by myself twenty-eight years ago; above all towers the Bartlett and the White Doyenne, and that grand old dwarf, Angouleme.—A. C. Bates, *Rockville, Ind.*

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New York Botanic Garden.—The movement for the establishment of a botanic garden at the metropolis seems to be making substantial progress. A meeting was held May 12, when plans were discussed and committees organized. Cornelius Vanderbilt, as chairman, appointed the following well-known men as members of

the finance committee: J. Pierpont Morgan, Andrew Carnegie, William C. Schermerhorn, John S. Kennedy, Morris K. Jessup, Richard T. Auchmuty, D. O. Mills, James R. Pitcher, Jesse Seligman, Edward Cooper, Samuel Sloan, Louis Fitzgerald, William E. Dodge, Robert Macaly, Eugene Kelly, Jr., James A. Scrymser, Timothy F. Allen, Percy R. Pyne, Charles F. Cox and Charles P. Daly. The committee on constitution and by-laws was as follows: Seth Low, Charles A. Dana, Stephen P. Nash, Parke Godwin, Samuel W. Fairchild, William G. Choate, William H. S. Wood, Nelson Smith, George M. Olcutt and Addison Brown.

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A Great Plant Show will be held at Madison Square Garden, New York, next November. An extended premium list is offered, and it is expected that heating and ventilating apparatus will be well represented. The following are the "rules and regulations:"

1. The exhibition will be open to the public November 2d to 8th.

2. The gardens will be open for the reception of exhibits on November 1st.

3. All exhibits, of whatever kind, must be in position by 2 P. M., November 2d.

4. Intending exhibitors will please correspond with the secretary for information regarding entries and details.

5. Except where stated, one or more stems or plants are admissible in chrysanthemum bush specimens.

6. Correspondence and suggestions are desired from all those who are interested in the progress of horticulture.

It is expected that this will be the "greatest floral exhibition ever held in America." J. W. Morrissey is secretary.

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Oregon Fruit Prospects.—With one exception, reports are all favorable to Oregon's fruit crop this year. The exception is hardly to be considered, since it relates to peach growing in the Willamette valley. Only a few very favorable sections in this valley will, so far as experience goes, allow of successful peach culture, and these favorable sections have an area of only a few score acres.

Southern Oregon promises an abundance of peaches, plums, prunes, pears and apples, and all kinds of small fruits. Eastern Oregon expects a fair crop of peaches, although these are not counted on, save in the Snake River valley; plums and prunes will be abundant; pears and apples full crop, unless orchardists neglect to do their duty by the codlin moth. The strawberry crop will be exceptionally large in the Hood River valley, while the outlook for other fruits in that section is very good.

In the Willamette valley, including the many little offshoots, the prospects for full fruit crops were never better. The orchards have been one mass of bloom—for a time it literally covered the moss ('tis unfortunate that our fruit trees are not quite everblooming). Though the season has been backward (about two weeks), we have had no late frosts. A few cool rains, falling during the early part of this month, have checked the strawberry crop somewhat.

The pestiferous little codlin moth has put in her appearance, some of them being on the wing as early as May 1st. At the rate we have been progressing during the last three years, it will take a quarter of a century for our otherwise progressive orchardists to learn that the codlin moth does not "perish from the earth" in this web-foot climate. Many orchardists, last year, insisted on waiting till some apples were affected before they decided to spray. They wanted to see if the moth was really on hand. They found out to their own loss. Still, some will try the same thing this year; they don't want to appear over-credulous.

Though the outlook for small fruits is good, the output will not be as large, relatively speaking, as of the larger fruits. During the past few years, the plantings of small fruits have not kept pace with the orchard plantings. Around the larger cities, where have been our largest small fruit gardens, real estate has been held so high, and so much has been put upon the market as "corner lots," that these gardens have been abandoned and, with two exceptions, Hood River valley and Grand Ronde valley, out-lying sections have not planted a corresponding area. This condition of affairs will not last long, however, for the present spring witnessed great activity in small fruit planting in several localities. All told, Oregon's fruit prospects have not been so bright in years, nor have her horticulturists manifested such a progressive spirit as we are able to note to-day.—E. B. Lake.

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California State Floral Society—Semi-Annual Exhibition, May 6 to 9.—Would you had all been there to see and feast upon the delicious fragrance and rare beauty of the scene by day and by electric light at night, in the large auditorium of the new Academy of Sciences! The galleries and balconies were adorned with ferns, fan-palms, graceful bamboos, red-wood sprays, gay bunting, lanterns and Japanese umbrellas up to the high dome; masses of roses, sweet peas and carnations stood on every side; young "Norfolk-Island pines" grew here and there, and there were tall palms in the center. The first to strike the attention was *Phœnix Canariensis*, surrounded by a hundred or more pure white chrysanthemums.

A twenty-five dollar prize went to Mrs. C. H. Hohmeisner for foliage, flowering and decorative plants from her greenhouse, arranged under a tree-fern bearing a bunch of big snow-balls tied with wide white ribbon; roses and largest of pansies, among *Polystichum angulare* and other rare ferns; heliotropes with broad ribbon bows of same color and handsome begonias. Second premium went to Mrs. L. O. Hodgkins, whose display was one of the handsomest in the hall, choice ferns, begonias, large *Lilium tigridium* and several specimens of the long white racemes of *Xenophyllum tenax* or "bear-grass," a wild-flower related to the asphodel.

The most interesting display to me in the hall was the center-stand without a tall palm, but with a hundred year-old wistaria in bloom of white and purple. Its stalk was about a foot in diameter, dividing into two branches, one of white, one of lilac, mingling charmingly with its pale, silky leaves. Golden and red rare azaleas and tree pæonies, double clematis, white magnolias and hundred-year-old cedars on either side were upon this stand. To think of being able to have on one's parlor table, for fifteen dollars, a tiny green cedar tree, a century old! The Japanese Gardener's Association, Oakland, was awarded a silver medal. One of the azaleas had four different colors blooming profusely at once; and several of the beautifully incised and bright-colored leaved maples, a few inches high, had four or more varieties grafted successfully on one stem, sometimes growing apart and then joining together like a bridge, from which grew different kinds of leaves.

The display of roses was of course the largest and finest of all, as at this season they are in their greatest profusion. The President, Professor Wickson, showed some beauties from his garden, his blooms of Papa Gontier being the finest in the whole show; this, as most of your readers know, is of a rich crimson with some yellow, the buds particularly large, globose, long and having the richest "tea" fragrance. His Henri Meynardier is paler, and Madame Lambard a beautiful rosy salmon, the outside of the petals crimson rose. Mrs. Smyth's roses were the finest in the exhibition; she had one of the silver cups. There were a number of money prizes given. People liked Madame Scipion Cochet, tea, just bloomed from slips imported from the east (which means the cold Atlantic coast); it is of most delicate pale pinky yellow with large petals.

None of the growers seem to have had success with the Homer, but they all adore the splendid large double carmine President, shaded with crimson, dozens blooming at once, on one bush. The Scipion Cochet is said, by a California florist, to be "born perfect, live perfect and stay perfect till it fades;" the Riza du Parc blooms finely but the curve of the lip of the petal is too apt to fade, should a shower touch it. Madame Cusin, a standard pink tea, is always in bloom. There was only one Admiral Rigny, a grand bloomer, in the room. The florists do not allow roses to fade on the plant. There was a great display of the large nankeen or orange-colored, rich Shirley Hibberd, massed together, and of Princess Stephanie, salmon yellow with rosy crimson tints, petals bent, hollowed and overlapping each other. La Fay is a favorite; also the pure white, long budded Niphetos and its similar, but climbing sister; the deep pink hybrid tea, Camoens; and Marquis de Viviens, tea, of similar rich color, with Mr. Hopkins' Duchess of Albany, a deeper pink than the old favorite La France.

Mr. Rock, of San José, presented all the palms and other decorations to the Society; entered for three prizes and won three, one a silver cup. He has 300 different kinds of roses, the Baron H. de Loew being the handsomest; petals very large, of palest straw color; has a vase-like form in bud; six buds and one blossom on one short stem. Dr. Grill is deep golden, its petals turning over, when open, more than those of the Baron. Charles Rovolli is a deep pink tea; the petals do not curve over. Jean Liabaud, hybrid perpetual, is of the richest, deepest, red-crimson. Many other beautiful ones were in his collection and in Prof. Wickson's.

Mrs. Townsend showed a new pink tea she named Eureka, handsomer than Duchess de Brabant, its mother. Mrs. Colville gave us the pleasure of seeing some of her fine collection of roses and foxgloves; Mrs. Crane, of San Lorenzo, shows Niphetos and other roses, camellias, pelargoniums with laced white edges, and pansies; H. T. Greenough took first prize, silver medal; Warren Cheney second prize, bronze medal; Mrs. Fish, third certificate for cut roses of amateurs, while the premiums awarded for best collection of twelve cut roses, were given to Mrs. W. H. Smyth, first, and Warren Cherry, second. M. Michel's roses and cacti were admired. It seems an especially good plan in Miss Pratt to give premiums of a dozen of her rare roses, including the Bride. A very shell-like double rose of palest pink resembling a camellia but very fragrant, is Clotilde Soupert, a new tea polyantha, sent by Charles Pach of Martinez.

In Mr. Garden's display were red and purple rounded trusses of rhododendrons, two branches each with three or four long lily-shaped flowers of most delicious fragrance, white as snow, each four inches long, upright, the stamens arranged in the graceful spread-out manner peculiar to the rhododendron and azalea; the leaves stiff as though cut out of leather, curling over at the sides and covered underneath with brown fur. *Hemerocallis alba* was shown, imported from India, at Golden Gate Park. In Mrs. Smyth's collection was *Nicotiana affinis*, looking like white petunia. Timothy Hopkins showed a marvellous collection of sweet peas.

The caladiums from Golden Gate Park bore white and pink variegated leaves thin as paper, two feet long fifty of them near the entrance of hall, with immense red poppies. A basket of the golden eschscholtzia on a pillar with golden ribbon; another of the delicate lilac-and-white wild *Collinsia bicolor* from Mrs. Harris and from Mrs. Ross of Woodneath, Belmont, were enjoyed; and daisies were there in profusion. There were Spanish iris from Australia and large double yellow and crimson ranunculus.

This State Floral Society does not seem to include the regular florists of the city or country; they would fill up the hall and take all the premiums. It is intended for amateurs and some professionals who do not employ much help, hoping to increase the love of flowers. Whoever exhibits any flower is expected to pay a dollar and become a member even if unable to attend the meetings, when interesting papers are read monthly.

Fresh flowers were supplied every day, save of the wild-flowers, for which collection, Mrs. Vestey received a prize.

NOTES FROM ENGLAND—*The Royal Horticultural Society.*—After struggling through a long period of adversity this old society is now giving every indication of renewed vigor, and everything points to a revival of the glory of its early days. Not only is its constituency being widely extended, but its finances are in a more satisfactory state than they have been in for many years, the report for 1890 showing a very fair surplus. The fortnightly exhibitions held at Westminster are usually of great interest and are consequently well attended. At the one held on February 10 there was a very fine display of orchids, Chinese primulas and cyclamens. Messrs. Pitcher & Manda, of the Hextable nurseries, Swanley, exhibited a collection of about sixty kinds of cypripediums in flower, consisting of new and rare species, varieties and hybrids. Amongst the more noteworthy were *C. Arthurianum, regale, Sallieri* var. *Hycanum*, a very pretty var. of *Spicerianum* named *revolutum, Godseffianum*, and *Klotzschianum* (a rare species from the Roraima Mountain, British Guiana). Exhibits like this are of the greatest value from the educational standpoint. Messrs. Sander & Co. showed the rare and beautiful *Oncidium Brunleesianum*, a fine example of the white *Lycaste Skinneri*, still a rather expensive orchid. Messrs. Veitch sent a new hybrid cypripedium named "Creon," a cross between the best forms of *C. Harrisianum* and *C. œnanthum.* The flower is chiefly of a rich reddish-brown, the dorsal sepal being very dark, with a white margin. It was awarded a first-class certificate by the orchid committee. A splendid collection of Chinese primulas was staged by Messrs. Cannell, all the plants being remarkable for their strong growth, large flowers and richness of color. Of the white varieties, one named White Perfection was perhaps the best, whilst Kentish Purple and Kentish Fire stood first among the colored ones, both being of the richest rosy crimson.

*The recent winter.*—The winter of 1890-91 will long be remembered as one of the severest on record. At such an establishment as that of Kew, where experiments, testing the hardiness of both new and old introductions, are continually being made, the fatalities in plant-life are necessarily numerous. These are all the more apparent because of the long run of mild winters that preceded the last, many plants that had crept outside during that time having come to be regarded as hardy. Horticulturally, however, such winters are not without their value, those plants that survive being indubitably stamped as perfectly hardy. Perhaps the most unwelcome fact that has been made apparent is the tenderness of the Indian deodar (*Cedrus Deodara*). There is an avenue of them at Kew extending three-fourths of the whole length of the garden, and except where sheltered by larger trees they have suffered severely—the younger branches being almost denuded of leaves. In a young state this cedar, *C. atlantica* and *C. Libani* are so alike as to be indistinguishable, and Sir Joseph Hooker has expressed the opinion that they are forms of one species. However this may be, the two last are evidently of hardier constitution than the deodar, neither having suffered.

*Cool Palms.*—Owing to the large increase of the palm collection at Kew, which now numbers considerably over 400 species, it has become a difficult matter to find room for all the larger representatives of the family in the palm house. Extensive trials have therefore been made with a view to ascertaining the possibility of growing species from less purely tropical regions in the large temperate house, the only other structure of sufficient size to allow of their full development. The results have hitherto been very gratifying. Not only has the list of greenhouse palms been considerably lengthened, but it is found that many species thrive even better here than they do in a warm house. The temperatures of this house may be briefly stated. From April to the end of September no fire heat is used, a large portion of the roof is left open and the temperature is practically the same as that out-of-doors. During winter the average temperature is 45° Fahr., but it is very frequently below 40°, and several times during last December and January the glass fell to within four or five degrees of freezing point. Plants that succeed in this house could undoubtedly be grown out-of-doors in the southern United States, or in any locality which has a bright summer and where the winter temperature does not fall below freezing point, or at most one or two degrees beyond. To some of your southern readers the following list, which comprises the palms grown in the temperate house at Kew, may be useful: *Areca Baueri* and *A. sapida; Brahea dulcis; Caryota ochlandra; Chamædorea elatior; Chamærops Fortunei, Humilis hystrix, Khasyana* and *C. Martiana; Cocos capitata, coronata, flexuosa, insignis* and *C. Yatai; Erythrea armata* and *E. edulis* (both from Southern California); *Jubœa spectabilis; Livistona australis, Chinensis* and *L. inermis; Phœnix acaulis, canariensis, dactylifera, humilis* var. *Hanceana, reclinata, spinosa* and *P. sylvestris; Rhapis flabelliformis* and *R. humilis; Sabal Blackburniana, Adansoni* and *S. Palmetto; Seaforthia elegans; Seronoa serrulata; Washingtonia filifera, robusta* and *W. Senoræ.* The last three are natives of Southern California and are better known under the name *Pritchardia.*

In the autumn of 1889 I paid a visit to the French Riviera, the narrow strip of territory lying between the Maritime Alps and the northern shore of the Mediterranean. I was astonished at the number of palms cultivated in the open, and at their splendid development. Not only are the gardens freely planted with them, but they are the commonest of street trees. The climatic conditions, so far as they concern vegetation, are probably identical with those of a large portion of your southern states. The following palms, besides nearly all those given in the above list, are grown there: *Brahea lucida, nitida* and *B. nobilis; Chamædorea scandens; Cocos Blumenarii; Thrinax Chuco.*

*Manure for Orchids.*—The feeding of orchids by means of different kinds of manure has long been a moot-

point, and until lately the general impression appears to have been that the practice was attended with so many dangers that it were better let alone. Of course there are a considerable number of orchids whose style of growth and requirements at the root in a great measure approximate those of ordinary in-door plants, and these for many years have been fed with manure in a liquid form and by mixing it with the soil. Calanthes, pleiones and thunias occur to me as well-known examples. But evidence has latterly been forthcoming which undoubtedly shows the beneficial effects of manure for a much larger class of orchids, and especially is this the case with the guano manufactured from fish refuse. One of the first occasions when public attention was drawn to its value was at the orchid conference held in London, in 1885. A splendid specimen of *Cymbidium Lowianum* was exhibited, whose luxuriant growth was attributed to the use of this manure. The history of its development from a small plant, which was given by the owner, showed a rate of growth far surpassing what is usually characteristic of this orchid. Mr. Moore, of the botanic gardens at Dublin, has also made and published the results of many experiments with the same fertilizer, and now uses it largely in his fine collection. The most striking demonstration of its effects, however, has been furnished from a garden in Herefordshire. A Mr. Spencer, an enthusiastic cultivator of orchids, has lately sent to Kew a spike of *Cypripedium Spicerianum* bearing three flowers. This is the only instance on record of a three-flowered spike of this cypripedium, twin-flowered ones being by no means common; yet the plant from which it was cut bore altogether seventeen spikes, no less than thirteen of which were double-flowered, three only being single. Now this plant was bought six years ago, and at that time was accommodated in a four-inch pot. It has been systematically treated with fish manure, and there can be no doubt that to this, combined with careful attention, its extraordinary vigor is due.

It may be used for anguloas, calanthes, cypripediums, cymbidiums, houlleteas, lycastes, phaius, pleiones, thunias, and generally speaking for all terrestrial or semi-terrestrial species. It may be either sprinkled on the soil once every three or four weeks (a thimbleful say being sufficient for a plant in a six-inch pot) or it may be mixed in water and watered in. It is always best to begin by small doses and watch the results. It must only be given to well-rooted plants, and only during the four or five months of most active growth.

*Plant labels.*—The requisites of a good plant label are legibility, neatness and durability. To supply these the inventive capacity of many an amateur and gardener has been exercised, and the number of different kinds of labels is, in consequence, enormous. Some of these are good, but the majority are so expensive that most plant growers prefer to still use the old label of wood and white paint in spite of its defects. In the opinion of many, the nearest approach to a perfect label yet invented, is one which is being extensively used at Kew, and both in the glass houses and out-of-doors has proved very satisfactory. The following is the method of preparation: Pieces of zinc of the size and shape required are first cleaned with sand paper and then coated over with Aspinall's white enamel. This is then allowed to remain several days until thoroughly hard and dry. When the label is required for use, another coat, of black enamel, is laid on, and *whilst wet*, the name, country, etc., of the plant is written on with a pointed stick. The letters then stand out conspicuously in white, the rest of the label being black. The merits of this label consist in its durability and in its being easily read without being obtrusive.

*Richardia Æthiopica.*—At one of the autumn meetings of the horticultural society a rather remarkable variety of this plant was exhibited by Mr. Elliott, of Jersey. It is a miniature form of the type, and does not grow more than nine inches to a foot high, a pot six inches in diameter being the largest required to grow it in. The spathes are quite perfect, and the whole plant is a diminished, but exact reproduction of the ordinary form. It is said to have appeared in a batch of seedlings. In the December issue of THE AMERICAN GARDEN the richardia was I believe, recommended as a window plant. For such a purpose this small form will prove convenient. It is now being sent out by the raiser, who has named it "Little Gem."

*Asparagus plumosus.*—The value of this plant for the decoration of rooms is not so widely known as it deserves to be. The beauty of its delicate feathery foliage is equal to that of any fern, but I know of no fern that will grow in a room as it does without glass covering. I have seen a plant that has been grown for two years continuously in a sitting room, and it is now not only in perfect health, but has increased considerably in size. In winter it should be kept away from the stove and should not be very moist at the root. The temperature may fall to freezing point or even a degree or two below without injury. A writer in the English *Garden* has recently recommended the variety nanus as a room plant. This, however, is probably more tender than the type.

*Cattleya Warocqueana.*—In my notes on new orchids in the February issue, this cattleya is put down as a variety of *C. Mossiæ;* it should have been *C. labiata.* Some controversy has taken place as to its true position in the genus. Some authorities consider it a form of *C. Gaskelliana*, but M. Linden, who imported it, claims it to be identical with the old autumn flowering *C. labiata*, which was introduced to cultivation seventy years ago but has never been met with in a wild state since, and is consequently becoming rarer and more valuable every year. He also states that the locality in which his agents found it is widely removed from the one where *C. Gaskelliana* grows. However this may be, its value, as one of the finest orchids introduced for some years, is in no way affected.—W. J. BEAN, *Kew, London.*

# FOREIGN NOTES.

OBITUARY.—Emil Rönnenkamp, landscape gardener (Garteninspektor) of the city of Berlin died March 10th after a long illness. He was 53 years of age.

WILLIAM BARRON, a prominent English horticulturist died April 8, aged 86. His knowledge of trees, especially of the coniferæ, was unsurpassed.

PIERRE BERTIN, one of the oldest and most respected horticulturists of France, died at Versailles the 3rd of April, aged 92.

MR. INGELREST, landscape gardener of Ghent, died recently in that city.

ROSE, ETHEL BROWNLOW.—Of all the recently introduced tea-scented roses this is one of the best. It is of splendid habit and also supplies a color long wanted. Its color may be described as being between Catherine Mermet and Comtesse de Nadaillac. It is a grand rose to stand, both on and off the plant, and is also very delicately scented.—*Ridgewood, in The Garden.*

SCHAFFER'S COLOSSAL RASPBERRY has been tested in Europe and is now being widely planted.

BOURGUIGNONNE MIXTURE is recommended by the *Chronique Horticole de l'Ain.* It is made by dissolving two pounds sulphate of copper in five quarts of water; to this add two pounds of soda dissolved in five quarts of water. Mix the two solutions carefully and when all chemical action has ceased, add water to make twenty-two gallons of the solution. This is said to be as effective as the Bordeaux mixture.

FERTILIZER FOR GRAPES.—Superphosphate of lime, four parts; nitrate of potassium, three parts; sulphate of lime, three parts. Mix well before applying.—*Revue de l' Horticulture Belge.*

SETTING TOMATOES.—On the island of Guernsey, where tomatoes are forced for the London markets, scarcely any trouble is taken to make the flowers set. The houses are kept warm and dry, often to such an extent that the plants wilt, and plenty of fresh air is given. Only in damp, cloudy weather the plants are lightly tapped. Excellent fruit clusters are obtained in this manner.—*I. H. M., in The Garden.*

FRUITS IN PERSIA.—Apples, pears, and cherries flourish in Persia only at elevations of six to seven thousand feet above the sea. Neither cherries nor plums are very good, but apricots are far superior to any grown in Europe. Peaches of excellent quality are grown, a small smooth skinned variety being particularly delicious. Many other fruits, as well as ornamental trees and shrubs which are native to temperate climates also do wonderfully well in that country.—*Dr. Staph, in Gartenflora.*

FRUIT PROSPECTS in England are exceptionally bright.

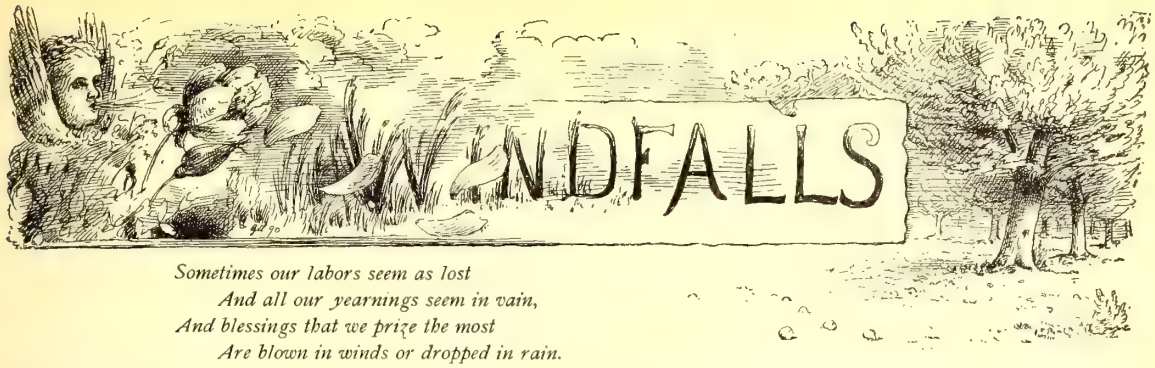
A NEW INDUSTRY FOR WOMEN.—An Association of women is about to start in busines to undertake by contract the care of London conservatories, window-boxes, balconies, and small gardens, by the year, season or month. The members of the association will, themselves, attend to all orders, employing men for the digging and rough work only. Plants will be received and tended at the premises of the association during the absence of the owner from town. The title of this new business is the Woman's London Gardening Association.—*The Gardeners' Chronicle.*

OLIVES OF TUNIS.—The editor of the *Revue Horticole* has received a curious collection of olives from Tunis. There were nineteen varieties, differing very much in size and form; even the pits varied considerably. Some of the varieties seem to be entirely unknown in southern France, although they are in every way worthy of introduction.

THE PHYLLOXERA IN ITALY.—At present there are 288 communes in Italy infested with the phylloxera, and it is spreading rapidly. The phylloxera laws regarding importations from England and the United States are decidedly prejudicial to Italy, and as they are no longer of any use, a change should be made.—*L' Agricola Italiana.*

LAWNS FOR WARM AND DRY CLIMATES.—In Brazil excellent lawns are made by using *Stenotaphrum glabrum*, a grass which remains green without watering, even in dry places, during hot weather. It is propagated by cuttings.—*Revue Horticole.*

A NEW INSECTICIDE.—A trial of a new arrangement for destroying insect pests is spoken of in *The Gardeners' Chronicle* of April 18. It is called the Lethorian Vapor Cone, and seems to be very effective. Among the plants used were adiantums, full of young fronds; cattleyas, in bloom; chinese primulas, etc. The maiden-hair ferns were laid on a shelf directly under the ridge of the house, and over the cones. In fumigating, the directions of the inventors were closely followed, and two days later a careful examination of the plants was made. It was then found that the green fly, thrips, and white scale were all killed; brown scale also killed, but where protected by thick foliage some were alive; many mealy bugs were also killed. The foliage was in no case injured, and Mr. Anderson, the writer, now uses the cones regularly for the above pests, in all cases with excellent results.




*Sometimes our labors seem as lost*
*And all our yearnings seem in vain,*
*And blessings that we prize the most*
*Are blown in winds or dropped in rain.*

**Rubus phœnicolasius** was described in the *Gardener's Monthly*, January, 1880, from an English source. Trying to "prove all things" as we do, a plant at length came to us, but under the name of *R. Hoffmeisteriana*, which we supposed a synonym, and which certainly agrees in every respect with the cut and description, pp. 204 and 205. I enclose a twig. We have admitted it into our collection of ornamental shrubs from its reddish hairs, but so far as pushing it as a *fruit*, we never should have thought of it!—THOMAS MEEHAN.

[The specimen sent is undoubtedly *Rubus phœnicolasius*.—ED.]

**Fruit Packages.**—D. W. Wiley, before Saugatuck (Mich.) Pomological Society: "We are making a mistake by using too many styles of packages. The factories cannot manufacture as cheaply as they could if only two or three styles were used, and we lose the benefits that would come from uniformity, when fruit is offered for sale on the market. The handled basket, either splint or climax, now so much in use in this section, is an expensive package for the grower, because it costs more to pack fruit in, and yet cannot be sold for more money than the old round basket. Still, if the majority prefer this package, we ought to use it to the exclusion of other styles rather than have the market filled with a miscellaneous lot of boxes and baskets, as it now is. We cannot expect reliable quotations and fair returns unless our side of the deal is conducted in a business-like way. Another point that we need to look after is the honest packing of fruit. Michigan's reputation is bad in this regard, and the competition from new southern districts, and that already experienced with California fruits, will capture the best of our trade. We must send better fruit in uniform packages, and then devise some plan for guaranteeing the quality in the package, so that buyers can rely on getting what they bargain for."

**Strawberry Culture for Women.**—New employments present themselves to women every year, and there are ten-fold more to-day than there were ten years ago. Women in the rural districts are giving their attention to horticulture, which is more healthful than the close confinement of city employments.

A woman in Medici, Kansas, decided to cultivate strawberries. She purchased three hundred Captain Jack plants. The second year, from her own plants, she set fifteen hundred more, and from the fruit the following year she cleared one hundred and twenty dollars. The second year, the yield of the third setting, of little less than two acres, was about seven thousand quarts, and netted a profit of five hundred dollars. Last year she set six acres of strawberries.

Fruit growers assure us that strawberries will grow in any soil that will raise good wheat or corn. A heavy soil with considerable clay in its composition is said to raise better berries with less labor. There is not as much danger of late frosts injuring the crop if planted on upland. The ground should be very rich. Manure from the cow stable should be used liberally. Save all the leaves in the autumn in a compost heap, and use in the garden. Wood ashes are very valuable for strawberry culture when spread and spaded or plowed in. The late Marshall P. Wilder, when asked: "What is most necessary for successful strawberry culture?" replied: "A great deal of water; in the second place, it needs more water; in the third place, I think I would give it a great deal more water."

The strawberry is such a delicious berry that it pays well to cultivate it for home use. Plants set in the spring yield a larger crop of berries the coming year than those set in August. They do well set in double rows, with plants ten inches apart, with a space of fifteen inches between the rows. Do not let them bear the first season, if you wish strong plants.

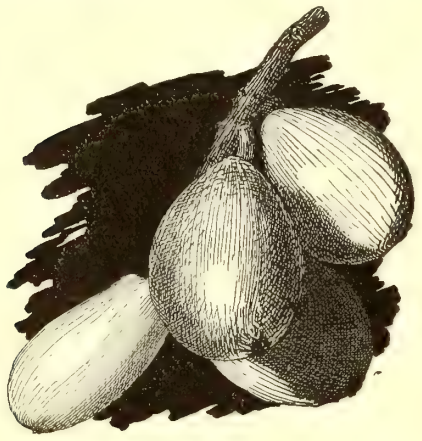
Unless there is a good body of snow to cover them well, it is better to mulch them lightly with straw or coarse manure in December, after the ground is frozen, to keep it from thawing.

In April, as soon as the weather is suitable, uncover, and when the soil is dry enough, make the ground mellow with a fork. Keep the weeds out and all the runners cut off until the fruit is ripe—MRS. M. J. ASHTON.

**A New Red Raspberry—The Merkel.**—The Merkel raspberry is wholly distinct from all other varieties, and possesses several very valuable qualities. The great peculiarity about it is, that it does not throw up any suckers or root sprouts, as the other red varieties so objectionably do. The plants form very large, tree-like bushes that are perfectly hardy and exceedingly productive. The berries are firm and of excellent quality, having a remarkable currant flavor, which gives them a pleasant, sprightly taste. In color, they are somewhat

darker than the Cuthbert; size and shape, about the same as the Gregg. Owing to its non-suckering habit and its great productiveness, the Merkel bids fair to supersede all the other red varieties.—JOHN F. RUPP, *Pa.*

**The Loquat in Southern Louisiana.**—The description of the loquat by Professor Georgeson in the January AMERICAN GARDEN (page 14) is interesting, and gives



LOUISIANA LOQUATS.

one a clear idea of the characteristics of this very peculiar fruit. The season for fruiting, as given, may be modified to suit the different localities where it is grown. Here, on the Louisiana peninsula, south of 30°, the tree commences to bloom in the latter part of August and continues blooming until Christmas, when, if no severe frosts have occurred, the trees are covered with the clusters of green fruit in the various stages of growth, some of which will commence ripening with the first few days of mild weather. Usually some of the fruit is ripe in February and continues ripening until the latter part of April. Heat sufficient to push the buds on orange trees ripens the fruit. The present season there were ripe plums (so called) when the buds for orange bloom were the size of pin heads. The first shipment of ripe fruit was made on the seventh of February.

The loquat has been cultivated in southern Louisiana for many years, so many that the history of its introduction seems to have been lost. Tradition has it that the seeds were brought by a ship captain and sold at fabulous prices.

The trees are all grown from the seed, causing more or less variation in the quality and size of the fruit. However, there are only two distinct varieties recognized as such, namely, the white fleshed and the yellow fleshed. The trees are ornamental, are vigorous and quite hardy for this latitude, have no insect enemies, so far as known, and grow to a large size. They produce heavy crops of fruit annually, the bulk of which, if not cut off by severe frost, which sometimes happens, finds a ready market in New Orleans, where large quantities of it are consumed. The retail price in New Orleans ranges from 50 cents per pound when scarce, to 5 cents per pound when very plentiful.

Like many other light colored fruits, a bruise soon turns black, injuring the appearance of the fruit and depreciating its value. There are no orchards exclusively of its fruit; trees are seen here and there, in orange groves, about the houses and elsewhere, no person having more than 100 trees. They are quite as profitable as the orange, but as the season for gathering is necessarily protracted, and the more care in packing that is required, will, no doubt, account for their no being grown more extensively.—W. S. REDDICK.

[Mr. Reddick sends us a fine lot of loquats, a sample of which is shown three-fourths size in the illustration.]

**An Enormous Orchard.**—Probably the largest orchard in the world is the famous Bidwell orchard of California. An exchange describes this orchard as follows:

"It lies in the open valley of the Sacramento, in Butte county, and covers two and a-half sections, or 1,500 acres of land. Its owner, General John Bidwell, is one of the early pioneers, having crossed the plains in 1841. He was an associate of Sutter and Fremont, and his life in those early times was replete with adventures among savage Indians and wild beasts.

"He has more than a quarter section of land, in fact, nearly 200 acres, planted to peaches alone. He has over 100 acres set to plums and prunes. The latter, when dried, are superior to the finest of the imported French prunes, while the plums are truly magnificent, including the Yellow Egg, Washington, Columbia Pond's Seedling, Coe's Golden Drop, Duane's Purple, Peach Plum, and still other varieties. Several thousand pear trees form a grand orchard in themselves. While many varieties are grown, yet the Bartlett leads all others. The Seckel, Flemish Beauty and the Kieffer are among the most profitable varieties. There are some 5,000 apple trees, which include most of the standard varieties. It is noticeable in this warm climate that what are known as fall apples in the Atlantic states are summer apples here, while those known as winter apples there, ripen early in the fall here.

"The apricot orchard includes between sixty and seventy acres, and the best varieties only are set out.

"There are 2,357 cherry trees, and these make a wonderful growth and bear prodigiously. One magnificent tree, a Napoleon, measures sixty feet high, seven and a-half around its trunk and bore in one season 1,750 pounds of fine fruit. The cherries were picked and weighed under the most careful supervision, so that no errors could occur. At the prevailing price that this tree returned to its owner there was a greater profit than in ten acres of land planted to wheat.

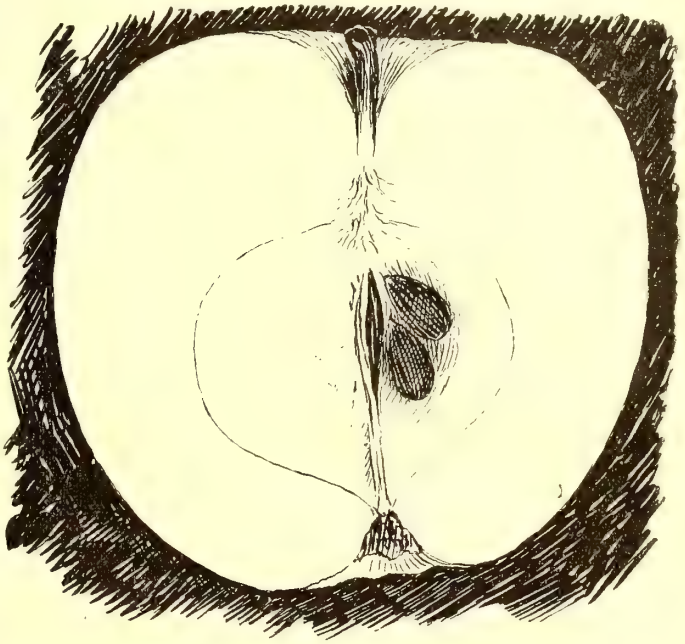
"There are great numbers of almond, which reaches a state of high perfection in this warm climate, many fig, nectarine, orange, olive, quince, walnut, chestnut, pecan and other kinds of trees, but it would be useless to here specify the number of each.

"The vineyard covers 200 acres, and the varieties

mostly grown are White Muscat, which number 57,213 vines; Black Hamburg, Flame and Blue Tokays, Emperor, Rose of Peru and Black Morocco.

"There are three large packing houses for handling the fruit. Dryers are not used, as, owing to the dry climate, the fruit and raisins are all cured in the sun. Immense quantities of the fruit are canned, and for this purpose a mammoth building was constructed, where 200 persons are given employment. During the rush of the peach and apricot season a much larger number is added. To pick, box and dry the fruits in the orchard 300 men are employed, so that this mammoth orchard alone gives labor to 500 persons."

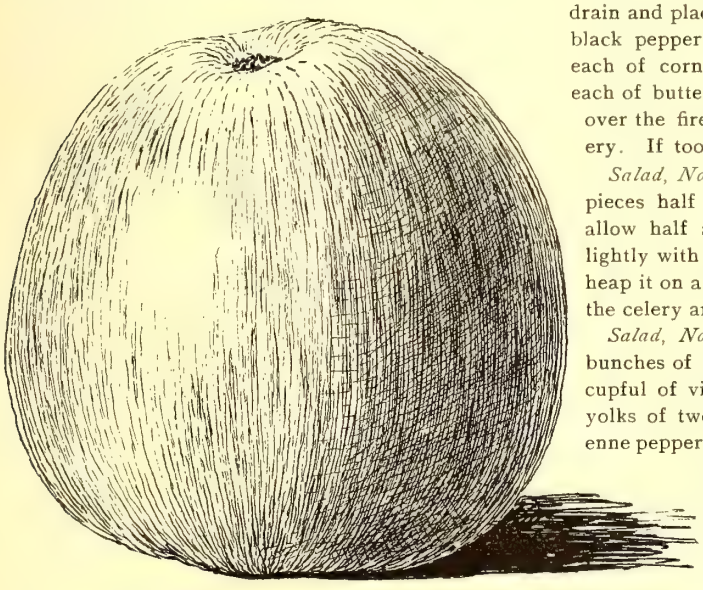
**The Pomeroy Apple.**—A local apple of great value is known along the Hudson as the Pomeroy. It is a mildly sweet winter apple of medium and uniform size, oblong, densely striped and shaded with red. It is one of the most satisfactory winter sweets which we know. Downing describes three Pomeroy apples, two of English origin and one from Massachusetts. Only one of them is sweet, and this is of English origin. The description matches the Hudson river fruit fairly well, but it is not certain if they are the same.



THE POMEROY IN SECTION.

**To Cook Celery.** — Comparatively few people know that celery can be cooked in a variety of ways. The following directions are good:

*Fried.*—Cut firm white celery into pieces two inches long, put them into boil in salted water, and cook fifteen minutes; remove from the boiling water with a split spoon and drop into ice water; let them remain there ten minutes, then take them out on a dish and sprinkle with salt and pepper, dip each piece in beaten eggs, then in cracker crumbs, and fry in salted lard; drain well and serve hot.



THE POMEROY (FULL SIZE).

*Stewed.*—Cut the celery into inch pieces, cover with water, add salt and boil until tender (about one hour), drain and place neatly on vegetable dish, sprinkling with black pepper. Wet into a smooth paste a teaspoonful each of corn starch and flour, add two tablespoonfuls each of butter and rich cream; stir this into the water over the fire until it thickens, then pour over the celery. If too thin, add more corn starch.

*Salad, No. 1.*—Cut the white stalks of celery into pieces half an inch long. To every pint of celery allow half a pint of mayonnaise. Dust the celery lightly with salt and pepper, mix it with the dressing, heap it on a cold salad dish, garnish with white tips of the celery and serve.

*Salad, No. 2.*—One head of cabbage and three bunches of celery, chopped very fine. Take one teacupful of vinegar, lump of butter the size of an egg, yolks of two eggs, one teaspoon mustard, pinch cayenne pepper, two teaspoons sugar. Mix these well; put mixture on stove and heat until it thickens, stirring all the time. When cold, add two tablespoons rich cream. Pour over salad; if not moist enough, add vinegar.

*Soup.*—Make a good broth of a shank of beef, skim off the fat, and thicken with a little flour, mixed with water. Cut into small pieces a large bunch of celery, or two small ones, boiling them in the soup till tender. Add a cup of rich cream, with pepper and salt.

*Cream of Celery.*—Wash and scrape a head of celery, and put it into one pint of boiling salted water. When it is boiled soft, mash it fine in the water, and pass through a soup strainer. Turn this into a pint of hot milk that has been thickened by having a tablespoonful of flour wet with cold milk cooked in it. Add a teaspoonful of salt, a teaspoonful of pepper, a tablespoonful of onion juice (if liked), and, lastly, a tablespoonful of butter. As soon as the butter is melted, give the soup a quick and thorough stirring, and serve hot.

**Preservation of Fruits.**—It is the healthy, well-developed, and in most instances, the well-matured fruit, that keeps best and keeps longest. The conditions required are that the fruit be healthy, that is, free from wounds, bruises or infections caused by insects, or climatic influences; anything contrary to perfect soundness introduces the process of decay, which is the inevitable order of all vegetable matters after perfect maturity has been reached.

The conditions necessary to bring about this perfect state of the fruit are, that the fruit must be grown on rich, congenial soil, in its proper season, and given sufficient time to fully develop itself; but not in every case to fully mature all its qualities, for with many kinds of fruits, this must be checked in order to retard decay. In other words, some fruits must be fully ripened on the parent bough, while some must be gathered before fully ripe to prevent loss of flavor and early decay.

To have fruit keep well is of as much importance as that of plenteous production, and, indeed, more so, because it is only that which is preserved and got into market that brings the profits; hence the importance, when growing fruit, of ever keeping in view the conditions necessary to its hardness and keeping qualities.

Some soils and localities, even on the same farm or premises, may not be adapted or suited to certain kinds of fruit; where this is the case, the fruit, to some extent, is not well developed, and its power to resist decay is weakened, hence it is so important to understand something of the requirements of the fruit to be planted, the soil or peculiar situation best adapted to its growth, also the proper time it should be planted, and the cultivation it should have.

Fruit growers who know and understand these conditions and requirements, and are careful to comply with them, seldom fail to have their fruit keep well.

For exemplification, if sweet potatoes, which are very difficult to keep, be grown on warm, rich, loose soil, planted early enough to grow and fully mature before frost touches the vines, then dug when the ground is dry, that they may be dry and clean, then laid in a dark, cool room, or at once stored away in a frost-proof cellar or store-house, and spread out in shallow boxes, with a light covering of sand, all the time handling so as not to bruise them, they will seldom fail not to keep well; but any infringement on these conditions, planted too late, or in cold, wet soil, or dug before matured, or bruised, or kept too warm, too wet, or frozen, all alike, will insure injury, if not ruin. This example, though of rather more than usual difficulty, serves to show that proper growing, as well as proper harvesting and storage, are all alike necessary to insure preservation.

With most kinds of fruits, it is better to gather them just when, or before fully ripe, because most fruits from this point on begin to lose in flavor, and incipient decay sets in. This is to be prevented by gathering and removing from atmospheric changes to a lower temperature, which arrests the ripening process and the loss of flavor, and for a time holds the fruit in what we may term a dormant state.

The place of storage seems to require about these conditions: A uniform temperature, perhaps that is safest between 35 and 40 degrees; no changes or spores are likely to be active here; the room dark, or nearly so, and so damp that moisture will not escape, and the air just active enough to prevent stagnation.—James I. Baird, *Ky.*

**Gardening Around Washington.**—No two cities could be more unlike than the two capitals, London and Washington; one a great commercial and manufacturing city, the other a quiet place where the representatives of a busy nation retire to transact the public business.

In landscape gardening, and all that appeals to refined and cultivated taste, Washington is fast becoming the rival of the leading capitals of the old world. Thanks to ex-Governor Shepherd, its streets and parks are equal to the finest to be found anywhere. Its suburbs, which yet can hardly be said to exist, are likely to become equally attractive. The purchase of a suburban residence by President Cleveland, and the recent provision by Congress, for two national parks within the district, have awakened an interest in this direction, and many fine private residences with tasteful surroundings are being erected on the heights which surround the city.

The increased number of people of wealth and taste who have made their home in Washington in recent years, has caused the growth of the florists' business to assume comparatively large proportions, several enterprising firms, doing a profitable business, having extensive greenhouses near the city. With fruit and market gardening, however, and even ordinary farming, the case is different. Washington obtains its supplies mainly from outside sources. Its meats are mostly from Chicago; its hay and grain is much of it from the prairies of Illinois and Iowa, while even the bedding for its fine horses often consists of turf imported from the bogs of Ireland. The finer fruits, in immense quantities, are brought from Florida and California, while apples come, in ordinary seasons, mainly from New York, and small fruits and vegetables from Norfolk and other points along the coast.

One of the causes for this condition of things lies in the character of the soil around Washington. The red clay hills of Virginia and Maryland are poorly adapted to give the best results in market gardening and fruit growing, while long continued cropping under misman-

agement has reduced even these inferior soils to the lowest limit of fertility. The climate, also, is unfavorable for certain crops. It is too warm for most varieties of the apple, while early frosts, together with the rot and yellows, render the peach crop uncertain. Raspberries do fairly well, while blackberries are so natural to the region that they grow wild everywhere, and are never cultivated. Huckleberries, also, are still gathered in considerable quantities in the neighboring woodlands.

The business of market gardening is mainly in the hands of small growers, many of them negroes, who sell most of their produce upon the market, from their own wagons, direct to the consumers. The system of markets and market days is favorable to this method of selling produce. Little produce is ever shipped away from the city, and, as a consequence, prices, which are usually high, sometimes drop very low when there is an over production. There is an opportunity around Washington for the introduction of more thorough methods of cultivation, and for an increased production of certain kinds of vegetables, and especially of small fruits.—A. A. CROZIER.

### Two Michigan Poems.

You'll find it in all the professions—
In pulpit, in court, and in shop
As well as in strawberry boxes—
The best always get to the top.

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It is the duty of a man,
Who lives among his fellows,
To do the very best he can
To drive away the yellows.

**Mulching.**—In the garden there are a number of vegetables or plants that do much better if assured of a moist soil. Watermelon, muskmelon, citron, tomatoes, etc., thrive much better in a soil that retains moisture. Where there is a good mixture of sand in the soil, this condition is readily obtained, but many gardens have not this advantage, and in order to obtain this condition and retain it, a mulch must be put around the stem of the growing plants on the ground.

Every farmer who has raised potatoes under straw knows that the soil will be moist during a long drouth, and a crop of late potatoes can often be made profitable when covered with straw, when otherwise the crop would have been a failure. To obtain the best results from mulching, it should be applied while the soil is moist or before the dry weather sets in.

Three years ago I tested bagasse on some vines I had in my garden, and the result was very satisfactory. That year we had a very long and severe drouth, more so than had occurred for several years. The vines that I had mulched with bagasse grew right along and made a good crop, while the rest all died, unable to withstand the dry weather. Since then I have had occasion to try it several times around newly set trees, vines and plants, and my experience is, that it is the best material you can secure for this purpose. For strawberries it is much better than straw, if sufficient quantity can be secured.

Next to this straw serves the purpose, but if new and long it will dry out quicker than bagasse. That to which stock has had access and trampled down, so as to break up short and caused to partially decay, is the best for this purpose. It should be applied wet, if possible, as it will stay in place much better. If placed around watermelon vines or tomatoes after they have received two or three cultivations, and before dry weather sets in, it will not only prove of great benefit to growing plants, but also render further cultivation unnecessary. As I said before, the work must be done in time, not later than the latter part of May, and a liberal quantity should be given. If you have a sufficient quantity, covering the surface all over around the plants and between the vines is the best plan, but if this can not be done, then a liberal supply placed on the ground around the stems will answer.

Leaves are the third best mulching material; they should be applied when wet, so that they will remain in place; this is the worst objection to leaves, that they will dry out and are then easily blown away. I find it profitable to save all the bagasse possible, as I consider it well worth the labor, for after it has served the purpose of a mulch, it can be worked into the soil to a good advantage.—N. J. SHEPHERD, *Mo.*

**The Cucumber.**—The cucumber is a vegetable that can be grown to great perfection by any person, and as its fruit is so much better when gathered fresh from the vine, it is very desirable that all should produce their own supply.

Cucumbers succeed best when given a sheltered situation and a rich loamy soil, and, as they are very tender, the planting should be delayed until the weather becomes warm and settled, which in this vicinity is about the middle of May.

The ground should be plowed as deeply as possible and then harrowed thoroughly so as to level it off nicely, when it can be marked into rows five feet apart each way. At each intersection put a shovelful of well decayed stable manure and mix it thoroughly and deeply with the soil, at the same time forming a slight hill in which the seeds are to be placed. From eight to ten seeds should be placed about an inch apart in the hill and covered with fine soil to the depth of an inch. Press the soil firmly over them with the back of the hoe. As soon as the plants are well up, they will be very liable to be attacked by many insect pests, so, to guard against this, it is advisable to dust the plants frequently with lime, soot, or sifted ashes, but care should be taken not to use too much; for if these materials be used too freely the vines will be severely injured thereby. When they are past all danger of injury, remove all but four of the most promising and give a thorough hoeing; at the same time draw up a little fresh earth around the plants.

Keep the growing plants well cultivated and free from weeds, but carefully avoid mutilating or disturbing them.

Remove all the fruit before it commences to ripen as the vines will cease to set any fruit as soon as the seeds commence to mature; and be very careful to cut the stem instead of pulling the fruit off.

The first sowing should be made about the middle of May and afterwards every two weeks up to the middle of July, in order to insure a constant supply. The last sowing does not always mature a full crop, but where cucumbers are in demand, it should invariably be made.

One of the most desirable varieties for amateur cultivation is the early White Spine. This is a well-known and popular sort. It is enormously productive; the fruit is of a light green color with few white spines; flesh tender and of superior quality. Tailby's is the result of a cross between the White Spine and one of the large English sorts. It is as prolific as the White Spine, but grows to a larger size. It has all the desirable qualities of both its parents and is the best variety for amateurs to cultivate. Gen. Grant is decidedly the best variety for frame culture, although it succeeds equally well when grown in the open ground. The fruit is perfect in form, solid, crisp, and of superior quality. On an average it grows from eighteen to twenty inches in length.—CHAS. E. FARNELL, *N. Y.*

**How to Raise Sweet Corn.**—Many persons who cultivate sweet corn put in the seed for the crop of the entire season all at one planting. As a consequence of this unwise practice the crop matures all within a short period, and the supply for the table will last only for a few days. In our own family, we have this savory luxury many days before corn in our neighbors' gardens is fit for the table, and clear on to November, we have luscious ears, tender, juicy, and fragrant.

How do you do it? That is very easy. About a month before the proper time to put seed corn in the open ground, about a dozen hills are started in flower pots placed on a shelf in a warm room. As growing corn sends out such long and slender roots, it is necessary to use pots that will hold not less than four quarts of earth. Six-quart pots would be preferable to smaller ones. On account of the long roots, young corn cannot be transplanted with satisfactory success, unless the plants are started in pots. Growing corn plants are gross feeders; and the soil in which the corn is started should be fertilized generously with manure. Let the plants (about four in each pot) be kept in the house until the soil has become warm and there is no danger of frost. My own rule as to the better time is when peach trees are in blossom and apple trees are sending out their leaves. Then, an estimate is made as to the amount of ground to be appropriated to sweet corn during the season. The ground is spaded deep and fine for the corn in pots, and the contents of each pot (after being thoroughly saturated with warm water) are plunged carefully in excavations scooped out about three feet apart. When there are indications of a cold night, or a cold storm of sleet and rain, every hill is protected by knocking a head out of one end of a barrel or nail keg and placing one over each hill until the cold snap has passed. Cold nights and cold storms will retard the growth of young corn in proportion to the severity of the storm and temperature. When the plants are set out, the seed for a few hills more is put in the ground. Then in about two weeks from that time a few hills more are planted. This practice is continued until the middle of July, which is about as late in the season (for this latitude) as it will be safe to plant sweet corn. I always save the first mature ears for seed.—ESS E. TEE.

**That Cinnamon Vine.**—This new named and vaunted plant is the old *Dioscorea Batatas*, or Chinese potato. Its rich, glossy leaves and honeyed fragrance ought long since to have welcomed the plant to its new vocation. The vine is in every way prettier than the Madeira, and of more delicate aroma. This cinnamon climber needs no replanting or fall gathering. It is a hardy perennial tuber. Every year vigorous shoots spring from its ground-wintered crop. Along its sprays grow little bulblets, from whose planting or droppings new vines start out.

However cooked, it is a very palatable, white-fleshed, delicate vegetable. In this respect, none of its tribe excel the dioscorea. But the trouble is to dig the tuber; the long, full-grown bulb will weigh eight or ten pounds. To harvest its crop, the earth on one of its sides must be scooped out to the bigness and depth of a post hole. I think I have grown them in very rich soil to near three feet in length and of two to three inches in diameter. You cannot hoist it like the carrot or parsnip by fork or spade. The pressure of its growth so hugs the earth to its noduled surface, and its bulk so swells out as you go deeper, that there is no other plan of harvesting but the post hole.

That once famous pioneer nurseryman, Wm. R. Prince, of Flushing, in his sonorous advertisement of the plant, declared it the "Alimentary basis of the Chinese Empire," whose vast and dense population was made possible by this two-story vegetable.

Although the plant has cropped in my garden for 30 years, I have never given it any special cultivation. It has sown its own seed and every year yielded its tubers. I doubt not that regular planting at the foot of tall poles on which it could climb would reward trial with a paying harvest. Could we have a variety of equal merit for the table that would not take so instinctively the underground route to China, it would be a great prize. I have heard of such a rounded bulb, but have never seen one.

The vine will climb 20 feet in a season, and keeps growing and green till nipped by the frost. No deep soil freezing harms the tuber. No insect, rot or ailment attacks the vine or bulb.—WM. H. NOBLE, *Conn.*

**The Botanical Garden "La Linnæa."**—This establishment has been recently opened at Bourg St. Pierre, in the Entremount valley, canton of Valais, Switzerland.

It occupies the site of the old castle of Quart on the Great St. Bernard road at an elevation of more than 5,000 feet above the sea.

The garden is devoted to the cultivation of mountain

plants from all parts of the world.—*Moniteur d'Horticulture.*

**Horticulture at the Colorado College.**—One by one the agricultural colleges are providing good and permanent homes for horticulture. The neat building and glass house shown in the cut (Fig. 1) have recently been erected for botany and horticulture at Colorado Agricultural College, Fort Collins, a department which is under the competent management of Professor C. S. Crandall.

It is a brick structure, lighted throughout with electric light. The diagrams explain themselves. Fig. 2 is plan of the cellar, fig. 3 shows the first floor. Opening from the seed room is a potting room 16x20 which is attached to the greenhouse; the latter is 20x40.

In the rear of the building is a small tract of ground which is reserved for planting such plants as are wanted for observation and immediate study. These include many of the wild plants from the mountains. Still farther away are the main gardens.

**History of the Illinois Horticultural Society.**—It was in Decatur on December 17, 1856, that the Illinois State Horticultural Society, that is now holding its thirty-fifth annual meeting, was organized. Thirty-one names were recorded as its list of members at that date; but few of them now remain among us. Dr. Hull, of Alton, was its first president, a man widely known in horticul-

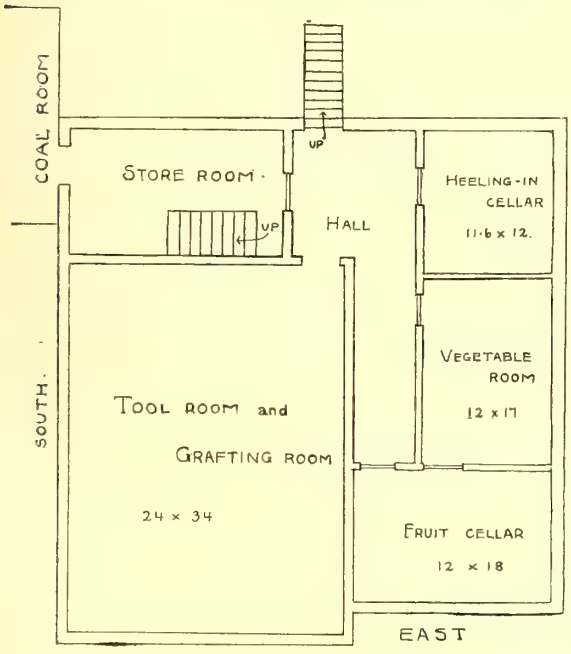



FIG. 2. PLAN OF CELLAR.

ture in his day, and who for some time occupied the chair of horticultural editor of *The Prairie Farmer*. Dr. Hull came to this state in 1847 and started a fruit orchard, and for many years the peach packages that came to the Chicago market needed no other brand than his to warrant them as A No. 1, and good from the top to the bottom of every package. His death occured suddenly at his Alton Bluff farm in 1875. But this was not the first effort of the horticulturists of Illinois to band themselves together for furthering the interests of horticulture

FIG. 1. HORTICULTURAL BUILDING, COLORADO.

in general and fruit-raising in particular. This occured under that other indefatigable fruit man, Edson Harkness, who first broached the subject and failed in 1845. He tried again in 1846, and receiving favorable responses from C. K. Overman and Samuel Edwards, called a convention at Peoria, Oct. 15, and formed a State Horticultural Society. This organization did not continue and the latest that can be found of anything it did was by a committee called to meet at Peoria, September, 1848. The cause seemed to drag until the organization of the Northwestern Fruit Growers' Association at Princeton, December 18 and 19, 1850. This held meetings at Dixon, 1852; at Chicago, 1853; at Burlington, Iowa, 1855; and at Alton in 1857. This society, if we remember rightly, was then blended in the American Pomological Society, and since then the Illinois State Horticultural Society has completely filled the field, and the good it has done for the cause of fruit-growing is simply incalculable. A list of the persons connected with it since its inception till now would include every live horticulturist of our noble state.—*Prairie Farmer.*

**Teasel Culture.**—The teasel (*Dipsacus Fullonum*) is still used to raise a nap on woolen cloth, and its culture is carried on in New York, Massachusetts and Oregon. About three-fourths of all that is used in the United States is grown immediately around Skaneateles, Onondaga Co., New York. The plant is biennial, as a rule, but stunted plants sometimes survive five or more winters. The ground for its culture is prepared as early in spring as possible; seed is sown in drills about three feet apart and lightly covered. The seed germinates slowly and the plant is about like a young clover plant when it first comes up. Careful hand hoeing and horse cultivating follow at sufficiently short intervals to keep all grass and weeds in subjection. Of late, some of the best growers have planted a very thin crop of corn in the rows, leaving the stalks to hold the snow in winter, as two or three degrees below zero is sufficiently cold to kill

a teasel plant if in no way protected. The second year, during the month of May, the plants are cultivated and soon after they begin to throw up a center stalk, which grows very rapidly, reaching a height of four to six feet by July 15th. About this time the "king" (or head of center stalk) begins to blossom. On each side of the main stalk laterals shoot out (from four to a dozen) each bearing a burr or head at each extremity; these are called "mediums" on account of being less in size than the "kings," and larger than the "buttons," or smallest heads which grow on side shoots from stalks bearing the "mediums." As above stated, the "kings" blossom first and remain in bloom about one week; by this time the most forward of the "mediums" begin and later the "buttons;" in all the plant is in bloom three or four weeks. The harvesting is begun when the blossoms have

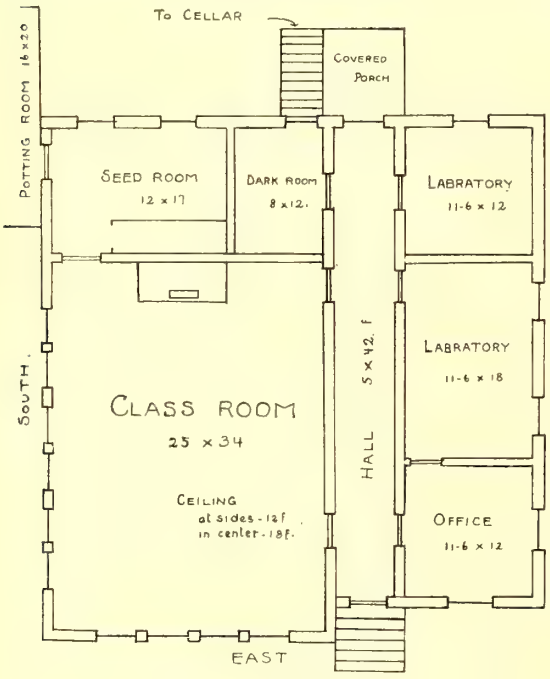



Fig. 3. First Floor.

fallen off about one-third of all the burrs. The harvesters are supplied with gloves, small knife and a large basket. As the blossoms fall, the field is gone over again, each time cutting all that are ready; the entire harvest consuming about twenty consecutive days. They are carted from the fields to barns and sheds and spread on scaffolds to dry. As soon as dried they are ready for the "middle man" who cuts off the long coarse spikes at the base, cuts the stem to an even length (three inches) and sorts them, making ten or more sizes, hand packs them in large cases, when they are ready to ship to the woollen manufacturer. They are sold by weight, ten pounds being called one thousand. The price at present is 75 cents per one thousand. An acre of land will produce from 100,000 to 250,000 burrs.—*Special Crops.*

**Tropical Utricularias.**—What is the reason that these superb little plants are so very scarce in the northern greenhouses? They merit to occupy a prominent place in an orchid collection, as they are so similar in appearance to the orchids and require the same treatment, growing as they do, among these plants in the same conditions. They generally grow either on dead, half-decomposed trunks of trees, or on mountain slopes on the moss-covered loam, mixed with humus. They are very dwarf plants, bearing flowers exceedingly large for the size of plant. Some are so minute that the limb of the leaf is not much larger than each foliole of a lemna; still they bear a delicate flower on a very thin stem, the size of a violet, light blue with some violet, white and yellow or orange. But the most superb species of this country, the *Urticularia Endresi*, attains very much larger proportions; it has leaves two inches long, and bears a half-erect, somewhat incurved scape eight to twelve inches long, which has, from a little distance, entirely the appearance of a spike of some beautiful miltonia or odontoglossum; the flowers, six to ten in number, are disposed as in *Odontoglossum vexillarium*, or *O. Warszewiczii*, from some distance resembling those of *O. Roezlii*; of fine texture, and pure white, with a light pure yellow blotch.

These plants, as delicate as they are of structure, are still of remarkable tenacity of life, provided they are not exposed to pressure, nor made to rot from want of drainage. Put them in a Columbian house or any cool or temperate greenhouse, shade, put one inch coarse gravel in a shallow box, then two inches loam, rich in humus. Then put your little plants, with their fine, tender, half-translucid, greenish-white bulbs, or rather tubers, on the surface and cover with a solid fleece of short, living sphagnum, one inch high for the most. Shade and very good drainage, with plenty of water, are essential.—C. Werckle, *Costa Rica.*

**Among Notable Orchids at the Paris Exposition** were some magnificent specimens of *Cattleya gigas* and a wonderful *Oncidium superbiens* with brown petals edged with golden yellow. The flowering branch is nearly 16 feet long. Mention must also be made of *Cypripedium caudatum*, with ribbon-like pendent petals nearly twenty inches long—*Moniteur d'Hort.*

**Iris Bakeriana.**—This most beautiful little bulbous iris is in flower again. The bulbs came from Herr Max Leichtlin, of Baden Baden, in the summer of 1889. It is a native of Asia Minor. Its leaves are cylindrical glaucous green, and six to eight inches long when the plant is in flower; but when the leaves are full grown they are about twelve inches long. The flowers are a beautiful violet, and the lower part violet on a creamy yellow ground.

It has proved hardy in the south of England. I am afraid it will be useless here as an out-door plant, as it flowers too early. It flowers outside in England about the beginning of January. I give it the same treatment as freesias, and grow it in a temperature of about 45°. —R. Cameron, *Mass.*

**The Rose of Jericho.**—The above name is sufficiently familiar, but few are acquainted with the plant itself. In the first place it is not a rose, nor is it at all like one, having neither the rose's form, color, perfume or any other characteristic.

Imagine a number of grayish stems rolled tightly up into a sphere about as large as a billiard ball, each stem bearing a number of oblong leaves and a terminal cluster of exceedingly small dull white flowers; below is a tap-root which is commonly taken for a stem.

The plant belongs to the order Cruciferæ; its botanical name is *Anastatica hierochuntina*. It is found in the sandy deserts of Arabia, Palestine and Syria, where it is called *Kaf-maryum*, or "Mary's Hand," for like many other plants, it has its legend. This legend is a very singular one, but before recounting it I must mention the curious property to which this marvel of the vegetable world chiefly owes its fame. In very hot weather, when the fiery sun scorches the sandy soil, the plant stops growing, its branches bend together and curl up into the ball mentioned above, which is so light and so loosely attached to the soil that the slightest breeze carries it away. If in this condition, dry aud apparently dead, it is placed in water or simply exposed to moisture, it revives, the branches unroll and extend themselves, and the plant resumes its former appearance.

The legend connected with the Rose of Jericho says, that this is the plant which the Angel Gabriel brought to the Virgin Mary, and it is a sacrilege in the eyes of the superstitious to bring the dead plant to life at any other time than Christmas eve.

The vitality of the Rose of Jericho is truly remarkable. Ritter states that a plant brought from Palestine in the time of the crusades was resurrected after a lapse of seven hundred (700) years. This palingenesis has given rise to numerous marvelous tales that need not be repeated here. It is also of great scientific interest in view of its connection with the reproduction of the plant, for the seed ripens at the very time when the parched soil is unable to give it sustenance. The seed falling on the hot sand would be scorched and killed by the sun, but the capsules remain tightly closed and the seed is still further sheltered by the branches which now begin to curl up. The hotter the sun, the drier is the air and the more tightly the branches curl. Finally the plant is borne away by the wind, and eventually finding some spot moistened by a slight shower or a heavy dew, the process which has already been described at once takes place. The branches expand, the capsules open and the seed, falling on the damp ground, germinates in a single night with the astonishing rapidity characteristic of the common cress which belongs to the same botanical family; hence it will be seen that the Térose, as this plant is also callled, has much to recommend it to lovers of the marvelous, and though not an European plant, its curious proceedings may be easily observed, for it may be obtained from the dealers in Oriental goods for a few sous. The Arabs of the Esplanade des Invalides at the exposition offered plants of all sizes, and the visitor could there observe the curious phenomena above described.—ALBERT LARBALETRIER, in *Le Jardin*.

**The Flower Clock.**—The hour at which each flower opens is itself so uniform that, by watching them, floral clocks of sufficient accuracy can be arranged. Father Kircher had dreamed of it, but vaguely and without pointing out anything; it is to Linnæus that we must ascribe the ingenious idea of indicating all the hours by the time at which plants open or shut their corollas. The Swedish botanist had created a flower clock for the climate which he inhabited; but, as in our latitudes, a more brilliant and radiant dawn makes the flowers earlier, Lamarck was obliged to construct for France another clock, which is a little in advance of the Swedish one. We quote from Pouchet:

| *Hours at which the flowers open.* | *Plants on which the observations were made.* |
|---|---|
| *Morning.* | |
| 3 to 5 o'clock | Tragopogon pratense (yellow goatsbeard or salsify). |
| 4 to 5 " | Cichorium Intybus (chicory). |
| 5 " | Sonchus oleraceus (sow-thistle). |
| 5 to 6 " | Leontodon taraxacum (dandelion). |
| 6 " | Hieracium umbellatum (umbellate hawkweed). |
| 6 to 7 " | Hieracium murorum (wall hawkweed). |
| 7 " | Lactuca sativa (lettuce). |
| " | Nymphæa alba (white water lily). |
| 7 to 8 " | Mesembryanthemum barbatum. |
| 8 " | Anagallis arvensis (field pimpernel or poor man's weather glass). |
| 9 " | Calendula arvensis (field marigold). |
| 9 to 10 " | Mesembryanthemum crystallinum (ice plant). |
| 10 to 11 " | Mesembryanthemum nodiflorum. |
| *Evening.* | |
| 5 o'clock | Nyctago hortensis. |
| 6 " | Geranium triste. |
| 6 " | Silene noctiflora. |
| 9 to 10 " | Cereus grandiflorus. |

—*Nature's Realm.*

**Begonia Socotrana.**—This beautiful winter flowering begonia was discovered by Prof. Bayley Balfour, in the Island of Socotra in 1880. He sent a few bulbels to the Royal Gardens, Kew, where they flowered in 1881. The plants were then given to Messrs. Veitch, and they sent them out in 1882. It is a dwarf grower, and has an annual stem; the flowers are a bright rose color, and are one inch and a-half wide, they are produced very freely and last an exceptionally long time when cut. The leaves are orbicular, peltate and are about six inches in diameter. Its culture is very simple. Its growing season is from the end of September to March. Then it goes to rest during the summer. When it shows signs of growth in September it should be shaken out of the old soil and repotted in soil the same as used for ordinary begonias, and grown on in a house where a temperature of 55 degrees is maintained. With all its good qualities it has never become a popular plant in gardens.—R. CAMERON, *Mass.*

**Flower Notes.**—The hunnemannia is a fine flower of tulip shape, and a bright beautiful yellow. This is

not hardy north, but in the south it is an herbaceous perennial.

The best, easiest, and cheapest way to get a bed of choice verbenas is to raise them from seed. The plants will be vigorous and beautiful, nearly every plant that comes up will have a flower which will in some respect differ from all of the others, and it will be an easy matter to have plants of all the new improved varieties that are now offered. Before sowing the seeds, soak them for two or three hours in tepid water, which will help them to germinate sooner; they usually take a good while before coming up out of the ground, but if the seed is well soaked they will be up in about two weeks.

In the decoration of halls and rooms, the *Sanseveria Zeylanica* is particularly adapted, as it seems to endure the drouth and dust without injury, needing only a little water. The leaves of this grand foliage plant are two and three feet in length, often longer, of a lovely dark green, which are crossed by white and light green variegations, making them extremely striking as well as beautiful.

The fad for yellow in flowers as well as other decorations still continues to rage, and in this color we find many very beautiful new plants which have been well tested during the past two or three years; some are older and others still of later introdnction. The yellow aquilegia is very pretty, and unites to that the virtue of being perfectly hardy. Its catalogue name is *Aquilegia leptoceras, chrysantha*, and it comes to us from Arizona.

The fraxinella is a lovely perennial with beautiful spikes of pink and white flowers, and rich glossy foliage.

Among the novelties which have attracted considerable attention stands the new imperial hibiscus. Its flowers are simply grand, of a lovely golden yellow hue, and they measure five inches across. This hibiscus grows five feet high. It is a profuse bloomer all the summer. The plants grow readily and quickly from seed, so I hope many of our friends will surely try a few of them.

In the center of a large bed, or as single clumps on the lawn, the *Eulalia Japonica, zebrina* makes a fine attractive show, during the entire summer; and the feathery crests makes good ornaments for roses during the winter, lasting in perfect condition it is said for years.

Those plants which are growing in pails, or tubs or very large pots, may be much benefitted if shifting is not practicable, by having several inches of the top soil taken off and replaced by fresh rich soil, mixed with some old rotten manure; over this lay some sphagnum moss, which will keep the soil from baking or drying out too quickly. Winter blooming fuchsias should be kept in their pots all summer, and watered regularly; give them a shady place, be sure to keep the buds pinched off as fast as they are discovered.

For a pretty hedge try the *Cydonia Japonica*, or Japan quince, which is a very showy, hardy and enduring shrub. The different varieties range in all shades from pure white to deep crimson, and a hedge of these different shades is beautiful; they may be planted so that the shades will gradually deepen, as white first, then deeper pink, then bright pink, then rose, deep rose, red and crimson.—Greta Beverly, *N. Y.*

**Shortia and Zanthorrhiza.**—An error of "make up" occurred on page 289 of the last issue, by which shortia and zanthorrhiza were confused. The articles should read as follows:

*Zanthorrhiza apiifolia* (fig. 10, page 289). This desirable shrub for shaded situations, which is also a medicinal plant, is described as follows in the United States dispensatory: "An indigenous shrub two or three feet high. The stem is simply rather thicker than a goose-quill; smooth bark and bright yellow wood. Leaves at the upper part of the stem are compound, consisting of several ovate-lanceolate, acute, doubly serrate leaflets, sessile upon a long petiole, which embraces the stem at its base. The flowers are small, purple, and disposed in long, drooping, divided racemes, placed immediately below the first leaves. The nectaries are obovate and bilobed, the styles usually about six or eight in number." These "ovate-lanceolate, acute doubly serrate leaflets" make up beautiful terminal clusters of green, indescribably lovely and graceful, almost fern-like in beauty. Immediately beneath the top cluster of leaves are found the flowers, which must be seen to be fully appreciated. Imagine a thread-like petiole from four to eight inches long, eight to ten in number, studded with chocolate-brown stars with pure gold eyes, hanging like a fringe from a common center. It is almost lace-like in delicacy and beauty. I am acquainted with many wild-wood beauties, but none compare in grace and delicacy with this, unless it is the *Chionanthus Virginica*, the white fringe or old man's beard.

The zanthorrhiza or yellow-root is a low shrub, a foot or two high, and it belongs to the Ranunculaceæ or buttercup family. Its roots yield a good yellow dye. It grows in shady woods and by streams from southern New York to the southern states.

*The Rediscovery of Shortia.*—Although the history of the rare shortia has often been told, I wish to repeat some parts of it.

During one of many interesting conversations Professor Hyams told me of the rediscovery of *Shortia galacifolia* in McDonnell county, N. C., by one of his sons, out on a botanizing tour. The specimen plant was brought to him to analyze, and he appealed to Dr. Gray to aid him in its identification, who promptly recognized it as identical with a mutilated specimen in the Michaux herbarium in Paris.

An eager correspondence began, and Professor Hyams invited Dr. Gray and other celebrated botanists to come to him in the season of bloom of the shortia, offering to guide them to its locality. He describes this party of botanists, seven, I think, who were so eager to see and possess these plants that they refused to remove their

ulsters to dine, took a hurried meal and hied to the mountains. He vividly describes the eager glances and the rush into the almost impenetrable shrubbery.

Professor Hyams is now a very old man and in very feeble health. He has one of the finest herbariums in the south.—Mrs. J. S. R. Thompson, *South Carolina*.

**Hippeastrum aulicum.**—This plant is better known under the name of *Amaryllis aulica*. It is an extremely handsome, evergreen species and is blooming freely here at present. The flowers are a very rich crimson; the base of the petals inside is green, and above the green is a dark blotch of red-purple. The scape is fifteen inches high; and the leaves are strap-shaped. It is a native of tropical America. The bulbs were rested during the summer; but water was not entirely withheld. The pots were top dressed in September, with a compost of good fibry loam, sharp-sand and cow manure. Since then, they have been kept in a temperature of fifty-five degrees. When the flower scapes make their appearance, they are greatly benefitted by a little liquid manure.

Small bulbs should be potted on as they require potting, but large flowering bulbs when they are established do not require potting so often. When they are started after their resting period, they only require top dressing, and liquid manure when growing freely. Another important item in their culture is to give them plenty of light and sunshine. Perhaps it would not be out of place now to point out the most obvious difference between amaryllis and hippeastrum, as a great number of people are perplexed to know why botanists have changed them from one genus to another. The difference is to be seen mostly in the seed. Amaryllis has few seeds in the pod and they are large and fleshy; while hippeastrum has many seeds, membranous and black. There is another important difference, in their geographical destribution. According to botanists we have only one amaryllis, and that is *amaryllis belladonna*, from the Cape of Good Hope. The hippeastrums come from tropical and sub-tropical America.—R. Cameron, *Mass*.

**The First Auction Sale of Plants in New York.**—Thomas Hogg, a noted florist of New York, who started in the year 1822 at 23d street and Broadway, found so little encouragement for the sale of greenhouse plants that he became discouraged and was on the point of giving it up when a Mr. Lang, the editor of the New York *Gazette*, recommended to him to call an auction. He decided to do so, and made arrangements with the noted auctioneer of the city, Mr. Hoffman, who was said to have been a great friend of horticulture. Mr. Hoffman was to have a sale of dry goods on a certain day, and he directed Mr. Hogg to send him a cart load of the plants. Mr. H., in the advertisement of his dry goods, announced as to be sold a certain number of "Pelargoniums," a new and beautiful article. The trade were all alive to know what it was, but all the explanation from Mr. H. was that they had better come and see and purchase. After the regular sale of dry goods, it was announced that the pelargoniums would be sold in one of the upper lofts, which was then opened. There was a good deal of merriment at the joke, but the company entered into the spirit of the thing, and Mr. Hogg sold his plants at a good profit. It being made known where they came from proved a good advertisement for the greenhouse and nursery. As the auction sales will soon begin again in New York, very few will believe that the first starting of the auction sales of plants began back in the early twenties.—*Edgar Sanders*, in *Prairie Farmer*.

**Cultivating Native Lilies.**—Finding yellow lilies (*L. Canadense*) in the mowing several years ago, and for the sake of the added zest which such an experiment gives gardening, I dug a few roots for my bulb bed. The bulbs, which are white and scaly, grow some inches below the grass roots. They were set at the same depth in rich mellow soil, with the stems left entire. They blossomed the next summer, and the following year grew to a height of fifty inches, a gain of eighteen inches. There were three and four blossoms on a stem, whereas this lily usually has one, sometimes two, but very rarely three. The seeds are very numerous, and are ripe by October. The pod has three divisions, and each has a double row of thin, yellow, triangular discs with a seed at the center of each. It would be an interesting experiment to plant them.

The yellow lily is a graceful plant, especially in bud and blossom. The leaves are in whorls some distance apart. The long-stemmed nodding blossoms are of various shades, from yellow to reddish, with brown spots on the inside. The petals spread like a bell, but do not roll back. The wild lily does not show at a disadvantage when planted with the Japan lily or the candidum; indeed, the latter seems by contrast to be lacking in grace. A circle of the Canadense would make an effective lawn decoration.

The red field lily (*L. Philadelphicum*) thrives when transplanted, and its rich color and odd shape make it a desirable plant. It has a similar bulb and grows at the same depth as the yellow lily. Its stem is rarely two feet tall, and the blossom is erect, bell-shaped, but not reflexed. The petals are spotted with black, and are set up on stems, or 'claws,' as the botanists call them. This gives the warm red blossom an airy, ventilated appearance. It is often found growing solitary in huckleberry pastures, where it lights up the dark green bushes like a torch. The plant does not seem to change much under cultivation.—Amy Wightman, *Conn*.

**Common Things.**—On my plant shelves is a thistle growing in a pot. Perhaps, being in a more aristocratic neighborhood than its native fields, the plant is more delicate; at any rate it has been much admired. The leaves are graceful and flecked with white; it is a rapid grower. I also have a centaurea, or corn flower, the favorite of the old German Emperor William. The leaves are white, and makes a pretty contrast with the vivid green of the geraniums. Another very curious

plant is a sea onion. The bulb is large, stands on top of the soil, and has a peculiar way of throwing off its outer covering when the latter is out-grown, like a child that bursts through its garment. The color of the bulb is a delicate green, and the bulblets pop out of the sides in a comical way; the flower stalk grows four feet, and the flowers are green and white, very pretty when examined closely. The tradescantia, or wandering Jew, makes a pretty addition to more stately plants; some of the leaves are pure white, or green, striped with white; they do well planted at the sides of the big pots containing the abutilon, or jessamine, and droop over the sides gracefully. Moss does well and looks green all winter when tucked into shady corners; and grass seed will sprout if sprinkled upon it.—SISTER GRACIOUS.

**Succory or Chicory** (*Cichorium Intybus, L.*)—Blue chicory is the most common term for this plant in the Vermont portion of the Champlain valley. It grows about three feet high, has many branches, and comes from a very deep root. The stem leaves are usually oblong and partly clasping, while the lower leaves next to the ground are longer, narrower, and coarsely cut-toothed, much like those of the dandelion. Indeed, when the plant is cut off close to the ground, or eaten down in the pasture, one not familiar with it might take it for a dandelion. In pastures well eaten down by stock, it is not so much of a pest; yet even here it, no doubt, crowds out grasses which are much more nutritious. It is in meadows and cultivated fields that it is the most harmful. A tall coarse weed, towering above the tallest grasses, it injures the value of hay, and unless it is pulled or taken out, makes it unfit for market. Cultivation and enriching the soil only help it; it seems to delight in a rich clay or clay loam, and its roots go so deep that a prolonged drought never seems to affect it. It propagates itself from seed, but more slowly than some noxious weeds, partly owing, I believe, to the fact that its seed does not usually mature until after haying is over, and most of it is cut while in flower, or before. I have noticed that where the plants were allowed to stand on road sides it increased much faster. If it is a slow spreading weed, what is lost in time is apparently gained in strength, for when once it has a hold upon the soil it is almost impossible to eradicate it. In digging or pulling it, the roots often break and pieces left in the ground sprout and form new plants. Charles Russell, of Shelburne, Vt., formerly of Hinesburgh, who has had as much experience with it as any one I know, says that pulling it in July after a heavy rain is the best way of getting it out that he has found. He considers it the worst weed he ever had to contend with, and never has succeeded in entirely clearing any portion of his farm of it. He has tried many remedies, all of which failed; even salt, he claims, will not kill it, but seems to help it. He thinks it would be impossible to clear it from land that is badly infested. Mr. Russell writes as follows: "I do not know of a single farm but it could be found on, but perhaps there are exceptions. Few are willing to admit that they have any, but on examination it is found in greater or less quantities." It may be kept back by taking it in time, as I can attest. I know of farms that had an occasional plant ten or twenty years ago, and though there has not been a time since it was discovered on the land when a few plants could not be found, yet not more than two-score could be found on them now. Their owners never allowed it to go to seed, but searched for it carefully each year, and though they may not have taken it all out, they kept it from spreading. One way of its spreading is in grass seed. When timothy is left to go to seed, the chicory will have time to mature at least a part of its seed, and many farmers find it coming in on newly stocked land. Too much care cannot be used in selecting pure seed, and a farmer who would knowingly sell seed with chicory in it, ought to be subject to prosecution, I think, as much as the man who sells unwholesome beef or pork.—F. H. HORSFORD.

**Junctions of Twigs Store-houses of Starch.**—It is a common saying that in a tree one year's growth begins when the last one ended. There is a period of inactivity passed by every tree and shrub, in fact, by all plants which live for more than one year. In case of the tree, the wood layer of one year may be distinguished from the one formed the season before and the succeeding year. This is due to the difference in the density of the wood formed in spring and that formed in autumn, and gives rise to the "ring" so-called, that is rendered evident from the fact that a porous wood is brought close to that which is dense. It is natural that there should be this difference, for in the spring and early summer the leaves are fresh and in better condition to perform their functions than later in the season, when they become more or less choked up with the accumulation of useless substances. Burn a full sized but young leaf and another of the same area late in the season, and note the great difference in the amount of ashes that is left behind in the two cases. More than that, in the early summer there are usually better conditions for the formation of wood than later on, and owing to the greater vigor the wood cells are formed faster and not filled up so full as later in the season.

But it was of the branches and young twigs that mention was intended to be made in particular in this connection.

A twig grows in length from year to year, but at the close of each season it forms a large terminal bud by developing a number of small thick leaves which overlap each other and inclose and protect the tender part within, called the growing or vital point. As the bud begins its growth the next spring, among the first things it has to do is to throw off its thick covering of scales. As these fall away there is left behind a series of marks upon the outside of the twig which usually indicate for some years the distance to which the twig had attained at the time when the scales were formed. After a few years this external marking disappears, and the surface will be one continuous line of bark.

If one makes a longitudinal section through a terminal bud, he will find that a short distance below the bud the

knife encounters a comparatively solid mass of tissue which, if seen in side view, is somewhat thimble-shaped. This thimble is made up of pith or the central cellular part of the twig which has become hardened by a process called lignification. That is, lignin, which is the substance of hard wood, has been deposited in the walls of the cells. Usually, in addition to this, there is a great deposition of starch in these cells which may be seen by carefully splitting the twig and placing the pieces (one or both) in a weak solution of iodine; this causes the starch to take on a dark blue color. Starch is stored up at this place near the terminal bud, to be used by it in early spring, at which time it changes over into sugar and is ready for use.

Now, if a similar longitudinal section be made through the twig at the place where two years' growth join, that is, at the point, for example, where the terminal bud was the year before, this same thimble may be found, but less prominent than at the tip of the same twig. Through this portion of the twig, which is a little larger than the stem above or below it, the pith is broader than elsewhere, the cells are much lignified and are filled with starch. If the iodine test be applied midway between the extremities of two years' growth, the pith as a rule is less lignified, often not at all in the central portion, and may bear only a little starch.

The point of all this is, that at the junction there is a place for the storage of starch. Here the pith is well adapted for holding this reserve food material, because constructed for that purpose during its first year, when it made up nearly the whole of the substantial part of the base of the terminal bud. If any person should try the iodine test, which is a very simple one, let it be said that all trees and shrubs do not store up an abundance of starch. Thus the apple and pear abound in this substance, while the poplar and willow have but little. The box elder responds to the iodine, while the buckeye has almost no starch in the junction. Other substances may take the place of the starch.—Byron D. Halsted.

**Ginseng.**—Thanks to the Chinese for their passion for ginseng, and to kind nature for bestowing it largely upon this region! Western North Carolina is many dollars the richer from the sale of "sang" roots. The great demand and high prices paid for dry roots of our little native plant have led to much inquiry concerning its cultivation and history.

Ages ago it was abundant in the great forests of Chinese Tartary, but it was such an important factor in the materia medica of China that it has almost entirely disappeared from China, and if our farmers allow the root diggers the freedom of their mountain lands, it will soon disappear from our region also. But the Chinese cannot give up ginseng because they have used up their local supply. They seek it everywhere, and were highly delighted to find that through Chinese agents in New York they could obtain it cheaper from America than anywhere else. It is their chief curative agent—a specific, in their opinion, for all diseases. They wear it upon their persons to keep off evil spirits, and worship it in their houses.

American physicians think that the medicinal virtue of this root is largely imaginary with the Chinese. Roots of different shapes are said by celestial doctors to possess widely different medicinal properties. For instance, while ordinary dry roots of ginseng in China are worth their weight in silver, a root in the shape of a man, with body, legs, etc., readily sells for its weight in gold. We are very glad to let the Chinese have it at the high figures they pay, our only anxiety being to supply their demand, for in this country ginseng holds an insignificant place in therapeutics.

Linnæus, when scientifically naming American ginseng, evidently considered it allied to the Chinese plant, for its generic name of panax is taken from the old Greek noun used by Theophrastus to indicate a remedy for all the ills of the flesh. The specific name, quinquefolium, was given with reference to its five-leaved arrangement. We have several other native panaxes, but none except quinquefolium has the aromatic, pungent taste of ginseng.

I have heard of ginsengs being found sometimes in the oak and sugar maple forests of the north, but believe it is chiefly indigenous to Georgia, Tennessee and North Carolina. It grows in loamy soils along elevated plateaus, or near the sea level in northern states. With us it is peculiar to mountain sections, and so far has not proved amenable to culture. Shade seems to be essential in cultivating it, for plants exposed to the rays of the sun in open fields or gardens soon die out, though given the best of care. Lately, some success has been achieved by selecting the edges of forests, where it is found growing wild, clearing out small trees and underbrush, and leaving some large trees for shade. This is done in early summer. The ground is then broken and pulverized with harrows, rakes or hoes, and all grass, weeds and roots killed. This bed is then sowed in berries or small unsalable roots.

Ginseng berries, ripe in autumn, are of a pretty, bright crimson color, and contain two seeds each. They are rubbed from the pulp and planted in the soft soil of the prepared bed about half an inch deep and six inches apart, in rows two feet apart. Seeds and small roots must be all planted in the ground before leaves begin to fall, that these, settling down over the bed, may give needed and natural protection through winter.

These leaves are allowed to remain upon the bed through the next summer as a mulch, aud to keep down the weeds, and all the cultivation the plants seem to tolerate is this keeping up of continual mulch about their roots, throwing dry branches over the leaves, if during winds, and the keeping down of weeds and tree sprouts.

At the close of the third season, the ginseng roots will be of marketable size, and may be dug, marketed, the old bed loosened, covered with fresh leaf mould from the forest, and replanted with the seeds and small roots from the late harvest.

Seeds for the ginseng crop are gathered from the forest for starting the beds, but they are becoming more scarce every year, owing to the fact that collectors will gather it before the seeds are fully matured, although there is a law in this state prohibiting the digging of ginseng before September.

Wallace Bros., of Slatesville, N. C., buy large quantities of ginseng from root diggers every year, paying from $3 to $3.25 per pound. It grows in most fantastic shapes, and is valued according to size of roots, therefore it is never cut or split.—L. GREENLEE, *N. C.*

**Collecting and Pressing Plants.**—Much of the pleasure of the studying of our native plants lies in the making of an herbarium. The general directions for drying plants are given in the Horticulturist's Rule-Book, as follows:

Collect samples of all parts of the plant, lower and upper, leaves, stem, flowers, fruit, and, in most cases, roots. In small species, those two feet high or less, the whole plant should be taken. Of larger plants, take portions about a foot long. Press the plants between papers or "driers." These driers may be any thick porous paper, as blotting paper or carpet paper, or, for plants which are not succulent or very juicy, newspapers in several thicknesses may be used. It is best to place the specimens in sheets of thin paper—grocer's tea-paper is good—and place these sheets between the driers. Many specimens can be placed in a pile. On top the pile place a short board and a weight of twenty or thirty pounds. Change the driers every day. The plants are dry when they become brittle and when no moisture can be felt by the fingers. Some plants will dry in two or three days while others require as many weeks. If the pressing is properly done the specimens will come out smooth and flat, and the leaves will usually be green, although some plants always turn black in drying.

Specimens are usually mounted on single sheets of white paper of the stiffness of very heavy writing paper, or thin Bristol board. The standard size of sheet is 11½x16½ inches. The plants may be pasted down permanently and entirely to the sheet, or they may be held on by strips of gummed paper. In the former case, Denison's fish glue is the best gum to use. But one species or variety should be placed on a sheet. The species of a genus are collected into a genus cover. This cover is a folded sheet of heavy manilla or other firm paper, and the standard size, when folded, is 12x16½ inches. On the lower left hand corner of this cover the name of the genus is written. A label should accompany each specimen upon the separate sheets. The specimens are now ready to be filed away on shelves in a horizontal position. If insects attack the specimens, they may be destroyed by fumes of bisulphide of carbon or chloroform. In this case it is necessary to place the specimens in a tight box and then insert the liquid.

**Care of Perennials.**—The hardy perennials and spring-flowering bulbs upon which we of the northern states have to depend for our May and June flowers, require some care in the fall, so that they may do themselves justice in their season of bloom. They richly repay all labor bestowed on them, for a great many beautiful perennials are perfectly hardy when slightly protected during the winter. This is especially true of those varieties that have evergreen foliage. Those that die down to their roots will bear a far larger amount of neglect.

Yet it is not severe cold that kills plants hardy in our climate, but alternate freezing and thawing in bare ground. Before protecting a flower bed, study the surroundings, for one bed may be situated so as to enjoy the protection of a snow-drift till the middle of April, while another, close by, may lie bare half the winter. Every one must observe for himself, and vary the treatment according to the individual needs of each bed and plant.

September or October is the best time to divide and to plant all bulbous roots, such as pæonies, lilies and irises; and while professional florists hold that it is also the best time to divide and reset all perennials, I do not think that perennials with fibrous roots become rooted firmly enough to stand a severe winter, in the northern states at least. All shrubs and bulbs bloom much finer in the spring if they have a generous supply of some kind of manure the previous autumn. Before freezing weather sets in, spring bulbs and plants that die to the roots need a coating of stable manure or forest leaves; but those that retain their leaves are apt to rot if so treated.

The ground should be leveled so that there will be no depression; for it is sure death to most plants to have water stand either on or over them. And if the amateur is not careful he will find, in spring, some of his most cherished pets dead from this cause, in spite of careful covering. If it is impossible to obtain stable manure, use commercial fertilizers, wood ashes, house slops or anything else one's wits suggest as plant food.

Evergreen boughs, arranged so as not to be blown away in a bare time, are excellent for covering evergreen perennials. Some florists advise cold-frames. But neither cold-frames nor evergreen boughs are always within the reach of women gardeners at just the right time, and they sigh for a substitute. I think I have found it in small, low boxes, with tight bottoms. These can be got by most village people by asking their groceryman for them.

These boxes answer all the requirements of a cold-frame, and plants come out from under them smiling and green in the spring if they are removed gradually, as all coverings should be. And they are extremely convenient where the garden is small and plants with evergreen leaves are here, there and everywhere. If a little box is turned over a plant just before snow, one need not fret if the ground lies bare half the time.—C. H., *Sanford, Maine.*

# THE QUESTION BOX.

**1. Hollyhock Disease.**—Enclosed please find leaf of hollyhock plant; we should like to know what the disease is in same, and the remedy, if there is any. Any information you can give us regarding same will be appreciated.—P. & W.

The hollyhock leaf sent by the correspondent is covered on the under side with bright brown wart-like growths—a kind of rust; and one of these warts dissected under the microscope, or examined in cross-section, proves to be composed of spores resembling, in a general way, the spores of wheat rust. It is, in fact one of the true rust fungi, and is known as *Puccinia malvacearum*. This species has a remarkable history. It grows only on malvaceous plants, and was first discovered in Chili some fifty years ago, being found there growing on some wild plant of this family. In later years, it was, by some means, introduced into Europe, where it attacked the hollyhocks, doing wide-spread damage. In 1873, it made its way into England, and two years later it was first observed in Ireland on plants raised from English seed. It was expected to again cross the ocean and appear in North America years ago, and its occurrence was announced a number of times, but each time the fungus proved to be not the true hollyhock rust, but a related species. In 1886, however, it actually appeared in Beverly, Mass., on malvaceous plants raised from European seed. The next year it was observed on hollyhocks in Boston Public Garden, Cambridge and Nahant, and in 1888 specimens were sent from Western New York. It grows, also, on the round-leaved mallow (*Malva rotundifolia*).

The *Gardeners' Chronicle* for August 22, 1874, p. 243 recommends as a remedy Condy's patent fluid (green) in the proportion of one teaspoonful to a quart of water. The writer found that this killed the spores in twelve hours, which was shown by their turning black. Double this strength caused instant death to the fungus, as stated, without injuring the hollyhocks. Sponging is better than spraying. As a preventive measure, set the plants far apart, so that they will have plenty of light and air. Too much shading and dampness favor the rust. It was feared that the hollyhock rust, when it reached this country, would attack the cotton plant, to which it might cause great destruction, but it has not done so, and it now seems probable that it will not.

There are two other kinds of rust that grow on malvaceous plants in the United States. *Puccinia malvastri* grows on *Malvastrum coccineum*, and other species, and is quite similar to the hollyhock rust, though specifically distinct. It is found chiefly or entirely (?) west of the Mississippi. *Puccinia heterospora* is a very different species as to the form of the spores. It grows on a number of malvaceous weeds and other plants, as *Lida spinosa*, *Abutilon Aircennæ*, etc., occurring in Illinois, Kentucky, southwest to the Mexican border, southward into South America, and even to Australia and Ceylon. It is this species that is now thought to be most threatening to the cotton plant.—A. B. Seymour, *Cambridge, Mass.*

**2. Heating Hot-Beds.**—I noticed the request (March, p. 185) to hear your readers' experience with heating material for hot-beds other than manure.

The principal florist (Neubronner), and also a leading market gardener, of Ulm, Germany, have used, with great success, the refuse from cotton mills and other factories where cotton is worked. They bought it in a neighboring city (Augsburg) at a low price. Before putting it into the beds, they moisten it thoroughly. It a short time it will heat violently, and this heat will last until the whole matter is burned to a fine dust, like ashes. It will give a better heat than horse manure, and its heat will last three or four times as long as that of manure. Its only fault and inconvenience is that fine dry dust, which will, when the beds are opened and the ground put out in autumn, fly around in the air and be very troublesome. Perhaps this can be overcome. We have never practiced this method because we cannot obtain the material here. I presume it is plentiful in the New England states.—Fr. Windmiller.

*Fire Hot-bed.*—I have used a fire hot-bed the past five years with good success. I have had no trouble in keeping it warm through the coldest weather of March, in this northern country, without blankets, mats, or anything but the common hot-bed sash. It is cheaper and easier run than the manure bed. I never have got up nights to build a fire, and I use oak wood only.—M. F. Hammond, *Wis.*

**3. Prices for Petunia Seeds.**—Will you quote prices paid to American growers of finest strains of hybrid superbissima petunias? also, of intus aurea, intus nigra, Prince and Princess of Wurtemberg, and finest fringed double? Inquiries from various wholesale seed dealers, also from parties from whom stock is purchased, fail to elicit any response.—Mrs. Thomas Gould.

**4. Pea Mildew.**—What will prevent mildew on peas? Our late peas are so badly mildewed that I have quit trying to grow them; early peas are not troubled by it. I had thought of trying the Bordeaux mixture.—Wm. C. Cusick, *Oregon.*

The pea mildew, of which Mr. Cusick writes, is presumably *Erysiphe communis*, one of the so-called "powdery mildews" belonging to the same family with the powdery mildew of the grape (*Uncinula spiralis*). I have found it abundant and destructive to late peas in Western Massachusetts, and it has been sent me in quantity from Alabama. It is one of the fungi which grow entirely on the surface of the host-plant, covering

it with a white coating of the delicate, interwoven fungus threads. At certain points short protuberances appear on the fungus threads, which serve as suckers, taking fast hold of the leaf surface somewhat as the suckers of some climbing vines take hold of their support, but with this difference in function, that they draw from the host the nourishment required for the growth of the fungus.

The spores of the pea mildew are produced in delicate sacs, which, in turn, are inclosed in dark-colored spore cavities. The latter appear as black specks, just visible to the eye, among the white threads of the fungus.

The pea mildew must be even more destructive to its host than the grape mildew. The latter grows chiefly on the upper surface of the leaves, but also on the fruit-stem and its branches. Besides being a more delicate plant, the pea is more thoroughly infested, as the fungus attacks leaves, leaf-stalks, stems and pods.

One would expect that a fungus growing altogether externally, like the pea mildew and the downy grape mildew, would be more susceptible to remedies applied than one growing partly or wholly inside the host, as the downy mildew and black rot of the grape do; yet even the latter are found to be susceptible to treatment. It is probably on account of the greater difficulty, that the latter have been more fully experimented upon. No record is found of experiments upon pea mildew, but remedies for powdery mildew of the grape should be equally effective upon the pea. The remedies recommended by the Department of Agriculture* contain sulphur, either in powder or in solution. The following recipes are given: (1) Take one peck of lime, not slaked, and one pound of sulphur; put them in a barrel and pour hot water over them sufficient to slake the lime; pour on this three gallons of soft water, and stir the mixture well. In twenty-four hours it will have settled and become perfectly clear. This should be drawn off as clear as possible. Half a pint of this mixture added to three gallons of water will be sufficiently strong. (2) Boil three pounds each of the flowers of sulphur and lime in six gallons of water until reduced to two gallons. When settled, pour off the liquid and bottle it for use. One pint of this clear solution in twelve gallons of water is the strength recommended for use. The flowers of sulphur are recommended as equally good, and less expensive for material and labor. It has been successfully used for powdery mildew of the bean in Bermuda.

Remedies should be applied as early as possible after the appearance of the mildew, and at a time of day when no moisture is present on the vines. A warm bright day is best. The application should be repeated as often as occasion requires.—A. B. SEYMOUR.

**5. Hardy Vines.**—Will you name a list of good hardy vines for arbors and porches?—W. F. CLAY.

There is no doubt but that the handsomest of all hardy climbers are the varieties of the clematis. They need rather careful handling, and a slight protection for the first two years, but after that they will grow and bloom finely. Of course the *Clematis Jackmanni* is the best known and deservedly popular, blooming as it does, so constantly from July until stopped by the frost. The dark, but bright, purple flowers are from four to six inches in diameter. The variety Miss Bateman is magnificent, with large creamy white flowers, which are borne in May and June. Mrs. Geo. Jackman is a satiny white, and this variety often flowers on the young wood, its blooming season extending from June until October. Lucie Lemoine has double, white flowers. *Clematis crispa* bears small, well-shaped flowers of a light lavender blue on white ground, and this also flowers abundantly from early summer until frost. *C. coccinea*, or coral clematis, is a gem indeed, growing so rapidly, flowering profusely, the flowers being coral-lilac in hue, and of such an odd form. There are many other excellent varieties of this favorite and grand climber, but I have mentioned the *creme de la creme*.

Hardy shrubs and vines of large size should be planted when dormant, early in the spring or late in the fall. The smaller plants should be planted at any time after the weather becomes suitable in the spring.

Honeysuckles are among the prettiest and sweetest of the real house vines. They bloom continuously, the foliage is pretty and clean, and their fragrance is simply delicious. There are quite a number of varieties. Halliana is one of the newer varieties, having been recently brought from Japan; it is a vigorous growing, evergreen sort, blooming constantly from June to November. The flowers are white, changing to yellow, and with a very sweet odor. *Lonicera fuchsioides* is our old favorite, the coral honeysuckle. *L. H. Belgica* blooms all summer and has red and yellow flowers; very sweet. *L. brachypoda*—this is a lovely variety, a ready twiner, and it flowers in June and July. The blossoms are yellow. *L. aurea reticulata*, or Golden-leaved Japan, has foliage netted and veined with yellow; a lovely and distinct variety, with yellow fragrant flowers; planted with other varieties of honeysuckles, it makes a striking contrast.

*Wistaria sinensis*, or Chinese wistaria, is a very hardy and vigorous grower. The flowers are borne in long drooping grape-like clusters of a pale violet blue, very handsome. A most profuse bloomer in the spring, often giving a second crop of flowers in the fall; very sweet-scented. It likes a sunny location, and the soil should be enriched with plenty of well-rotted manure. *Wistaria sinensis, alba*, is like the above, but the flowers are white. *Magnifica* differs from the above in darker blue flowers, very beautiful. *Wistaria frutescens* blooms earlier than the others, and has violet purple clusters of bloom.

*Periploca Græca*, or Virginia silk vine, is a very strong grower, growing very tall. The foliage is long, narrow, shining. The flowers are of a purplish brown.

*Actinidia polygama* is a vigorous and handsome climber. It has white flowers, with a purple center.—GRETA BEVERLY, *N. Y.*

*Scribner, Rept. on Fungous Diseases of the Grape Vine, 1886, p. 26.

A Newport Lily Pond.

*Described in June Am. Garden; on the estate of Mr. Fairman Rogers.*

# The American Garden.

*Vol. XII* *JULY, 1891.* *No. 7.*

## THE GARDENS OF NEWPORT—II.

A GARDEN HOME MADE BY "THE RICHEST WOMAN IN AMERICA."

RECENT writer echoed a somewhat popular feeling when he said, in substance, that a pleasure garden should be constructed as near as possible in imitation of nature, and that every departure therefrom is, in an important sense, a loss rather than a gain. Such a statement is altogether too broad. Nature's gardens are the forests and the fields, the swamp and the bogs. These, though sometimes grand and lovely, and interesting always, are rather the sources from which to obtain supplies than the perfection to which civilization aspires. Every step in the higher life of humanity is an improvement on nature; and there is as wide a field for progress in ornamental planting as in any other department of human activity. It is the landscape artists' work to make selections, bring together the choicest gems, and arrange them in their order as best fitted to serve the pleasure and add to the enjoyment of cultivated taste.

Sir William Temple says: "If we believe the Scripture we must allow that God Almighty esteemed the life of man in a garden the happiest he could give him, or he would not have placed Adam in the garden of Eden." And so gardens have been spoken of by poets and historians of all ages as sources of pleasure and evidences of refinement, and many a man, weary of the turmoils of statesmanship and the whirl of business, has turned aside to find substantial enjoyment in the beauties of nature as therein set forth. We read many praises of the gardens of antiquity and of the men who created them, but though some of the old pleasure grounds were, perhaps, more pretentious than any we now have, especially in their artificiality, we may well doubt if any of them were equal, on the whole, to those of our own time.

In the autumn of 1881, Miss Catherine L. Wolf, understood at the time to be the richest unmarried woman in America, purchased a lot of land consisting of about ten acres, located on what is known as Ochre Point, on the Newport cliffs, as a site for a summer home. She immediately proceeded to build a palatial residence and surround it with the richest and best possible collection of trees, shrubs, vines and flowers that could be brought together and harmonized in artistic combinations. A visit to these grounds today, will show that what followed was largely a realization of her fondest wishes in that direction. "Vineland" possesses many charms in both its natural attractions and its rich and varied adornments. The buildings are of brown stone, artistic and capacious. The lawn is of ample proportions, and the masses of shrubbery and flowers that line the graceful curves of the walks and carriage ways, and nestle in the nooks and corners, speak eloquently for the many lands from which the various specimens were gathered, and which they so worthily represent. Miss Wolf lived to enjoy this work of her creation but a few years, when her kinsman and friend, Louis L. Lorillard, succeeded to the possession of the estate.

To create such a garden as this, even under the most favorable circumstances, is no easy task. But here there were unusual difficulties to be overcome. It had long been understood that the situation was so swept by ocean winds that trees could not be grown there at all, and the former proprietor, a wealthy New Yorker, who had passed many summers on the spot, had thought himself fortunate in having kept alive two or three groups of stunted evergreens on the lawn, in each of which fifty or

a hundred specimens were planted closely together for mutual protection. But as will be seen, even such adverse conditions have been successfully met, and there are now few gardens in America, if any, possessed of superior attractions.

This favorable outcome of Miss Wolf's purpose is largely due to the skill and perseverance of James H. Bowditch, the landscape artist, who, if he had done no other work in this line, would be entitled to high rank in his profession. It was certainly a bold experiment, when he decided to introduce, on a large scale, the rich and rare evergreens of this and other countries in so great abundance as to give them prominence over all others. It was determined from the first to place reliance chiefly upon hardy trees and shrubs, and especially on the so-called foliage plants for the desired effects. Mr. Bowditch had made use of some of these on the adjoining estate, now owned by Cornelius Vanderbilt, of which I may write hereafter, and had been successful where many others had prophesied failure. He now proceeded to greatly enlarge the list, especially of foreign varieties, and in doing so, has tested their capabilities and adaptations to the fullest extent. The result is, therefore, of especial value to horticulturists as affording assistance in determining the hardiness of the several species, some of which are not popularly supposed to be adapted to the New England and other northern climates.

The illustration of the gate house or gardener's residence brings out a group of these evergreens standing by the roadside near the principal entrance to the estate. The cottage is situated a few feet from the street line, and the hedge which borders the highway affords a curve inward to the building. This leaves a small space, such as in most cases might be left unimproved, but is here made beautiful. The illustration cannot bring out the shades of color, wherein lies much of the effectiveness of the combination. The plants are arranged with a low border of dark green, back of which each row rises above its predecessor to the last, which is also solid green. The darker plants at the right are mostly silver-tipped retinosporas, while those of lighter shade are chiefly of the variety known as plumosa aurea. A few of the larger golden plants, however, are biotas; and the arrangement is such as to constitute a solid bank or wall of golden foliage, the combination from every point of observation being exceedingly harmonious and effective. Among the plants with green foliage as shown by the darker shades on the left, are a number of junipers, yews, Arbor vitæ, pyramidalis and retinosporas obtusa and plumosa. The whole number in the group is 190, though only a part of them is shown in the picture.

As the retinosporas occupy so important a place in Newport gardens, a brief description of the species and varieties may help to a better understanding of the subject in hand. As is well known, they are conifers and natives of Japan; but though introduced to America more than a quarter of a century ago, and becoming known to many who have loved and prized them, they are by no means yet common in garden culture. Botanically, they belong to the cypress family, and should have been recognized as a sub-genus, but Siebold, who suggested the present name, thought he observed a sufficient distinction in the resinous coating of the seed to classify them separately. He therefore combined the two Greek words, signifying resin and seed, in their present name. But it is now pretty generally agreed that there is no sufficiently marked distinction to justify such a classification. The present name, therefore, besides being inconvenient to many, is in reality misapplied. But as it is always difficult to get rid of a bad name when once acquired, so here the awkward word, retinospora, or as some have it, retinispora, is scarcely likely to be superseded by a better.

It is said that in their native country some of the species grow to the height of a hundred feet: and that they are among the most magnificent of trees; an estimate which may be the more readily accepted in view of their well-known characteristics as here revealed. But in this country they do not appear to have anywhere assumed such striking proportions. In most cases even the larger species grow as shrubs or quite small trees. As employed in ornamental gardening, they are seldom found more than six or ten feet high, while some of the varieties are among the veriest dwarfs of vegetation.

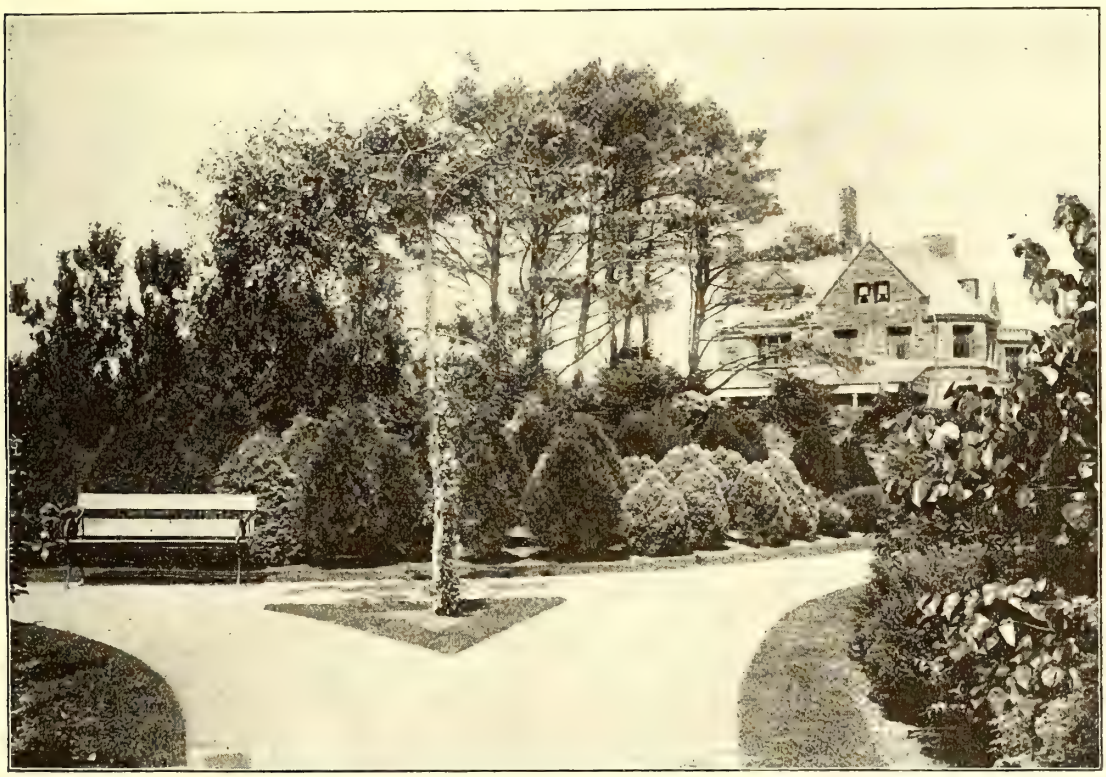
The *R. obtusa*, in its native habitat, is said to be a tall, slender tree, often rising to a great height with wide spreading branches. Its leaves are scale-like, ovate, rounded and closely crowded along the entire length of the small branchlets. They are bright green, and hold their color well at all seasons. As the lateral branches are numerous, the tree has a dense, not to say magnificent head. It proves hardy here and is one of the best. There are several varieties of this species that are also valuable. One, *R. aurea*, has a portion of its foliage of a golden color, which in combination with the glossy green of the type, gives it an interesting appearance. Though not much planted in Newport, the few specimens observed afford evidence of hardiness sufficient to withstand our winters. Another has white leaves inter-

mingled with the green, giving it a spotted appearance.

The *R. plumosa* is one of the most desirable of the smaller conifers in use. It forms a perfect little tree, at its best fifteen to twenty feet high, but is here seldom seen above eight or ten feet. The stem and branches are thickly clothed with small, delicate light green, awl-shaped leaves, giving the tree something of a feathery spray in the form of a waving plume, whence comes its name. The golden variety, *R. aurea*, is much the same in all respects, except that its foliage is bright yellow. Some of the branches also partake of the same color, while others are green. This variety is planted more freely here than any other, and is one of the best for massing or for enlivening the border. The colors

The *R. filifera*, or thread-branched species, has numerous long, slender, drooping branches falling gracefully on every side and constituting a well-rounded pyramidal head. It is one of the most curious and interesting of plants, and can be used to advantage singly, in masses, or for borders and hedges with the best results. A golden variety, the branches of which are bright yellow, more recently been introduced and still rare, proves a great acquisition. There is also a silvery tinted variety with equally pendulous branches, but not so effective as the golden. The filifera is among the most hardy of the Japanese evergreens.

The *R. ericoides* is of dwarf habit, seldom growing more than two to four feet high. The small heath-like



Lodge and Group of Conifers on Louis L. Lorillard's place at Newport, R. I.

are permanent, and as brilliant in winter as in summer. Such a tree or shrub cannot fail to be of great service everywhere, singly or in combination, and its use is steadily increasing.

The silver variety, *R. argentea*, has its leaves, including nearly all the season's growth, tipped with white, affording a beautiful contrast with the back ground of bright green. This silver-tipped cypress, when it has reached a medium size, is very effective, and no more beautiful plant is seen in the gardens of Newport. Well rounded specimens are found here eight to ten feet high and six to seven feet in diameter. It proves hardy, and to many is the most beautiful of the retinosporas.

leaves, which are thickly crowded along the numerous branches, are pointed and somewhat rigid; green in summer but turning to a violet red in winter. Though small, each plant is in the form of a perfect tree with a compact, cylindrical head. It is especially adapted to borders of groups or walks, the color in winter affording a most pleasing contrast when grown among other evergreens.

The *R. squarrosa* grows four to six feet and has slender branches with a dense, silvery-green foliage of great beauty. It is one of the most graceful forms in use, but does not prove perfectly hardy in exposed localities.

The *R. obtusa, nana* is a dwarf not more than two or

three feet high. In some respects it resembles the creepers, as in its growth it spreads outward from the central stem on every side until it forms a flat, glossy cushion of green, sometimes four to six feet in diameter. It is especially valuable for rock work, and can often be made a thing of beauty in shady situations where the grasses, even, will not thrive. The var. nana aurea possesses similar characteristics, but is of slower growth and has bright, yellow foliage. The two, planted together, form an attractive combination.

The *R. pisifera* is a small tree with scale-like leaves in four rows along the branches. Some of the leaves are slightly elongated and curved, the whole tree presenting a feathery appearance. It is an attractive plant, and can be employed to good advantage. It is sometimes called the pea-fruited variety, from the appearance and character of the seed.

*R. lycopodioides* has its foliage arranged around the branches, the leaves being more or less awl-shaped, in opposite pairs, imbricated and of deep green color. The branches are slender and numerous, forming a broad but beautiful head. It is sometimes known as the club-moss retinospora. A variety with variegated foliage is highly prized, but is too rare to be often seen in cultivation.

The *R. compacta* is a low tree with a round, compact, dense head and bright green foliage. It can be used as an evergreen to much advantage in many situations.

The *R. filicoides* is a vigorous plant with bright green foliage. The leaves are small, egg-shapped, imbricated and somewhat curled. Branches flat, with numerous branchlets on either side, which are, usually, dark-green above and much lighter beneath, the whole head having a fern-like appearance. It is a hardy and free grower.

The *R. leptoclada* grows to a height of eight to ten feet in pyramidal form. The branches are numerous and short, with many sub-divisions; the leaves linear, and of bright green color. It is a beautiful little tree, but has not withstood our winters so well as some of the others. It appears to suffer more, however, from the sun than the frost. There are still other varieties, but none of especial value as compared to those named. The list given affords a wealth of evergreen foliage such as few persons, not actually acquainted with these plants, are prepared to appreciate.

With possibly one or two exceptions all these species and varieties are grown in Newport without difficulty. The only protection afforded them in winter is, in bleak exposures, to place around the groups close board fences, such as are of almost, if not quite equal advantage to the pines, spruces and arbor vitæs. In some few cases branches of evergreens are placed over their tops to guard against the sun's hot rays, but this is of doubtful utility. I left a hundred specimens, including nearly every variety named, in the open ground last winter without the least harm to a single plant, and yet it may be well to give such valuable, though not especially costly plants, the best opportunities possible. In a colder climate than that of southern New England, extra care may be desirable, and probably should be afforded.

The illustration on page 387 shows another group of these conifers forming part of a continuous border to a walk circling about the grounds. As before, the golden colors are shown by the lighter shades, and the larger pyramidal forms are fine specimens of *Biota elegantissima*, the variety which here shows the greater hardiness and superior beauty. The others are retinosporas plumosa, argentea, and Swiss stone pines, *P. cembra*. As the border continues, there are numerous equally interesting groups in which nearly all the species named appear in a continuous band, with many introductions of other sorts adapted to such combinations. This border, if in a straight line, would reach out at least an eighth of a mile, every section of which by itself would be, if standing alone, an object of rare beauty. The tall trees are pines, with purple beeches and purple-leaved maples, *Acer Reitenbachi*, at the left. On the opposite side of the walk at the left, is a large bed of hardy roses, and on the right, a promiscuous collection of shrubs and plants, including a great variety of spireas, deutzias, barberries, etc. The Colorado blue spruce, *Picea pungens*, is also somewhat conspicuous in the vicinity, and several specimens fully justify the highest praises bestowed on that western prodigy. There are a good many of these spruces in the grounds, but all are not up to the required standard of color. In the distance is seen a portion of the summer house, with suggestions of its immediate surroundings.

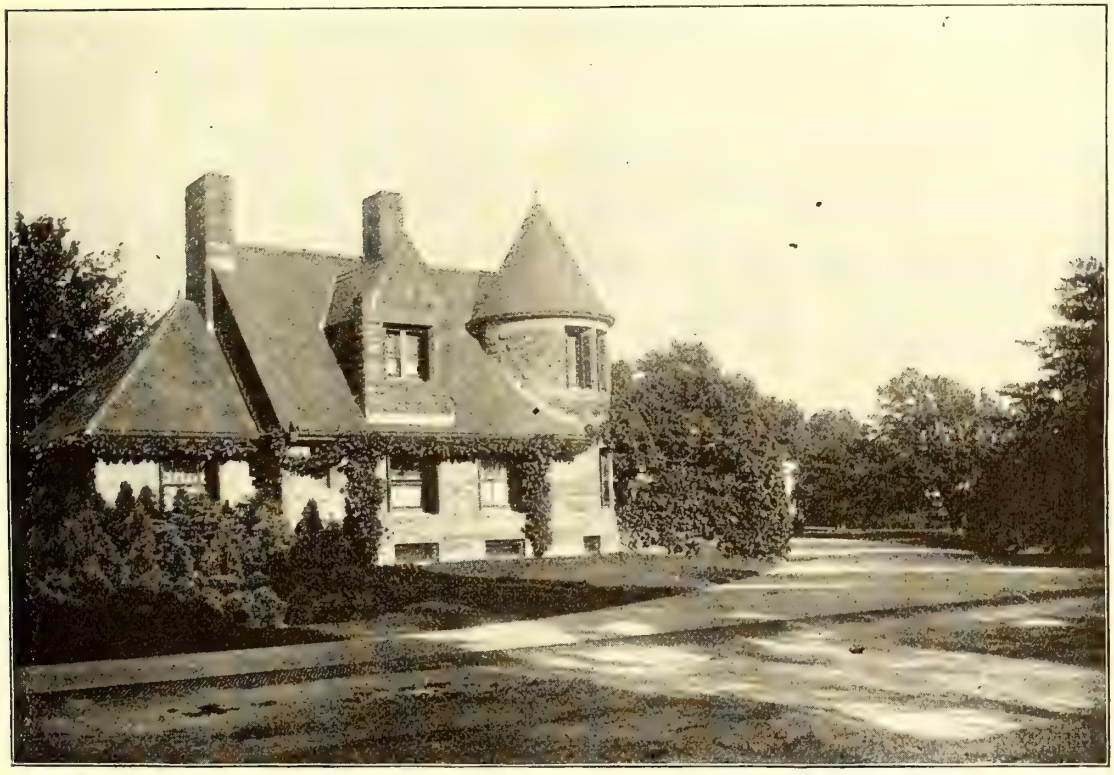
The opposite side of the house is again seen to be embowered in foliage. The plants in the border in summer are largely composed of the French and other new cannas that are now much employed in garden decoration. These are of many colors, both in flower and foliage, and are much admired wherever planted.

The lily pond is in a recess formed by the conservatories, and is thus enclosed on three sides, the remaining one being open to the south. The evergreens on the border are small spruces, while beyond and across the gravel walk is seen a variety of conifers and deciduous trees, mostly of the well-known and common sorts. The pond is well stocked with water lilies, and though not large is, in the proper season, always a thing of beauty and rich in its supplies of aquatics. The illustrations give some idea of the general character of this and

other gardens in the vicinity. The open lawn is in the center and fronting on the cliffs, while the other three sides are thoroughly planted in the manner indicated. It would be difficult to name a desirable ornamental species among trees or shrubs that is not here represented, whether of native or foreign origin.

There are two fern-leaved beeches, *Fagus heterophylla*, standing in these grounds that have a history of more than ordinary interest. This variety has long been popular in Newport, as what is claimed to be the oldest and finest specimen in the country stands on Bellevue avenue in front of Redwood Library. It was planted there many years ago and has long been pointed out to strangers as among the sights of Newport. No tree could be more symmetrical, and the peculiar fern-like leaves, of the most charming tint of green, give the dense head an airy appearance of great beauty. This tree has been the envy of many who saw it, and since young specimens could be freely procured, they have been planted on almost every lawn in the city. But these are mostly small and far from satisfying the desires of those cottage owners who are too impatient to wait the processes of growth and development. There were two such fern-leaved beeches at Miss Wolf's homestead at Throgg's Neck, New York, and that lady, while fitting up this estate, undertook their removal to Newport. In each case the trunk was about four and a-half feet in circumference, bearing a head some thirty feet high, so that the task of transfering them to Vineland was somewhat difficult. But where there is a will there is a way. They were taken up in mid-winter with large balls of earth, maintained in an erect position, placed on wheel drays and conveyed to the water's edge, where they were loaded on a scow and towed through Long Island Sound. On their arrival they were again placed on drays, still erect, and carted to their destination. The experiment proved an entire success, and the two trees stand to-day as proofs of what can be done in removal and transplanting under difficulties. Both put out their leaves the first season as if nothing out of the usual line had occurred in their history, and the spectator would have never suspected that these large trees, uncut and unmutilated, had passed through an experience of this kind. It is understood that the expense of removal was about $1,700. They are not the equals of some others in symmetrical proportions.

L. D. Davis.



A Border of Conifers Circling through the Grounds.

# THE CHILDREN'S PARADISE.

THE ONE-ACRE lot was a neglected rock-brake. It lay just back of the barnyard and had sometimes been used as a paddock for calves. Rocks cropped out here, there, and everywhere; what soil there was was rich enough, and the little brook which ran from the spring-house meandered through it on its way to the larger stream at the foot of the hill.

Nothing of much importance grew in the one-acre lot except a few old chestnut trees and two thriving walnuts just beginning to bear. Weeds sprang up and thrived amazingly. Besides the weeds and nut trees there were a few brambles on the rocks and along the boundary fence, blackberries and wild raspberries, and there was one large over-cup oak alone in sovereign dignity on a little eminence. Such as it was, the one-acre lot was the children's favorite romping ground. The minnows and crayfish in the brook, and the acorns of which they made fairy cups and saucers, were unfailing sources of amusement, and year after year the little paddock was devoted more exclusively to their use and pleasure. Here they could be free to do as they liked. They named every rock and loved every rod of ground in it, and, as they grew older, it was finally ceded to them and they were encouraged to plant therein whatever seemed good in their eyes.

When the eldest boy, Francis, was born, the father had planted a shellbark hickory in the lot, in honor of the event. Two years after came the twin daughters, Violet and Pansy. On this occasion two sapling pecan nuts were added that grew and thrived with the growth of the little girls. Next came Dudley, whose tree was a Swiss stone-pine. Myrtle was the youngest, and was such a tiny white maiden that her somewhat fanciful father declared a delicate white birch the only appropriate tree for her. So the birch was planted and they all grew and flourished together until the youngest child and tree were six and the eldest fourteen.

All the family had a taste for horticulture, and they possessed a fine garden and orchard. The children planted anything they took a special fancy to, particularly such trees and shrubs as were both useful and ornamental. When they decided to embellish their domain there was a great looking up of nursery catalogues and rummaging of book-shelves for works on horticulture and landscape gardening. They did not care much for æsthetic results, but they concluded to plant along the margins of their territory so as to keep their beloved central play ground free, where, in the smoothest part, they already had a croquet ground.

First of all Francis said they must have a persimmon. The children had an allowance of twenty-five cents a week, and Francis had saved his until he had enough to buy a *Diospyros Kaki* or Japanese persimmon, which he planted himself under the direction of his father. Dudley knew where a copse of young American persimmons grew, about a mile away, and he contributed one of these to keep the Japanese from being too lonely.

In course of their researches the twins learned that the ginkgo tree, *Ginkgo adiantifolia*, has an edible kernel. They contributed the price of this from their savings; and little Myrtle said she must have a sugar maple. Her birthday came the last of March and they surprised her with a maple surreptitiously planted. Their enthusiasm for their new project increased daily, and from time to time they added to their treasures; now a red filbert, or a rare plant like *Myrica rubra*, the Japanese tree which has fruit like a blackberry, or *Elæagnus longipes* for its edible berries, or an English walnut of the dwarf variety, preparturiens. They chose this walnut because it bears when quite young.

Already they had grand times nutting in their little grove. The chestnut trees bore plentiful crops and so did the walnuts and the shellbark hickory. Also this year they gathered their first pecans. Whatever they heard of as new and rare and at the same time useful, they gradually added to their store. They loved to surprise each other on their birthdays with a long desired plant, and it was a point of honor with them that the child whose anniversary was to be celebrated should keep out of Eden the foregoing day while preparations for the fete were going forward. Fortunate were their little neighbors who were summoned to such a feast, the invitations written on cards of birch bark, and the rustic table in the wild grape arbor covered with delicacies of the children's raising.

When Pansy and Violet were twelve years old they found two Japanese hovenias planted in their favorite corner near the brook, a gift from the other children.

That spring Dudley, who had a sweet tooth, planted a little patch of sorghum, and they all combined to keep their bed of Tom Thumb pop corn clear of weeds. That same pop corn, neatly tied with blue ribbon, took the prize at the September county fair, and who so proud as the children on that long-to-be-remembered day!

One of their rules was never to visit the lot without pulling up a weed or two, and their father gave each of them a weeding thimble.

They had two young paw-paw trees which they planted by the brook. These trees they obtained from the river bank about two miles away; they were the souvenirs of a very delightful picnic. They used to make occasional excursions into the woods and to the neighboring mountains with their old horse, Nellie Bly, taking huge baskets of provisions and coming back laden with partridge berries, wintergreen and May apples, or wild mulberry shoots, sassafras, spice-wood, or young sugar nut trees for their beloved pleasure ground. Then they planted a fine herb bed in which they raised lavender for their mother, and bee-balm which they used to impart delightful aroma and flavor to their lemonade; and they had thyme and summer savory and sweet basil and sage to supplement parsley, which was the only aromatic herb the garden furnished. They tried the different varieties of gourds also, with which they adorned the rocks and the rough stone wall which surrounded their domain, where scarlet beans, wild grape vines and bitter sweet, raised for its ornamental berries, flourished in a delightful tangle, loved by the birds who seemed to prefer the old paddock for housekeeping purposes to any other portion of the grounds.

I never knew happier children. There was always something pleasant going forward in their little domain, where they had a swing and seats in the trees. One year their father made them a grand present of a tent, and after that they scorned the house except in the stormiest weather.

Of course some of their experiments were failures, as when the field mice ate all their peanuts as fast as they were planted, and some of the trees died now and then, when they had a solemn tree-funeral, closed with a bon-fire, which was found very comforting to the mourners. Very likely their plantation would not have found favor in the eyes of a neat gardener, but to the children the one-acre lot remains a real paradise in spite of its brambles and of its weeds.

*West Virginia.* DANSKE DANDRIDGE.

# GRAPE GROWING ON THE ISLANDS OF LAKE ERIE.

IN ANY one of a half-dozen separate counts the islands of Lake Erie might safely rest their claim to consideration. Their history is part of the story of the birth of the republic. The salubrious climate has made them a favorite summer breathing place for thousands whose homes are scattered through a wide extent of the middle west. The excellent fishing afforded by the great "unsalted sea," makes them a rendezvous for sportsmen. The stone and lime industries afford an outlet for surplus commercial energy, while to the cultivation of the vine, all these are subordinate. Kelly's Island, the one of the Lake Erie group to which this paper will give special attention, comprises an extent of some 2,800 acres, most of which is exceedingly fertile, and which is kept under a high state of cultivation. The island is a limestone formation, of no very great depth of soil, as a rule, except in the Sweet Valley, where, in the track of an old moraine, is an alluvial deposit which constitutes its richest portion. As an offset to this, in some portions there is so thin a covering of soil that cultivation is not attempted, and the land is given up to quarries.

Of the entire island about twelve hundred acres are now in vines, the cultivation of which, and the manufacture of wine, constitute the chief employment of the people. The population of the island is equal to about one person for each acre of vineyard; and right here it may not be out of place to say, that I have rarely found a community of equal extent, where there seemed to be such universal and average thrift. There may not be any great individual wealth, and there is no excessive individual poverty. The homes are modest, but comfortable. There is land enough to afford each family a homestead, and employment sufficient to enable each one to make at least a comfortable living. It is to the grape industry more than anything else that this happy condition is due. There are few large vineyards under single ownership—none, I think, of more than forty acres—while the great bulk of the land so cultivated consists of five acre and ten acre tracts, and from that to little patches here and there in the home yards and gardens wherever space and soil will allow. The principal varieties grown are Concord, Catawba, Ives and Isabella. These combine to give a long fruit season, during which great quantities of grapes are shipped away to various markets. The bulk of the product, however, is manufactured by the various wine companies

which have establishments upon the island; this gives a very good near market.

While there are extensive vineyards upon all the adjacent islands, and all along the lake shore from the city of Sandusky, east, the industry may be said to have originated—so far as this section is concerned—upon Kelly's island, and flourished there for ten or fifteen years before obtaining much foothold elsewhere. Now, while the industry is extensively pursued all about them, the growers upon this island still claim that they grow the *best grapes* produced in America. The island is certainly fortunately situated, in many respects, for grape culture. In the first place, the limestone soil is so strong that vineyards which have been producing for thirty years, without being fertilized at all during all that time, show as yet no diminution of vigor or productiveness. During recent years, the vine growers have been experiencing considerable trouble from mildew and rot, but are now sucessfully battling this by spraying the vines with a solution of sulphur and copper. In vineyards where this has been practiced in part, one could at a glance detect the difference between the rows which had been so treated and those which had not. After soil, the next advantage given to this spot by nature is the climate. Winter lingers long hereabouts, and for a fortnight after the buds have come forth upon the mainland they still lie dormant here. Ice drifts down from the northern shore of the lake, keeping the water and the air cold. Not until the ice is gone does the temperature rise to a point sufficient to start vegetation, so that the buds are not out in time to be nipped by unseasonable frosts; and after the water has once become warm it operates to hold frost in check. This influence, in turn, is felt until late in autumn, prolonging the ripening season for the late varieties. The curtailment of the crop by mildew and rot has not been an unmixed misfortune, as the growers who have given their vines proper treatment, and thus saved the crop, have profited by the higher prices obtained, which has much more than offset the additional cost of cultivation. Delaware, which sold last year at three cents, brought five cents this year, and Ives and Catawba three cents, againts two cents last season. Those who grow grapes for shipment estimate the cost upon an average crop at one and one-half cents a pound; this includes baskets, packing, freight and commission. As an average crop equals about two tons, it may be seen that at above prices, the business is quite profitable. Those who sell to the wine makers are at much less expense, as the fruit is placed in barrels as gathered from the vines and hauled direct to the presses. The cost of cultivating in this instance is placed at $25 per acre. Much of the work, such as tying, picking and packing, is done by women and children, which fact helps to reduce the cost. A feature worth noting in this connection, is that a carefully cultivated patch of osier willows is found upon each vineyard, the green rods being used for fall tying of the vines. It occured to me that with a little extension of the osier patch, basket-making might be profitably added to the other industries of the island affording employment during the long, cold winters, when many of the people, must from force of circumstances, remain idle. The spring tying of the vines is done with rye straw, and patches of rye are likewise cultivated for this purpose. The rye straw might also be further utilized in the manufacture of hoods for packing the bottled wine. These straw hoods are now wholly imported in bales, prepared ready for use. Whether the new tariff bill has protected this minor industry I am not prepared to say; but, if not, it might well have done so.

There are numerous wine cellars upon the island, the largest of which has an annual capacity of 500,000 gallons. The original cellar is 138 feet long, 37 feet wide and 16 feet high, The sides are of solid rock, the cellar having been quarried out between two parallel seams and an arch then sprung across to form the roof. This room is the main fermenting cellar, and has a capacity of 150,000 gallons.

There are six other cellars, each 125 feet long, 22 feet wide and 10 feet high, and in addition there is room overhead, in the superstructure, equal to three more cellars of the same capacity as those last mentioned.

To this, and other similar establishments, the grapes are carried as they are gathered from the vines, and washed at once in order that the fresh, fruity flavors may be most perfectly retained in the juices. The new wine, as it leaves the press, is conducted by pipes to the still wine cellars, into casks holding from 1,500 to 6,000 gallons each. That which is to be converted into champagne remains here until it has passed a sufficient fermentation for bottling; then it is bottled and put into a warm room where the further fermentation is permitted to go on until the bottles begin to break; then it is removed to the champagne vaults where it remains with only an occasional handling until "ripe." It is then placed on the clearing tables (or sediment racks) inclined with the cork end down, and shaken by hand with a rotary motion twice a day, for from three to five weeks. By this means the sediment becomes entirely deposited on the cork. The bottles are then taken to the finishing room, the corks taken out together with the sediment, a dose of syrup (made from pure sugar crystals dissolved in old wine) added, recorked, wired, labeled, foiled and packed for shipping. During the two years which these processes require, each bottle is handled more than two hundred times; and, as much of the handling must be done by especially skilled workmen, one may see some reason for the high values set upon the best champagnes.

While a considerable business is done in champagnes and bottled still wines. the product is mainly sold in bulk, and every steamer going from the islands carries as part of its cargo, barrels and casks of various sizes, containing the juice of the grape. The average production of fruit is put at about 5,000,000 lbs., which should produce about one-third of a million gallons of wine. Statistics show that the shipments are much greater than this, and the seeming inconsistency of the figures can only be explained upon the supposition that

the wine may be occasionally "stretched." But as the Ohio law now compels that all pure wines shall be plainly marked upon the package, with the word "pure," one who exercises reasonable caution need not fear that he will obtain anything besides a pure and wholesome fruit juice when buying these products.

Of the beauty of the island I have said little, and indeed I could do it but poor justice. The vineyards are the island's first glory; and from a slight eminence near its center, one can see at a glance almost the whole twelve hundred acres, a wonderful example of the bountiful richness of mother earth. There are few things in nature which appeal to the sentiment as a vineyard does. From the earth, through the vine, comes food and drink; the eye is pleased with the colors of fruit and foliage, and the rich bouquet of wine pleases still another sense.

From this prospect we turn to another, as different as night is from day. On the left of this fertile expanse are the bare walls and basin of a great quarry from which men dig stone, that houses may be builded. It seems a gross, coarse occupation beside that of cultivating the vine. But men must have houses to live even more than wine to drink! Then looking further afield we come to the third occupation of these island dwellers—that which calls men to go down to the sea in ships. This is a stranger contrast still, from the gentle arts of the soil, to the turmoil and danger of the lake. Erie's surface lies calm enough now, but let the winds blow and she can rage like a lion. At the wharf I see a sunken schooner. Her masts and bowsprit show, but all else is covered; she has "made port" in a double sense, and as the waves beat over her and against the shore, they emphasize the difference between the callings of men. Happy is he whose lot it is to spend his days in such a spot, peacefully and contentedly pursuing those arts "which doth mend nature." "Bosomed deep in vines," he may care little how the world wags without. At night, after a day among the vineyards, I strolled along the beach while an eager, rippling wind blew fresh in my face. Ten days before, I had breathed the soft airs from the Mexican Gulf, while at my back were the vineyards of Scuppernong and gnarled fig trees. And I could not but meditate on the boundless choice that our broad land affords to all who would cultivate the earth and gather the fruits thereof. And as I meditated, "more the wonder grew" that men do not more avail themselves of these abundant opportunities. JAS. K. REEVE.

## GRAPES IN FLORIDA—NEW AND OLD VARIETIES.

WILL GIVE the results of my observations in regard to grapes during the last two years, that is, since I published my little treatise on "Grape Growing and Wine Making in Florida." During that period, several hundred acres have been planted in grapes, consisting mostly of market varieties, among which Niagara entered for about two-thirds, Ives, Delaware and White Diamond forming nearly all the balance.

In our southern counties Niagara is said to hold its own, while in our clay soil of middle Florida it already shows signs of decline. This, however, may be attributed to the fact that Niagara vines seem to have suffered more from the frosts of last year and this year than almost any other variety.

We had this year, growing side by side, Worden, Niagara, Ives and Elvira, all one-year-old plants set out in the latter part of February, and having made about the same growth when this April frost came. Worden vines were all frozen to the ground, two-thirds of the Niagaras badly injured, Ives and Elvira hardly touched at all. Of course, I do not infer that we should not plant any Niagaras or Wordens. I try simply to explain the weakness of our old Niagara vines. All wood from such sickly vines ought to be discarded by the propagator. Sound wood from a healthy vine only, will make a healthy plant.

NEW VARIETIES.—Among the multitude of new grapes lately introduced, I will only mention those having already acquired a certain notoriety. In my praise of some and criticism or disparagement of the others, I want it understood that I am guided solely by my wishes to see the grape industry prosper in Florida.

*Eaton.*—Introduced a few years ago. On our grounds Eaton does not seem to be as strong a grower as Concord. In Florida, on account of our long distance from markets, it will never be but an amateur grape, although as such, it should be in the collection of all grape growers.

*Green Mountain.*—This grape has been advertised extensively, and we all know that eulogistic editorials generally accompany well-paid advertisements. I had never seen the Green Mountain vine before I set out a dozen plants this spring; but I happened to see the fruit once, and it was far from looking like a hot-house grape! The bunches were long and straggling, the berries hardly medium, and of a dull green color. I was taken to task by interested parties, through an editorial in a New York trade journal for not admiring their new production, and accused of being "afraid of the competition of this early and delicious grape." Now, I I claim for each nurseryman the right of expressing his opinion in regard to the quality and beauty of a fruit or vigor of a plant, just as he sees it, and not through the originator's eyes.

Some Green Mountain grape vines have been planted this season throughout the state; let us see how early and productive they prove to be, and how they compare with White Diamond and Niagara in quality and market value. In two years from now we will be better pre-

pared to give an opinion; vines will be cheaper, too. In the *Horticultural Art Journal* of September, 1890, I read: "Ellwanger & Barry, of this city (Rochester, N.Y.) make the assertion, backed up by what seems undisputable testimony, that 'Winchell,' which they have been offering in their catalogues for the past five or six years, and the Green Mountain are identical, and come from the same source. In such a case, what becomes of the trade-mark, copyright, etc. ?"

*Moyer.*—Originated some eight years ago in Lincoln county, Ontario, Canada, and is said to be a cross between Delaware and some purely native variety. At first sight, however, any one familiar with Canada grapes will see that Moyer must be a cross between Delaware and some of Arnold's hybrids, probably the very early grape Brandt, which accounts for its earliness and also its propensity to mildew. The Moyer vines I bought two years ago were very small, propagated from one eye cuttings, and although ornamented with the great seal of the company, they did not thrive. Three or four were killed by the freeze of March, 1890; the others are looking sickly, with a poor showing of fruit. The leaves and young shoots are affected with anthracnose. Among the testimonials printed in the circular of the Moyer, there is not one from outside the province of Ontario, Canada.

*White Diamond.*—This is undoubtedly the most promising of all the new varieties of grape vines, and it is planted much more extensively than any other, owing to its now well-established reputation of being a strong growing and heavy bearing vine, producing the best American white grape in existence. Thousands of acres are going to be set out next season. A new company, known as the Boyer Diamond Grape Company, has been formed by capitalists of Rochester, N. Y., where this variety originated, and expects to set out, this spring, 100 acres at Farmer Village, Seneca county, N. Y.

E. P. Powell, of Oneida, N. Y., writes in *Popular Gardening:* "Diamond, a superb white grape, with splendid foliage, splendid bunches, and a large berry. Diamond is like wine. It can be recommended in highest terms." From a correspondent in the *Rural New-Yorker:* "Diamond is now well tested, and proves good everywhere." From a correspondent in *Popular Gardening:* "Diamond has fruited with me three years and is so superior to any other white grape we have, that such others are left in the shade in point of quality." In the *Horticultural Art Journal*, twenty-five nurserymen having made an investigation of the White Diamond vineyards, near Rochester, came to the following conclusion: "We regard this (Diamond), all things considered, as the best white grape we have seen this season."

Now how about the Diamond in Florida? Over 4,000 vines were planted last season (I mean in the spring of 1890), and most of the parties who set them out report that they are pleased with their growth. Mr. George Zellhofer, of Grand Island, Fla., says: "I have both Niagara and Diamond growing side by side. The Diamond is fully as healthy as the Niagara, and in starting out this spring, it is in advance of the latter." Mr. Geo. D. Watson, of Windsor, Fla., writes: "My Diamond grew finely—better than any of my other vines." Around Orlando, some Diamond vines seem not to have given satisfaction, but they had probably been frozen a few days after planting, which weakens some varieties of grape vines forever. I purpose to investigate the matter, and next month visit all the Diamond vineyards in the state. In my own vineyards, the growth of Diamond vine surpassed that of Niagara of same age, being, next to Old Fort, the most vigorous of all my vines of the labrusca family.

*Old Fort.*—This grape, found wild by a friend of mine in the mountains of North Carolina, should not, perhaps find a place in this nomenclature of valuable novelties, as it has no pretention to being very fine, and *looking like a hot-house grape;* but it is so early, so vigorous and so prolific that it will prove of some value to those who cannot raise the finer sorts.

The two last seasons have been very unfavorable for the testing of new varieties, on account of severe spring frosts, which injured the young vines before they made roots strong enough to ever recuperate from so much waste of sap. Fortunately, such unseasonable frosts are of rare occurrence in this climate, and should not discourage any grape grower.

My advice to beginners in grape culture is to go slow in the planting of new varieties not yet sufficiently tested in this state; try those which are said to do well elsewhere, and plant largely only of those you have seen giving satisfaction in your section.—*E. Dubois, before last meeting of Florida Horticultural Society.*

# BURNING OVER STRAWBERRY PATCHES.

HOW IT IS DONE—EXPERIENCES PRO AND CON.

THE destruction of weeds, insects and fungi among strawberries by burning over the beds has come to be a common practice in many places. The following notes, adapted from recent correspondence in the *Fruit Growers' Journal*, will answer many questions for our readers.

A. Robinson, in eastern central Illinois, gives the following advice: The burning over of strawberry fields after fruiting is very generally practiced here, and with unvarying success, We are not troubled here with crab grass to any great extent, at least not nearly as much as growers farther south, and our fields go into winter quarters clean. We therefore have no occasion to burn the ground previous to fruiting. The warm spring rains, however, bring along an abundance of wild vegetable growths, which, at the end of the fruiting season, have to be killed out by cultivation or destroyed by fire. The latter is much the better, if the conditions are right, as the fields are purged of noxious insects and fungi by the ordeal. I speak in a qualifying sense, because the season may not be propitious. If the ground is dry and the weather hot, we simply mow off the growths as close to the ground as possible and wait for the ground to be wet, and then wait for the dead stuff to dry out. If a stiff wind is blowing lengthwise of the rows, so much the better. The ground will look like burnt prairie. Not a green thing will be in sight, and you will wonder if you have killed the whole patch. Wait; in a few days you will see here and there a green leaf, and soon the rows will be green with fresh foliage—enough for all purposes. The weak plants will be killed and there will be a survival of the fittest. Then we cultivate and renew. The second bearing is always the best if the cultivation is thorough and not too many plants left to choke each other.

Late winter burning on new beds I have seen practiced, and practiced myself, while engaged in fruit growing in Union county during nearly twenty years. In some conditions it is safe and advisable; in others it is disastrous, as I found to my cost. If cultivation is suspended early and the crab grass left to mulch the ground, and no straw used, the dry stuff can be burned with no detriment to the plants, under the following conditions: Either let the ground be slightly frozen or wet and cold. Take a time when there is a stiff wind; fire on the windward side and in a few moments the blaze will be racing across the field, and the job is done. There are no accumulations to stop and hold the fire long enough to injure the roots, nor damage the fruit crowns that are then in embryo or yet hugging the ground very closely. Unless these conditions can be met, it were better to let the field alone.

The first time that I knew of this being practiced was by an old man named Jesse Fly, living near Makanda, and whose grandson, Riley, now occupies the place. The old man had no experience in the matter, but he had not used straw for mulching. The patch was covered knee high with a thick carpet of dry grass. He burned off the grass when the ground was slightly frozen over, and the neighbors thought the field dead. But the biggest and best crop of Wilsons that I ever saw grew on that ground, and I lived during the best days of that remarkable variety. After that the same thing was tried in the neighborhood, sometimes with success, but often with failure. It would be too late, or the ground too dry and warm, or there was not enough wind to blow the fire across quickly enough. But with the ground frozen or cold and wet, and a good breeze, it never failed. We mulch with straw, and the ground remains covered till after fruiting. So we cannot burn early, unless we desire to kill nine-tenths of the plants. With one exception I never saw a field injured by summer burning, and then an extremely dry, hot spell followed the burning. To guard against this possibility many use the spring tooth rake and scratch the ground unmercifully, then haul off the debris and burn it.

R. H. C. Mitchell, of Tennessee, has had this experience: I do not think it advisable to burn off the grass in this state, from the fact that it causes a later ripening of the strawberries. That is my experience. I had a portion of my patch burned over one season and the plants did not do so well as before being subjected to the fiery scythe. The same season the grass was very thick on the ground. I started to rake it off with a hand rake, and could make but little headway. Finding that I had undertaken a bigger job than I had calculated on, the horse was hitched to a spring-tooth hay-rake and it worked like a charm. The patch was raked both ways, up and down the rows and across the rows, and after the raking it looked like a garden which had been well raked by hand. It was about the 1st of March, and how those berries did grow! I made a mistake, however, in throwing the raked up grass too near a row of thirty LeConte pear trees. When the grass was fired the wind arose with the fire and burned the whole row, but they started from the roots, and some of the shoots grew to the height of seven and nine feet that year.

Here is another plan that will rake straw, leaves, chips, or any other trash. Take an oak scantling, three by four and four feet long, fill it with $\frac{5}{8}$ harrow teeth, three inches apart, then two other pieces of the same length

and make in the shape of a V harrow. Let the teeth set about 45 degrees forward, and let the two cross pieces come in about twelve inches from the end of the rake; saddle them on and let one of the teeth go through where they are saddled on, take the wheel off of your wheelbarrow and place it in front, letting the axle through both beams just the same as the wheelbarrow beams were. Now place a piece behind the wheel to hold the beams, then get two plow handles and put them on your wiffletree with a rope (an iron rod is better). As the horse pulls the rake until it gets full you have to stop him, lift your handles and as the trash drops down you push forward same as a wheelbarrow until the teeth are clear, and then let down.

I cleared some very thick timber land, for which purpose it beats hand rakes a great deal. I raked the land both ways and sowed grass without breaking it and left the ground in good condition.

# THE CANNA.

ONE OF of the most popular foliage plants of the day is the canna, and most justly so. A bed of an assortment of cannas, their broad, musa-like leaves and flaming spikes of bloom, give an air of tropical luxuriance to the plainest yard, thus relieving the tiresome sameness too often found in our gardens. How long will it take us to learn that fine foliage is in every way as desirable as fine flowers? Certainly a gratifying change can already be seen. But a few years ago flowers alone were considered worth growing, and each flower garden seemed a copy of some other. Now, thanks to a more enlightened taste, flowers are relieved from monotony, and their beauty actually enhanced by contrast with leaf effects alone, whether wrought out in intricate mosaic designs with echeverias or coleus, or seen in the less formal beds of ricinus or canna; and the time is near at hand when the coleus and caladium, the achyranthes and the canna will be as universally used as the geranium and verbena are to-day.

Some of our foliage plants have little to recommend them beyond their bright coloring, and of that the eye soon tires. Not so with the stately canna, with its varied gifts of fine habit, handsome foliage, bright flowers, and perfect coloring; while over and above all this, it is of the easiest culture, only asking to be well fed. The canna is of most accommodating habit and can be grown out-doors or in the house, in sun or shade, though its rankest growth, and deepest coloring is obtained by full exposure to the sun. The host of insects that are the plague of many plants rarely attacked the Canna.

If these things are true, and they undoubtedly are, why do we see so many stunted specimens? The answer can be written in four words, viz: *because they are starved.* The cannas are gross feeders, and food they must have in abundance, if they would thrive. The soil can scarcely be made too rich with manure, or the ground spaded too deep. In a bed suited to them, how the roots do revel! No weed need be feared, when once they fairly get to growing, for the greedy roots will take possession of every inch of the ground, and the huge leaves lapping overhead will take sole possession of the air and sunshine. It is of no use to plant a border to a bed of cannas, unless the new dwarf cannas, *Helianthus multiflorus*, or some similar plant that grows rank enough to hold its own, is chosen. Nor should the plants be crowded closely together in border or bed. The canna is a plant that needs plenty of room for its best development, and the plants should not be placed closer than two feet apart, and the taller sorts are all the better if the space is increased by an additional foot.

As to the question of the best variety, that depends altogether upon individual taste. The writer's favorite is the Ehemanni, which, while it has been over-praised as a flowering plant, deserves every good word that has been said in favor of its foliage. Its habit is grand, its leaves superb, its color a clear, soft green, of which one never tires as of the dull bronze and dingy purple cannas so often planted because they are novelties. Its one fault is that high culture is necessary to secure good specimens. The starved plants are no finer than any common uncared-for seedling. Many of the dwarf kinds have most beautiful flowers, almost equal in size to a gladiolus bloom. These dwarf sorts, while not so fine for foliage beds as the taller ones, are beautiful for borders and make especially fine pot plants for room decorations with their massive leaves, and their large heads of bloom.

Our American florists catalogue less than a dozen varieties, but the European dealers send out long lists of fifty or more, and the prospective purchaser is quite bewildered by the glowing descriptions. There are cinnabar, cochineal, cerise madder, purple, and brown reds, canary, straw, golden, saffron, and orange yellows, together with "gooseberry color," whatever that may be, salmon, crimson, scarlet, capucine, and violet. Surely there is no lack of variety here!

There has been much complaint that cannas rot during the winter, but if large clumps of these plants are lifted in the fall and put, *undivided*, in a dry cellar, and not a drop of water given, they will remain sound and plump, and will sprout of their own accord when spring comes. I have seen clumps that had remained unwatered in a cellar six months, that had formed strong shoots fifteen inches high before being brought to the light. Very small plants should be kept through the winter in a growing condition.

*Mo.* MRS. LORA S. LAMANCE.

# THE ORNAMENTAL CHERRIES OF JAPAN.

FESTIVITIES OF THE CHERRY SEASON IN THE ISLAND EMPIRE.

THE MERE mention of the word cherry calls up vivid pictures of the luscious, long-stemmed, juicy fruit, which from childhood has been a favorite with most of us. And when we speak of planting or cultivating the cherry tree, we have the same luscious fruit in mind as the ultimate reward of our efforts. The utilitarian idea lies uppermost in thoughts of the cherry. The tree and the fruit stand in the relation to each other of cause and effect.

It may therefore surprise the practical American to learn that the Japanese plant cherry trees very extensively, and yet never gather a cherry. Their trees bear no fruit; they plant them for their flowers, and for them only. With our firmly-rooted idea of the function of a cherry tree, it may not be easy to prove that their trees are worthy of our attention; and yet I venture on the task in the hope of gaining a few converts. I should not despair of success if it were possible to impart to the reader a realization of a tithe of the charm of the cherry flower season in Japan, and of the enthusiastic admiration which the tree then inspires. All classes of society, from the emperor to the coolie, rich and poor, old and young, all are enthusiastic admirers of the cherry flowers. The trees are planted in groups in the parks, in temple groves, in avenues, lining many of the principal streets and roads, singly and in clusters in the gardens and yards about dwellings; they are dwarfed and grown in pots of all sizes, and trained in many forms and with pendulous branches; they are favorite objects with artists for conventional representation in paint, in lacquer, in metal—everywhere, both in nature and art, one finds unmistakable evidence of the innate love which the people have for this flower. The trees bloom during the balmy month of April, when the raw and chilly winds of winter have given place to the warmth and calm of cheery spring, and all nature leaps into renewed life.

Invited by the irresistible charms of nature, the people collect in gayly dressed throngs under the pink clouds of cherry blossoms, and there abandon themselves to jest and merry making. In Tokio, Ueno Park and the street called Mokojima are especially renowned for the charm of their cherry blossoms, and on pleasant days these places are visited by tens of thousands of people, who have banished care and are bent solely on enjoyment, and they form, perhaps, the happiest collection of humanity that the world ever sees. It is a motley but always good-natured and orderly throng. The grave savant, the spectacled student, the flushed and prosperous merchant, the careworn poor, the decorous matron, giggling maidens and hilarious children—all are there, with laughing faces and in holiday attire. Mokojima is particularly a favorite resort. It is a long but rather narrow street, which borders the river Sumida. It is thickly lined with cherry trees, and when they are in bloom, numerous small and temporary refreshment stands are put up on the land side, in which the pleasure seekers stop to rest and smoke, sip tea, eat sweetmeats, drink *saké* (rice wine), and watch the surging mass of humanity moving by, under the slowly swaying clouds of bloom. No pen can do justice to the scene. To be fully realized, it must be seen.

The cherry blossoms also usher in a series of private festivals, which ministers of state and the mighty in the land who glory in the possession of cherry groves give to their friends. Even his Imperial Majesty, the mikado, called by his subjects O'Tenshi, the son of heaven, is affected by the general impulse the blossoms impart, and issues a mandate to the effect that on a certain day, if it does not rain, he and the empress will give a cherry-blossom festival in one of the imperial parks. Large, handsome cards inviting the guests are issued several days beforehand. The guests comprise all high officials of the government down to a certain rank, the *corps diplomatique*, foreign employees of the government at the capital who receive a salary of 300 yen or more per month, high officers of the army and navy, and representative officers of foreign war vessels, which happen to be in the Yokohama harbor. The writer had the honor of attending three of these parties, and can therefore speak from personal observation. Usually a similar party is given in the fall when the chrysanthemums are in flower. In each case the ceremony is the same. At the appointed hour the guests collect in some pleasant place, not far from the entrance, the foreign representatives and high officials on the right side of the walk and the remainder on the left side. Presently bands, stationed about in the park, strike up the national anthem with which the emperor is always greeted. Dressed in military uniform and followed by only a few attendents, the emperor passes between the two groups of waiting guests, stopping, however, to shake hands with the foreign ministers, and he is followed at an appropriate distance by the empress and a bevy of court ladies. When the royal hosts have passed, the guests follow, and to the sounds of music alternately caught up by the bands, stroll through blossom-shaded paths, over wistaria canopied bridges, by swelling mounds studded with brilliant maples, until finally a flower-decked pavillion is reached. Here a long table is spread with a truly royal collation. Their majesties and excellencies are seated at the upper

end, while the majority of the guests stand up or are seated at little tables scattered about on the lawn outside. Ample justice is always done to the viands, and wine, wit and humor flow freely. Here one may hear at once nearly every language of any importance under the sun. The repast being finished, their majesties retire to their carriages, and the guests give themselves up to the charms of the flowers for the remainder of the afternoon.

FIG. 1. NIOI-SAKURA.

Having thus seen how the cherry blossoms charm the lives of all classes of Japanese people, let us now give a little closer attention to the flowers themselves.

The flowering varieties belong to the species known as *Prunus Pseudo-Cerasus* (*P. puddum*, Pl.), Jap., *Sakura*, *Yama-sakura*. It forms a large tree, which is wild in the forests everywhere in northern Japan, and in the mountains of the south. It resembles our cultivated sweet cherry trees in growth and appearance, but differs from them in the flowers and fruit. The former are often panicled, and the latter is so small and insignificant as to be quite useless. The wood is hard and fine grained, and is often used for carvings and cabinet making. It has been a favorite ornamental tree with the Japanese from time immemorial, and under culture a great number of flowering varieties have originated. These varieties are propagated by grafting on seedlings of the wild stock. Aside from the flowers there is much difference in the growth and general appearance of these varieties. Some are upright, stiff and straight in habit, while others are spreading, short jointed and crabbed; and others again have slender willowy shoots, which lend themselves readily to the various forms in which dwarfed and pot-grown specimens are often trained. As a rule, the earliest varieties to bloom are single, and the large and very double flowers are among the latest to appear and remain the longest, though there are some notable exceptions to this.

Flower and leaf start at about the same time, but the leaf grows slowly at first, and the tree does not usually

get green till the flowers are ready to fall. The early single varieties remain in bloom only a couple of weeks, and begin to decline about the middle of April. Most of the double varieties are in the zenith of their glory during the latter half of April, and some of them persist till well into May. All of them are charming, even in their dissolution when the falling petals turn summersaults through the air in clouds, and literally strew the pathways and the people with flowers.

Following is a list of choice varieties, which, however, covers only a fraction of what may be found there. Those represented in the engravings have been selected to illustrate the leading types.

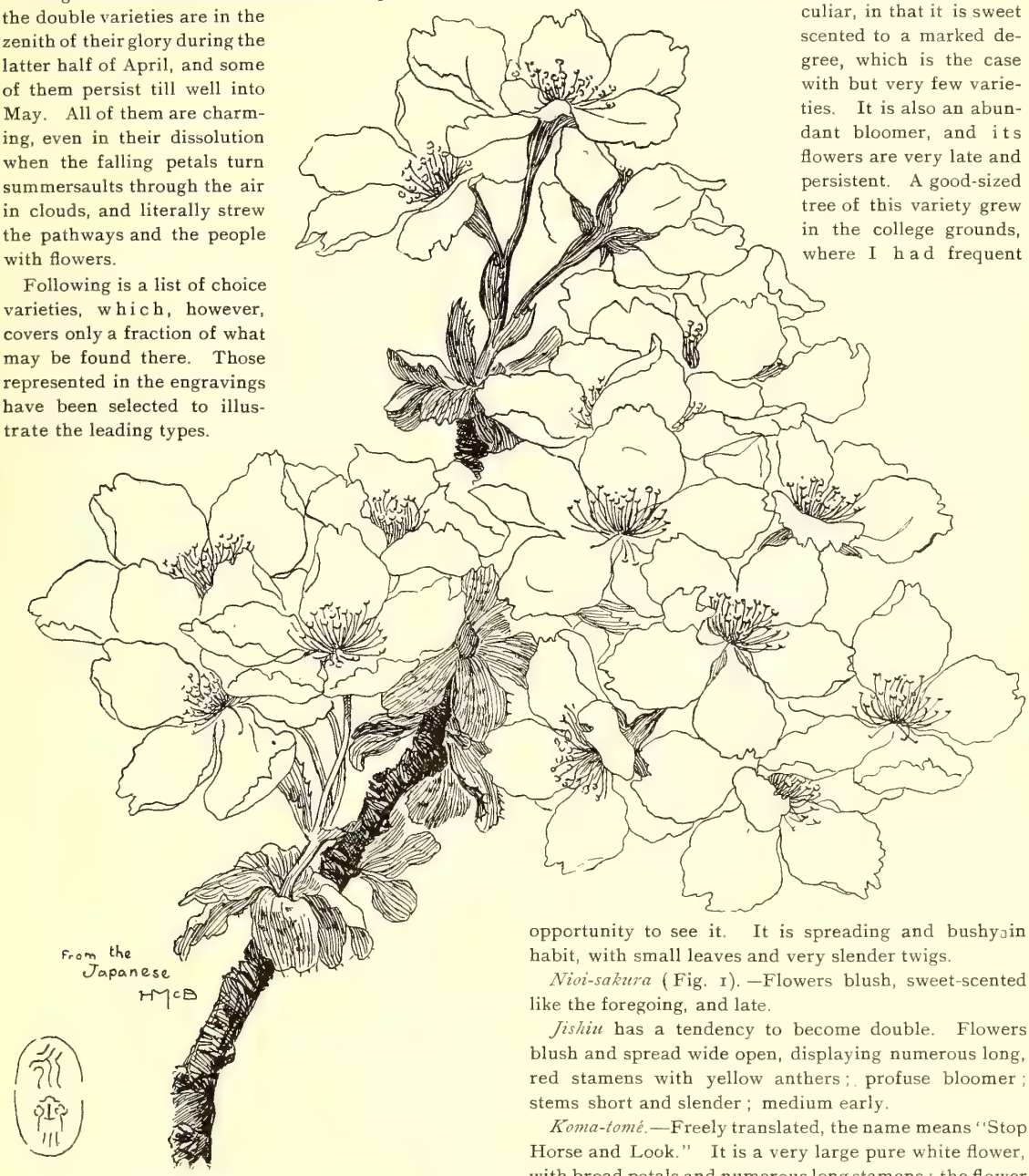



FIG. 2. KANZAN.

SINGLE-FLOWERED VARIETIES.

*Higan*—Flower small, rose colored.

*Yama-Higan*—Flower white, small.

It should be stated that these two varieties probably belong to *Prunus subhirtella*, Miq. Both are among the earliest to bloom; the flowers are small, the growth slender, and on the whole they resemble that species more than they do the flowering cherry proper.

*Kanzan* (Fig. 2).—This plain white variety is peculiar, in that it is sweet scented to a marked degree, which is the case with but very few varieties. It is also an abundant bloomer, and its flowers are very late and persistent. A good-sized tree of this variety grew in the college grounds, where I had frequent opportunity to see it. It is spreading and bushy in habit, with small leaves and very slender twigs.

*Nioi-sakura* (Fig. 1).—Flowers blush, sweet-scented like the foregoing, and late.

*Jishiu* has a tendency to become double. Flowers blush and spread wide open, displaying numerous long, red stamens with yellow anthers; profuse bloomer; stems short and slender; medium early.

*Koma-tomé.*—Freely translated, the name means "Stop Horse and Look." It is a very large pure white flower, with broad petals and numerous long stamens; the flower stems are long and panicled or branched; blooms early.

*Yoshino-sakura.*—Pure white, medium early flower.

*Beni-ito-sakura.*—Flowers small, bright red, early.

DOUBLE-FLOWERED VARIETIES.

*Fuzan-Fukun.*—(Fig. 3). The flowers of this splendid variety are very double reddish-pink in color, almost globular in shape; continues in bloom till late in May.

*Botan-sakura* has reddish flowers, very large and double, which are at their best in the latter half of April. It is not so abundant a bloomer as some other kinds.

*Ko-Fugen.*—This variety has the largest flowers of any that has fallen under my observation. They often measure two inches or more in diameter, and are very double and very late. Color reddish-pink, growing lighter with age.

*Kode-maru* (Fig. 4, p. 401) is peculiar in that the flowers appear in very dense clusters at intervals on the branches, and being short-stemmed, they are crowded into balls, which give the tree an unique appearance. In color they are light pink; the petals are narrow, and only moderately double.

FIG. 3. FUZAN-FUKUN.

*Yo-Kihi* has very large and very double flowers; color rose-pink. The flower stems are short, but the flowers are more scattered than in the *Kode-maru*, hence they do not form balls as it does. It continues in bloom till late in May.

*Hakumai* blooms early, has very large blush flowers, turning almost white before they fall off; semi-double, large petals; one of the best.

*Beni-naden* has a large, rose-colored flower, with very large, sprawling petals; blooms medium early.

*Giyo-iko* is remarkable in that the flowers are of a clear, light green color when they first expand, and gradually become tipped with a pinkish tinge. It is the only variety I have seen of this peculiar color. They are very large and often panicled, on long stems. The branches of the tree are slender and rambling.

*Fugen-zo*, a very popular variety, has very double, rose-blush flowers on long stems, and is a prolific and long continued bloomer. It is one of the handsomest kinds to be found there, and is planted perhaps more generally than any other kind.

*O-chio-chin* is a large-flowered double white variety; very fine.

*Yaye-sakura* has small rose-colored but very double flowers.

*Asagi-sakura*, also double white, but tinted with rose.

*Kuruma-gayeshi* is white, shaded with pink, very double.

*Isè-sakura* is red on the outer edges of the petals, but gradually fades into white with age.

*Taizan-Fukun* is a handsome double white flower, shaded with pink.

*Hisakura* has a large, double, red flower.

*O-temari* is very large, rose colored.

This list could be much extended, but these include their best varieties. There can be no doubt that these cherries will do as well here in almost any part of America as they do in their native country, and as ornamental trees for the lawn and roadsides, they will, while in bloom, surpass in beauty anything we now have that blooms in early spring. Once before the public, they will not lack appreciation.

There are two ways of importing them—either as scions to be grafted on cherry stocks here, or small trees already grafted. The latter is to be preferred. Cherry grafts are uncertain at all times, and after they have crossed the Pacific, too many would fail to grow. To

succeed at all, they should be cut early in December, packed at once in damp moss and forwarded by express, so they can reach their destination before the end of January. On the other hand, young trees, if well packed, can be forwarded by freight at much less expense, and with greater assurance that they will grow on arrival. The native nurserymen are not good packers of trees for long trips. They lack experience in such shipments,

FIG. 4. KODE-MARU.

and they fail to comprehend the trying conditions to which the stock will be exposed. In the moist, mild climate of their native land, everything grows, no matter how rough the treatment it receives. In early spring it is of almost daily occurrence to meet gangs of men hauling large trees, bursting into flower, and almost completely deprived of their roots, intended to be planted elsewhere; and I never knew one to fail to grow. The same is true of trees of all kinds They plant them when convenient, regardless of the season.

C. C. GEORGESON.

## JAPANESE FLOWERING CHERRIES IN NEW ENGLAND.

There appears to be some reason to doubt whether all the ornamental Japanese cherries usually classed as varieties or forms of *Prunus Pseudo-Cerasus* really belong to one species. Among the many names under which the plants are sometimes offered in catalogues, the following may be mentioned, besides the usual *flore pleno* appendages to the generally accepted name. As the plan is a cherry and many authors still adhere to the generic name of Cerasus, we find it passing under the names of *Cerasus Pseudo-Cerasus rosea plena*, *Cerasus Sieboldi* and varieties *alba plena* and *rosea plena*, *Cerasus Capronia flore rosea plena*, *Cerasus serratifolia*, *Cerasus Lannesiana* and *Cerasus Watereri*. Plants have been received as *Prunus acida*, and they are also sold simply under the less pretentiously sounding names of Double Chinese Cherry, Double Japanese Cherry, Double Rose-flowered Cherry, etc. This chaos may very easily be divided into three or four lots, according as the flowers are single, semi-double or full double, and with reference to their white or rosy color; but a critical examination shows much variation and diversity in the foliage. *P. Pseudo-Cerasus* does not appear to be as well known in this country as it deserves to be, but where it has been planted it has often been under the impression that it will speedily become a large, symmetrical tree like the double-flowering garden cherry. This, however, is hardly the case in this latitude, for the Japanese species appears small and shrub-like in comparison, and is without the vigor of the common kinds; and, moreover, it is apt to be misshapen, unless carefully trained. It is, however, well worth cultivating for its flowers, which are among the most beautiful of ornamental cherries we can grow. In the climate of the region about Boston the plants are perfectly hardy, where planted on well-drained soil and not forced into

too rank growth. One of the most beautiful forms to select is that known as *Prunus* (or *Cerasus*) *Watereri*, which has large, double, rosy-red flowers.

With regard to *Prunus Japonica* there also appears to be a good deal of confusion in the use of the name. The single-flowered type is rare in cultivation. The ornamental merits of these plants are too well known to need description here, but a word may be said in regard to their hardiness in Massachusetts. Many gardeners class these plants as of precarious existence or only half hardy, but opinion and experience vary much on the question. When planted in cold or damp situations, the branches and stems are very apt to be severely killed back in winter; but where the situation is not too exposed and the soil is light and pretty dry, so that the wood ripens well before frost, we have known plants to stand for many years without showing any injury whatever either in bud or branch.

The plants are often grafted, which gives them a better shape; but as they are generally not very long-lived, we would recommend the amateur to have plants on their own roots, in which case layers may be made and new individuals obtained without any trouble and whenever desired.

*Arnold Arboretum.* J. G. JACK.

FIG. 5. PRUNUS PSEUDO-CERASUS.

## SPECIES OF JAPANESE FLOWERING CHERRIES.

NOTES FROM A GARDEN HERBARIUM.—V.

ALTHOUGH the Japanese cherries have been well known in this country for a long time, their proper botanical names appear to be unknown to nurserymen and cultivators. None of the books give the proper names. There are two species in common cultivation.

1. PRUNUS PSEUDO-CERASUS, Lindley. (Figs. 1 to 5.) In general aspect of foliage, this cherry bears some resemblance to the common sweet cherry (*Prunus Avium*). *P. Pseudo-Cerasus*, however, has ovate-lanceolate or elliptic lanceolate leaves, while the sweet cherry has oblong-lanceolate obovate leaves. In the Japanese species the teeth upon the leaves are very small and sharp, each one ending in a callous point, while in the common garden cherry the teeth are coarse and blunt. Fig. 6 is an excellent representation of the dentation of the sweet cherry leaf. These characters of leaf margins will always distinguish the two species at a glance, even in the

cut-leaved varieties. The stipules of *P. Pseudo-Cerasus* are conspicuous, deeply cut or fringed, and they persist for a considerable time. But the best character of separation is in the flower clusters. The clusters of the sweet cherry are compact, and none of the flower stalks are branched, while in the Japanese species the clusters are large and diffuse, the stalks are branched and the bracts are large and conspicuous. This openness of inflorescence is one of the attractive features of the Japanese cherry. Maximowicz separates the cultivated forms of the typical *Prunus Pseudo-Cerasus* as var. *hortensis*, and he says that they differ from the type in having habitually narrower leaves, smaller leaf serratures and larger flowers. "*Cerasus sinensis*" and "*C. humilis*" of nurserymen belong to this species, as does also, apparently, the *C. serratula* of Loudon. Mr. Jack states above that the species also sometimes passes under the names *Prunus* or *Cerasus Capronia* and *P. acida*, but specimens of these plants in my herbarium, as sold by Ellwanger & Barry, are not this species.

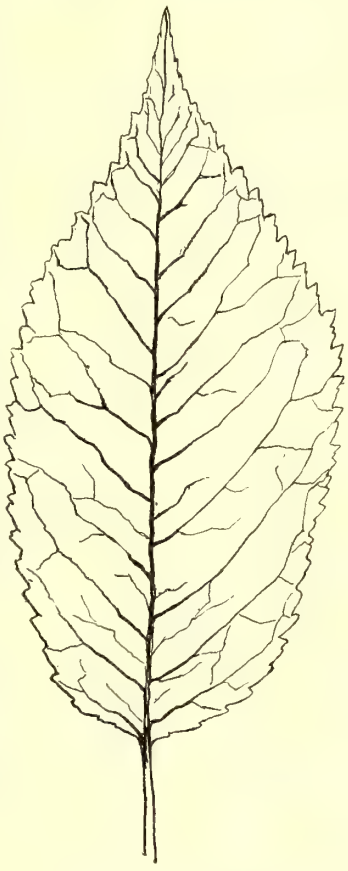


Fig. 6. Leaf of Sweet Cherry.

Last summer I received this species from J. T. Whitaker, Tyler, Texas, who informs me that he imported it four years ago directly from Japan. He is testing its fruit-bearing qualities. He finds the fruit very good, tart like the Early Richmond, and a little larger. It is a light red fruit. The leaves from Mr. Whitaker's trees are more deeply cut than those which I have seen in northern nurseries, very much as in Fig. 1

Var. Sieboldi, Maxim. (*Cerasus Sieboldtii*, Carriére. *Prunus paniculata*, Edw. Bot. Reg. 800. *Cerasus Pseudo-Cerasus*, Nicholson's Illustr. Dict. Gard. 296.) This form differs from the species in having the young leaves and young growths pubescent. In nurseries it is known and sold under the name of "*Cerasus Sieboldii*" and "*C. Japonica*."

All the forms of *Prunus Pseudo-Cerasus* are handsome and interesting, and they should be better known, being among the best of the small trees which are valuable for ornamental planting.

2. Prunus Japonica, Thunberg, (Figs. 7 and 8) is a very different species. The leaves have somewhat the look of small Morello leaves. The pretty white or pinkish small flowers are borne in clusters of two or three, and appear with or just preceding the leaves. I have seen them near midsummer, however. The leaves are small, firm, very dark green, and finely and closely serrate. The detached leaf in Fig. 8 shows the characters well.

*Prunus Japonica* is a weak and slender grower, seldom over five feet high, and it is usually grafted high and treated as a weeper. It is commonly sold as "*Cerasus Japonica pendula*," "*Cerasus semperflorens*" and "*C. Japonica rosea pendula*." It makes a small tree of graceful habit and attractive foliage and flowers. The fruit is not important, but the ornamental character of the tree for many uses, is not so fully known as it ought to be. In fact, all these ornamental cherries have a future in America as they become known.

L. H. Bailey.

# SUB-TROPICAL GARDENING.

SUB-TROPICAL PLANTS, if arranged and planted with taste and judgment, make a display which is enjoyable to look upon, and give a striking contrast to the masses of flowers and foliage around them. Many gardens look monotonous, simply for the lack of these sub-tropical plants, and as many may be stored away in almost any corner, others are most useful in the decoration of the conservatory, greenhouse or winter garden during winter. It has often been said that many sub-tropical plants are so tender that they require too much attention and are expensive. Quite true; but why confine ourselves to these when there are now so many to select from?

It remains, therefore, to the judgment of the gardener, to select from those which he knows will best suit his purposes and the position of his garden. Such plants as ricinus, cannas, wigandias, palms, yuccas, dracænas, ferdinandas, and many others, after garnishing the houses in winter will make a lively and pleasing display in the garden. The agaves, which will stand almost anywhere in the winter, when taken to the open ground in summer, will contrast with almost any surrounding objects.

The cannas, which are amongst the first of our sub-tropical plants, and which are so effective in so many

ways, and require as little attention as any, may be the first to note. Fine plants standing singly look well if planted in contrast with flowering plants around them, or in groups, not as are sometimes seen, in thick masses, all of one variety of foliage, but judiciously mixed or intermixed with other tall-growing plants. When the early frosts come, they retain their freshness after many of the more tender plants are killed, and a fine effect may be made by mixing *Zea Japonica, variegata* with cannas in a group, the dark foliage and brilliant flowers contrasting admirably with the variegated foliage of the zea. Their roots may be stored in sand in winter, and divided to increase the stock, or they may be raised by seed.

*Aralia papyrifera* (Chinese Rice Plant), although a native of the hot island of Formosa, if planted in a sheltered position (to protect it from cutting winds), grows as luxuriantly as in its own native island and is very effective when planted in contrast with the dark green foliage of other shrubs. *Aralia Sieboldii* is more effective and useful when planted young than when allowed to become lanky and branched. It is usually raised by root cuttings, but is equally as good from seed.

FIG. 7. FLOWERS OF PRUNUS JAPONICA. NATURAL SIZE.

Dracænas (Cordyline) are indispensable for the sub-tropical garden, but are best in large plants and plunged in the ground singly. In the South of France and many of the southern countries of Europe, I have seen them growing to a height of twenty or more feet, with their majestic heads peering above the lower growing shrubs and plants around them. This refers, of course, to the green varieties, such as *D. Indica, australis, congesta, lineata* and a few others. The highly colored varieties will not do well in our northern climates.

*Acacia lophantha* is one of the most useful plants, with its mimosa-like foliage, and if planted in a good rich soil amongst other flowering plants, gives a good effect and gives but little shade to the plants around it. It may be raised easily from seed, and will be ready for planting in May or June, if sown early in the year; but where room can be spared plants a year old are much better, as they can be better hardened off and are more sturdy than those raised the same season.

*Caladium esculentum* is another plant of bold and striking outline, that may be employed in many ways with good effect. A small group of three or four contrast well with other plants, or planted singly in vases, or on a rockery are equally effective. In winter their tubers may be stored in sand, or the plants may be used to garnish the conservatory.

*Ficus elastica* (India-Rubber Plant) is a fine old plant; although many years in cultivation, it has only recently been introduced to the flower garden. It is as useful in the sub-tropical garden, and equally at home, as it is in the greenhouse or drawing-room, and it not only exists in good health but makes a good growth under the influence of the summer sun out of doors. It is best grown on a single stem. It is used in many ways, according to the height of the plants about it.

*Ferdinanda eminens* is one of the tallest and noblest of sub-tropical plants. If planted in a rich soil in a warm humid position, it will grow over twelve feet high. It may be grown freely from cuttings taken from the old plants, or it is more advisable to keep a stock in pots during the summer for this purpose.

*Phormium tenax* (New Zealand Flax) is not so much used in the garden as it deserves to be. Large plants are very effective if plunged in the turf singly on a lawn, and smaller plants may be used in many ways. The variegated form is even more useful where color is required, but it is, as far as I am aware, rather scarce, although it is equally as free growing as the green variety.

*Polymnia grandis* is a plant which seldom becomes ragged or unsightly, as some of the sub-tropical plants do. *P. pyramidalis* and *P. maculata* are equally as useful. *P. pyramidalis* grows to a height of eight or nine feet. They all strike easily from cuttings, and are best planted out in a young state to insure fresh and unstinted growth.

*Musa Ensete*, the great Abyssinian Banana, is certainly one of the finest and noblest of all sub-tropical plants. Besides its noble appearance, it withstands the heavy rains and storms without laceration, unlike *M. paradisiaca* and *M. sapientum*, which are often torn into threads by the storms and rains. In winter it thrives well in an ordinary conservatory or winter garden. At present it is comparatively scarce, but when taken up by nurserymen, it will no doubt become more plentiful.

Not a more imposing and more useful plant than the ricinus or castor-oil bean can be found in the garden,

when well grown. It is most useful when grown on a single stem, but in warmer countries it attains the size of a small tree. A bed of it looks well, but when planted with other smaller plants it gives too much shade. It is easily raised by seed in heat.

Amongst the many palms now used for sub-tropical work, *Seaforthia elegans* proves one of the most useful, and is equally imposing in the winter-garden. Many others stand well out of doors and make a grand effect, such as: *Chamærops excelsa, C. humilis, C. paletto, Areca lutescens, Caryota urens, C. sobolifera, Phœnix dactilifera, P. Canariensis, P. tenuis, P. sylvestris, Livistonia australis, Latania Borbonica.*

*Chamærops Fortunei* stands out unprotected all the winter at Kew, and *C. excelsa* grown by the riverside in the Royal Botanical Gardens, Regent's Park, London, has stood out unprotected for over twenty years and looks in good health.

*Uhdea bipinnatifida*, with its rich mass of elegant leaves, has the appearance of a great cow-parsnip. The silvery tone of the leaves remains until late in the autumn. Cuttings may be taken from the old plants in the autumn.

*Solanums.* Of the wonderful varied family of solanums, there are many fine and imposing species that may be used with advantage. Most of the varieties used, such as *S. robustum, marginatum, Warscewiczii, macranthum, macrophyllum, Fontainesianum, crenipes* and several others, are best planted in a young and growing state, and being annuals, may be raised easily from seed.

*Wigandia macrophylla*, well-known as it is, requires little description. It must have a warm position to be seen in its full beauty. *W. Vigieri* is also fine, and owing to its habit is considered by some to even surpass *W. macrophylla.*

*Alsophila excelsa*, if planted in a warm and shady position, will give a striking effect in contrast with the surrounding foliage. It is one of the very best tree-ferns.

Amongst all these mentioned, a good selection may be made, but such plants as *Araucaria excelsa, Grevillea robusta, Verbesina gigantea, Senecio grandifolium* and *S. Giesbrechtii, Eucalyptus globulus, Humea elegans, Nicotiana Wigandioides* and *N. colossea* should be included.

*Nicotiana colossea*, the giant tobacco plant, although comparatively new, has for size and habit found favor with many. Of the hardy plants used in sub-tropical gardening, *Aralia spinosa* and *Japonica* are very useful for variety.

*Arundo Donax*, the great reed of southern Europe, looks well when planted as a single specimen and, *A. Donax, versicolor* gives a fine effect with its varied coloring amongst a group of choice shrubs. *A. donax, conspicua* is also a good companion to the pampas grass, with its long silvery plumes of foliage. Many of the bamboos give contrast, some of which are nearly hardy, but those generally used are *Bambusa nigra, viridis* var. *glaucescens, aurea, metake*, and *Fortunei.*

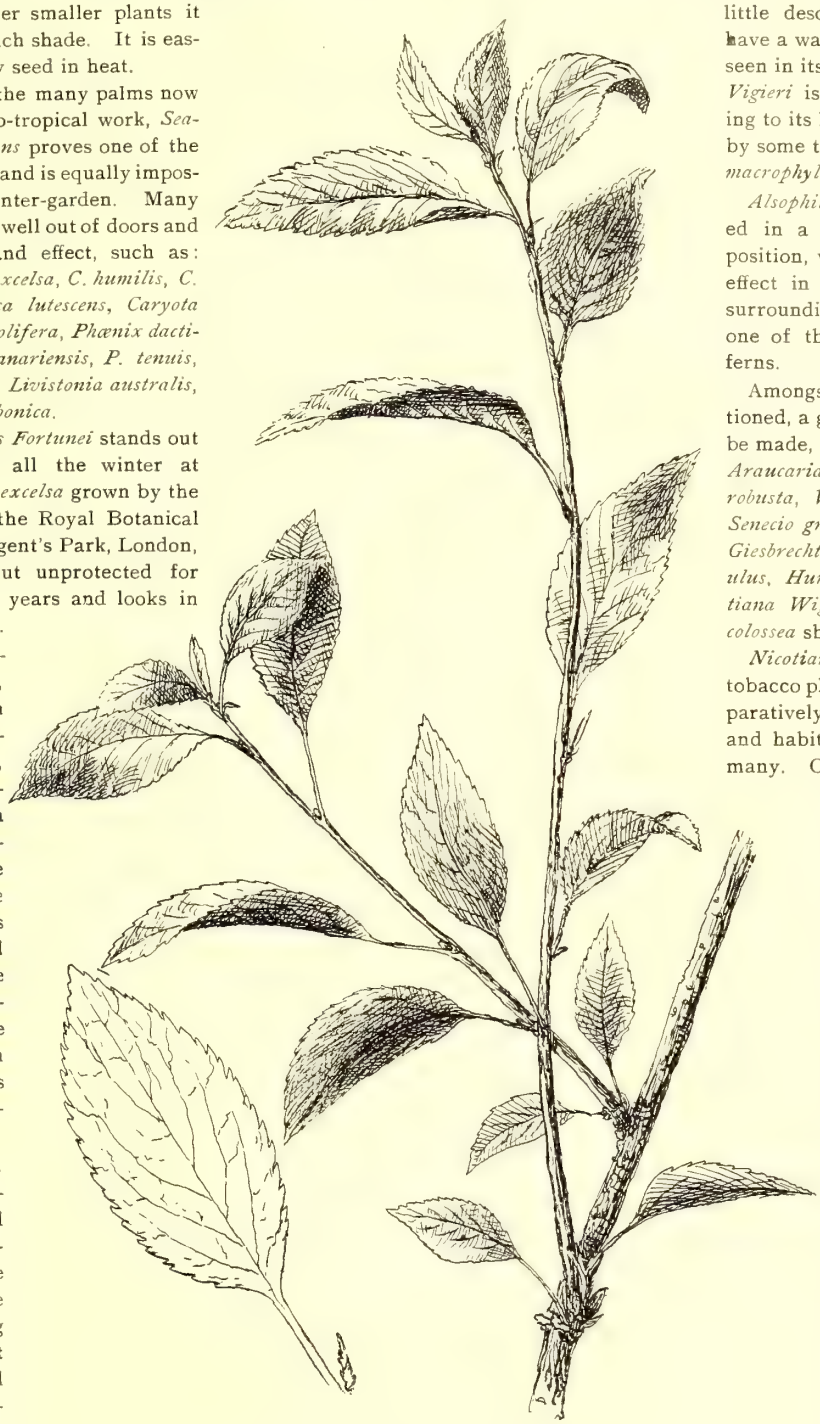


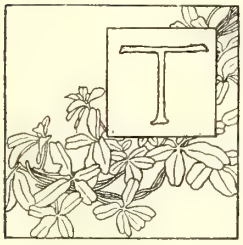
FIG. 8. PRUNUS JAPONICA.

Several of the ferulas are very striking, with their deep green elegant leaves. They are almost the first amongst herbaceous plants to put forth their leaves in spring, and will retain their freshness until late in the autumn, providing their flowerieg shoots are removed as soon as they appear. *F. communis, Neapolitana terigitana, sulcata,* and *glauca* are some of the best.

*Tritoma uvaria* var. *glaucescens* is another plant that has scarcely a rival, for it is useful for almost any kind of sub-tropical work. If planted in borders or singly, with a background of shrubs, nothing can surpass it, and another fine effect may be made by intermixing it with other plants on the side of a lake. *Crambe cordifolia, Melianthus major, Acanthus latifolia,* and the varieties of yuccas, make a good display in the sub-tropical garden.

*Kew.* F. W. S.

# THE GENUS BROWALLIA.



THIS beautiful and somewhat peculiar genus of plants is one of considerable interest both to botanists and horticulturists. To botanists it is interesting from the historical association connected with it, or more particularly with the naming of the genus, in that it records the only instance of temporary ill-will that can be cited against the great Linnæus.

This great botanist had among his numerous acquaintances a certain friend named John Browall, who was very humble in his relations with Linnæus, and, having adopted his new sexual system of botany, wrote an article against Siegesbeck defending that system. Linnæus, in acknowledgement of his friend's services, dedicated to him a genus of a single species, naming it *Browalli demissa.* Shortly afterward Browall, having been made Bishop of Abo, assumed the pomp and dignity of a great magnate and Linneus having discovered a second species of this genus named it *B. exaltata.*

This excited the wrath of Browall, and he proceeded to write pamphlets against Linnæus denouncing him in the most severe language. Later on Linnæus discovered a third species differing slightly from the original outline of the genera which he named *alienata.* The two men were never afterwards reconciled to each other, and thus we have preserved in the nomenclature of this genus a historical incident to which future generations of botanists will look back with considerable interest.

Speaking from a botanist's point of view, it is a genus of half hardy shrubs or herbs belonging to the order Scrophulariaceæ and bearing white or blue and in one species orange flowers. The corolla is salver form in general outline, but becomes resurpinate through the contortion of the upper end of the peduncle. There are four stamens inserted in two rows upon the corolla tube. The alternate leaves are ovate in general outline, short stalked and have entire margins.

They are all natives of the western continent and are mostly confined to central and northern parts of South America. Up to the present time I believe that nine species have been described, some of which, however, may belong more properly to other genera. The following species seem to be founded upon such definite characteristics as to warrant their acceptance as good species.

*B. abbreviata,* a short species with light red or rose colored flowers. The calyx is campanulate with very long teeth; leaves are quite hairy when young, but become almost glaucous when mature.

*B. demissa* is a native of Panama and was first discovered in 1735. The flowers vary in color from bright blue to purple or reddish and are axillary. It is a low species.

*B. elata* is a tall species and the one most commonly seen in cultivation. It is easily distinguished by its calyx, which is covered with glandular hairs. There are two varieties, one with deep blue and the other with white flowers.

*B. grandiflora* differs but slightly from the preceding species, having larger flowers of a light blue color. Both species are natives of Peru.

*B. Roezli* is probably the prettiest species of the whole genus. The flowers are of a delicate blue or white with a yellow tube and are an inch in diameter.

*B. Jamesoni* is a shrubby species often four feet in height with bright orange flowers. It is a native of New Grenada: was discovered in 1850 and has been cultivated at odd times for many years, but has never become a popular favorite.

To horticulturists and flower lovers in general, the genus is of interest, not from any of those very pronounced characteristics which have caused so many of our flowering plants to be adopted immediately as favorites, but from its delicate beauty and humility, and from the ease with which it is cultivated. Such plants are apt to be neglected in the popular craze for more gaudy, or more highly scented plants; yet few will better repay the labor bestowed upon them than such humble plants as the browallias.

Their principal use has been as a bedding plant, for which they are admirably adapted, as they make a rapid growth, and soon form masses of dark green foliage, intercepted with the delicate white or blue flowers. They are now used to a considerable extent as greenhouse plants, and with but little trouble can be made to yield an abundance of cut-flowers in the late winter and early spring months.

But few directions need be given for their culture. A light sandy soil with a copious supply of water is all that is necessary to produce finely developed specimens.

*California.* W. C. Blosdale.

# EASILY CULTIVATED ORCHIDS—II.

LYCASTES.

AMONGST the ornamental orchids that require cool or intermediate temperatures, the lycastes have always been regarded as the most easily grown. For beginners in this branch of gardening, there are certainly none more suitable. Not only are they kept in good health with little trouble, but their flowers are borne in great abundance, and as the old foliage remains until the new growths are completed, they always present a handsome and leafy appearance—a quality which many orchids, unfortunately, do not possess. It must be confessed that elegance is not a strong point in the flowers of lycastes, the chief characteristic being rather a stiff, prim kind of beauty; but, judging by the enormous number grown, it is a style which pleases very many. The genus is exclusively a tropical American one, its natural range extending from Brazil as far north only as the southern part of Mexico.

LYCASTE HARRISONIÆ, VAR. EBURNEA.

They are epiphytes with large pseudo-bulbs, surmounted, as a rule, by two or three leaves, but sometimes by only one. The leaves are always plaited, and usually broad and pointed. The flowers push from the base of the matured pseudo-bulb, often along with and clustered around the new growth. They are borne singly, or rarely in pairs, on erect scapes. The chief botanical distinction consists in the large, transverse appendage which lies across the center of the lip. Except in one small section of the genus, the sepals are larger than the petals, the lip being smaller than either.

CULTURE.—Although there is a considerable range between the lowest and the highest temperatures in which lycastes will grow, the one in which the genus as a whole succeeds the best, is that of a warm greenhouse; in other words, where the thermometer does not fall below 48° Fahr. on winter nights. At the same time any one with a greenhouse which does not long remain below 45°, or on the other hand, never falls below 55°, may successfully grow them. In this respect, they are most accommodating. Both in the air and at the roots these plants delight in abundant moisture, and from April up to September, provided the drainage is perfect, there is little danger of giving them too much. In the

colder portion of the year the supply must be reduced, but it is necessary to always keep them fairly moist, especially those species that flower in winter. They should be grown in pots, which, to secure suitable drainage, should be half filled with pot sherds. The compost should consist of fibrous peat, from which a large proportion of the earthy particles have been removed, clean sphagnum moss chopped into lengths of an inch, pure loam fiber in the proportion of one-fourth, and a small amount of coarse silver sand. For weak plants, or newly imported ones, the loam and sand should be omitted. When potting, the plants should be set high enough to allow the base of the pseudo-bulb to be half an inch or an inch above the rim of the pot, making the compost into a slight mound. It has been found of great benefit to the roots to distribute in the soil, as potting proceeds, lumps of charcoal, soft brick or porous sandstone, about the size of a pigeon's egg. Lycastes are amongst the orchids that may be safely treated with manure, either in the form of weak liquid, or by sprinkling fish guano on the surface. It must be done in moderation, and only during most active growth.

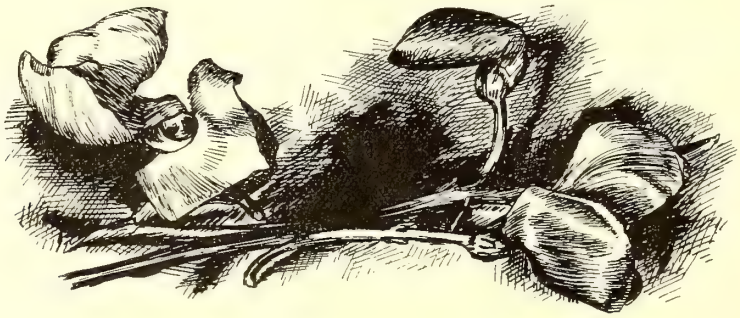
In the Genera Plantarum of Bentham and Hooker, the old genera of paphinia and colax are included under lycaste. Doubtless the floral structure is sufficiently similar to justify this arrangement, but in general appearance, both as regards habit and flower, they are widely different, and this difference is equally marked in their behavior under cultivation. Both paphinias and colaxes require considerably warmer conditions, and are certainly not amongst the most easily cultivated orchids. The preceding remarks, therefore, must be understood to apply only to lycastes proper.

In any selection of species, *L. Skinnerii* will always occupy the most prominent place. It is par excellence the orchid for beginners, and is the one oftenest recommended to them by experienced growers. As an orchid for room decoration it is unrivaled, standing the dry atmosphere better and remaining longer in bloom than any other. This applies in a lesser degree to all lycastes, although, of course, it is only during the time they are in flower that they can be used in rooms. *L. Skinnerii* is remarkable for the amount of bloom a single pseudo-bulb will produce. I have myself grown plants with as many as sixteen flowers clustered round one growth, and when it is remembered that each of these is from five to six inches across, all the parts being of fleshy texture, it will be seen that there are few orchids to equal it in flower production. Another noteworthy character is its extreme variability in color, it sometimes happening that in a whole importation scarcely two plants will turn out alike. The palest and most valuable variety is alba, which is entirely snow-white, with the exception of a faint patch of yellow on the lip. The darkest variety is nigra-rubra, the prevailing hues of which are dark purple and mauve.

Other species that may be selected as amongst the most desirable in this genus are: *L. aromatica*, notable alike for the abundance and pleasant aromatic fragrance of its golden yellow flowers; *L. Barringtoniæ*, a strong-growing species lately re-introduced in considerable quantity by Sander, of St. Albans, with large flowers of a rich, creamy yellow; *L. cruenta*, with greenish-yellow sepals and deep orange-colored petals and lip, the latter blotched with crimson; *L. Deppei*, a common, but very handsome lycaste, the sepals being thickly blotched with brown-purple, whilst the petals are pure white; its variety, punctatissima, is one of the rarest and most beautiful of lycastes; *L. plana*, similar in habit to *L. Barringtoniæ*, but with sepals of a madder-red color, the petals and lip being white, spotted with crimson; *L. tricolor*, an uncommon species of an unusual color, the sepals being pale brown and the petals and lip deep rose.

*L. Harrisoniæ* belongs to a section of the genus differing in several respects from that to which the previously mentioned species belong. It has tapering, four-angled pseudo-bulbs, bearing only one leaf, and the flowers differ in having the petals and lip about the same size as the sepals. It has been placed by botanists in both maxillaria and bifrenaria, but is generally regarded as a lycaste. The illustration represents the finest variety of it that is known; it is named *eburnea*. The flowers are three inches across, with the oblong sepals, and petals ivory-white and waxy in texture; the lip is large, the side lobes being erect, and the color primrose-yellow and white. *L. tetragona*, a remarkably colored species, belongs to the same section. The sepals and petals are green, blotched and striped with chestnut, whilst the lip is white, spotted with crimson on the outside, and purple within. Both these species require to be kept drier in winter than *L. Skinnerii* and others of the same group.

*Kew.* W. J. Bean.



# HORTICULTURAL ADVANTAGES AND POSSIBILITIES IN NEW ENGLAND.

VEGETABLES—UTILIZATION OF WASTE PRODUCTS—CROPS AND MARKETS.

I HAVE intended for sometime to call attention to certain possible directions in which our farmers and gardeners on the sterile and abandoned farms of New England can materially add to their incomes; and, too, from usually neglected sources. In some way our New England gardeners have seemed to be placed at a disadvantage as compared with their friends in the southern states, but as the years go by conditions are getting more nearly equal, and after a number of years experience both in New England and in the garden spot of the south, I would prefer to take my chances at making a living and a competence at gardening in New England in preference to the south. The great increase of acreage in gardening as well as the opening up of new regions further south, has so increased competition, that for a number of years, market gardening has been very unprofitable in the south, especially in the older sections. The expenses of southern gardeners are always necessarily higher than New England growers, for several reasons. The item of freight is always a large one. The further item of package is larger, and both of these, in the main, are avoided by the New England grower, as his markets are at his door, so that there are no freight bills, and in the case of bulky vegetables like potatoes, cabbage, etc., the barrel or box is always returned the day delivered, or at least next trip. In the case of berries, the packages are usually returned next day. So that enough crates and baskets for two or three days picking is amply sufficient, while the southern grower is obliged to have on hand enough packages for the whole season's crop, as the distance of shipment, and reshipment by commission merchants consume so much time that rarely are any packages returned early enough to be used to any extent in the same season. Further than this, a large portion of packages are scattered and never returned, and many that do get back, are so broken as to seriously reduce their value. The distance from market is so great that often in damp or hot weather, entire shipments are totally spoilt, that the New England grower by his nearness to markets could have marketed safely. When to these items we add commissions, it is readily seen that unless the crop sells at a good round price for a large part of the season, these expenses will swamp all profits; and in many cases these items of expenses and losses alone, would be a sufficient amount to return the New England grower, with small expense in these directions, a living profit.

There are many other directions in which the horticulturist of New England has the advantage over competitors in the southern states. It is a settled fact that a large number of our choicest fruits and vegetables attain their highest perfection only in the northern states. Not only is the product superior in quality, but the average yield per acre is far greater. The cool, moist subsoil of the northern states, which is kept so in a great measure by the very gradual thawing out of the deeply frozen soil, has a very decided effect on the health, vigor and productiveness of all vegetable products indigenous to that climate and latitude. This effect has been noticed for years, and it has long been the custom to procure seed oats, wheat, potatoes from northern sections, because it was found that they reached a higher development in these cooler latitudes. One advantage lies in the fact, that in warmer climates the ground is frozen so little, if at all, that there is but little check to the increase of insect enemies, while in a climate where the ground freezes four or five feet, this element acts as a serious check to increase of insect life, and at same time is favorable to production of fruit. Another advantage that is thought to be clearly proven is that in such deeply frozen soil, growth starts as soon as a few inches of soil are thawed and warmed up, and the lower down this process of thawing gets, the slower it becomes, especially after the upper soil is covered with a mulch of growing vegetation to shade the soil, or even a mulch of loose cultivated soil. So even if we should have a drought in the earlier part of the season, this slowly thawing soil is steadily sending up moisture to freshen and sustain the plant above, and even on comparatively thin, poor soil produces heavier crops than is possible on far deeper and more fertile soil farther south, having very similar amount of rainfall.

This effect I have been noticing for years, and have repeatedly proved to my satisfaction, as on a deeper, stronger soil in the south, with more fertilizer, both animal and chemical, and quite as complete cultivation, I have not been able to get as heavy yields as I have on my farm north. Some crops, even, cannot be cultivated profitably in southern latitudes that are exceptionally profitable in the north. For instance, south of Washington it is rare to find any genuine sweet corn, on

account of a worm about the size and appearance of our northern cut-worm. This worm commences in the tip of the ear and burrows the entire length, completely ruining the corn, so that the people are obliged to use field corn as a substitute, and a very poor one it is, too, to one accustomed to our very toothsome varieties of sweet corn. Another crop that comes to mind is cucumbers for pickles. For five years I tried these in the south on different soils, and varied methods of culture, but the result was uniformly a failure. A few pickings can be got from vines started very early; they are so grown quite often by being started in pots or hot-beds and transplanted. This may do for early cucumbers, but is far too expensive for pickle growing, for which crop one requirement is easy and cheap culture and a long season of picking. But the vines in the south would uniformly dry up or blast and were, for the purpose desired, a failure, although the crop had been a very profitable one north. And here I want to call attention to a product that will return large profits to the New England grower, and that is made very largely from wastes from other crops, I refer to *mixed pickles*, such as are now found in all of our large grocery stores. Several years ago while in general market gardening business, I often noticed these goods, and as new shipments were received, from the pickle factories I examined them closely to see the proportion of different vegetables used in their make-up, and noted the defects (according to my taste and the dealer's opinion,) in some brands that were not receiving the top market price. I formed the opinion that a first-class article in this line would be profitable, sell readily, and that I had the market right at my door, in the numerous manufacturing villages with which New England is dotted. I tried it and found it as I had expected. In fact, by commencing carefully and using the neatness and system necessary to all first-class products, I found that I was able to sell my product for a higher price than some of the best factory brands were selling for. The wholesale price during the past ten years has ranged from 25 to 35 cents per gallon in barrel lots. I will give some idea of the method of preparation, which will also show largely why its manufacture is so profitable.

All through the selling season of the different vegetables you can be preparing your stores for mixed pickles. Your first important crop will be bush beans. When the market returns get so low that it is no longer profitable to sell them, put them into your vat of salt brine, where they may stay until fall and winter, or such season as you are ready to freshen them and sour them with vinegar. Care must be taken to put in no stock that is not tender, as old tough material is no more fit for pickles than it is for sale green. Your small, misshapen cauliflower you will put away in brine in the same way; also small onions, small musk-melons *not quite* ripe, green tomatoes, martynia, cucumbers and other materials that you will observe if you notice closely the mixtures for sale. When ready to sell, freshen, cut up the cauliflower, large cucumbers and martynia sufficiently small to mix well, sour them with cider vinegar, and sell. It will be readily seen that a great part of the material being practically waste products, there is a very good margin of profit, and the market is at your door.

*Conn.* EVERETT E. BROWN.

# EEL-WORMS IN LEAVES OF CULTIVATED PLANTS.

A NEWLY INVESTIGATED ENEMY.

DURING the past year, while examining specimens of diseased leaves for fungous troubles, eel-worms have been found in the foliage of a number of cultivated plants. That microscopic worms infest plants is no new fact, but it has been considered that they are quite generally limited to the roots or underground parts of the infested plants, or at least do not, as a rule, prey upon the foliage. Thus the two bulletins* already issued in this country consider the subject from the standpoint of root-gall producing worms. While it may be true that all plants with leaves attacked by the nematode worms also have their roots infested, it is nevertheless true that a great share of the conspicuous damage done to many plants is effected by the worms that work in the foliage. In many cases leaves have been found in bad condition when the presence of the worms elsewhere was not detected after a careful examination of the other parts of the plant.

The following are the species of ornamental plants in the leaves of which nematodes have been found in such numbers as to injure materially the infested plants. Early in the season there were complaints made at the experiment station of a failure of the chrysanthemums to do well. The leaves of these sickly plants when microscopically examined revealed the fact that they were being destroyed by multitudes of eel-worms. Later in the season some dwarfed and diseased plants were examined and the dead spots in the leaves of these were found to contain many nematodes. During the past winter, while a special study of fungous diseases of greenhouse plants has been prosecuted, several other kinds of leaves have proved to be the feeding ground of the same microscopic worms. Thus the bouvardias have suffered

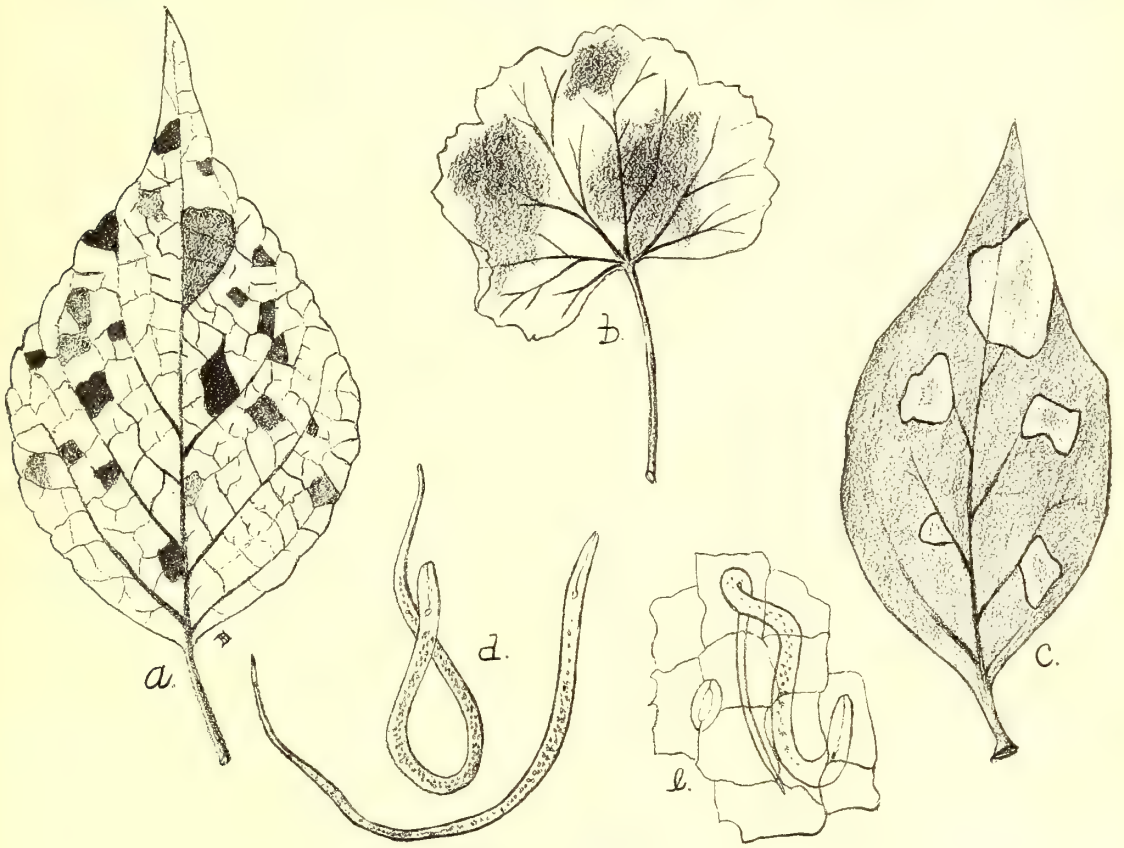
* *The root-knot diseases of the peach, orange and other plants in Florida*, by Dr. J. C. Neal; *A preliminary report upon the life, history and metamorphoses of a root-gall nematode*, by Prof. T. F. Atkinson.

considerably, as also pelargoniums, salvias, cinerarias, begonias, cyclamen, and Easter lily.

These leaves are quite naturally divided into two groups as regards their external appearance. In the coleus, cineraria, and salvia, for example, the foliage, while retaining its natural shape, becomes blotched with angular patches which at first turn yellowish green and then brown. The appearance of a blotched salvia leaf is shown at *a* in the engraving. In such leaves the veins are prominent and the surrounding pulp or green part is not particularly abundant, so that the veins form a barrier to the unimpeded progress of the worms. A microscopic examination of the blotches shows that the well-defined, irregular lines between the healthy and diseased parts are made by the comparatively dense substance of the veins.

The second group of leaves is composed of those like the chrysanthemum, geranium and begonia, in which the pulp is abundant, the leaves being comparatively thick and the venation not so prominently netted as in the coleus and salvia. Therefore, as a rule there is no distinct blotching of the leaf, but instead the decaying spot spreads indefinitely until the whole is involved and the leaf falls away. At *b* the appearance of a geranium is illustrated as partially destroyed by the nematodes. Such leaves are wet, even slimy in appearance, and the cause of the decay is easily communicated to a healthy leaf by placing a diseased specimen upon it. In the case of the coleus, upon the other hand, the foliage is dry. In some instances the worms may be seen upon the free surface of the leaf, and in the first group in particular, the spread of the decay throughout the leaf may, in larger part, result from the migration of the worms upon the surface and their entrance through the stomata into new healthy areas.

A form somewhat midway between the two types is that seen in the bouvardia and shown at *c* in the engrav




EEL-WORMS AND THEIR WORK.

ing. In this, the outline is not so much due to the veins as the sharp contrast of color between the green, healthy parts and the light brown of the affected portions.

The microscopic appearance of the foliage nematodes is shown at *d* and one of the worms as seen in the leaf substances is represented at *e*. They vary much in size according to age, but in general are about $\frac{1}{100}$ of an inch long, tapering but little to the blunt head end, and gradually in the opposite direction to a slender, often sharp pointed tail.

It is not our purpose to enter into a full consideration of the life history of the eel-worm, but suffice it for the present purpose to say that there are the two sexes which

when mature are strikingly different. From the egg the larval or thread form is hatched; this passes, through several moults, becomes a cyst, and finally developes into a male or female; the latter increases enormously in size and after impregnation at last breaks up into a gelatinous mass of eggs and young larvæ. The length of time required for the completion of a cycle in cases studied by experts in this department, is not far from one month. Only the larval forms have been met with by the writer in the foliage, but it was not uncommon to find the various sexual stages in the galls in the roots of the same species of host.

The point that most interests the practical grower is a successful method of treatment. From a knowledge of the nature and habits of the worms, it is evident that the direct application of vermicides is almost out of the question. The worms not only work within the substance of the plant, but render the parts affected more impervious than the healthy tissue. Substances like kerosene emulsion or bisulphide of carbon, it has been found, when applied in strength sufficient to reach the worms, also injured the plant. What is true of remedies for nematodes in the roots would hold good for those in the foliage Preventive measures seem the only ones available, and the first of these is to reject all affected plants when selecting from the greenhouse for planting in the open ground. All such discarded specimens should go to the burn heap and not to the compost pen. In like manner all affected foliage of plants to be retained, should be gathered and burned.

If it be assumed that the seat of the disease is in the subterranean parts of the plant and the direct inoculation is through the soil, it is evident that any method of sterilizing the earth in which the plants are to grow would be an effective check to the ravages of the nematodes. So far as the soil of the garden is concerned the method of starving out the worms by growing crops not susceptable to them is the cheapest, provided that time is not an important element. It may take years and a rotation of unsusceptible crops may be necessary, which latter presupposes a knowledge of the subject not possessed by the average gardener. Soil that is annually frozen to the depth of a foot or so will not usually contain a dangerous stock of nematodes and if the plants are not affected when set out, they will remain free. In the north, therefore, the main point for out-door culture is to have healthy plants, as they come from under the glass. Nematodes are much more abundant and destructive to field crops in the south because the worms are not kept down by the cold of winter.

It is evident that the greatest damage to plants by nematodes at the north will naturally be confined to, or originate in, the greenhouse and here the leading point in any method of prevention is to have the soil, whether in propagating bed or flower pots, free from the worms. If, thorough freezing is destructive to them, the importance of exposing the soil to be used under glass to severe winter weather is important. Old soil that has grown wormy plants should be carefully disposed of and fresh earth free from nematodes used in its stead. If the plants set in this soil are free from worms there is little chance of serious inroads from them. Lime mixed with the soil, as old broken mortar, is recommended by many gardeners and to the same end soaking the soil with lime water occasionally is reported as destructive to the worms that may be in the earth. When once in the plant they are, as a rule, out of reach of such remedies. However, in some instances, as when geraniums are attacked in the foliage and become slimy, it may be well worth while to try kerosene emulsion or some arsenical compound.

Frost and fire are the two leading preventives, namely: the freezing of the soil and burning of the affected parts.

*N. J. Experiment Station.* BYRON D. HALSTED.

# HORTICULTURE IN ARCHIPELAGO DE HARO, WASHINGTON.

THOSE who have visited the Channel Islands off the north coast of France and wondered how an island like Jersey could support such a city as St. Heliers, and have found upon due inquiry that the people are supported by fruit and vegetables raised out of doors under nature's own canopy and in doors under a canopy of glass, and then shipped by steamers to the border market, will understand the conditions under which an island in the Archipelago de Haro is entering upon the same field of labor. Orcas Island, protected by the other islands of the group, mountainous, containing a large amount of limestone and natural phosphates in the soil, surrounded by the Japan current, with deep inlets or sounds cutting it into many parts; with a climate equal to the best parts of southern France and perhaps in some respects superior to that of Jersey, is becoming rapidly the most important district of the northern Pacific states for all those fruits that will grow in the warmest portions of the temperate zone.

Apples, apricots, cherries, peaches, pears, prunes, plums, and all varieties of small fruits are grown in abundance and of superior quality, flavor and size. So apparent has the value of the favorable importance of this island become that large and wealthy companies have bought land and are planting out prune, pear, apricot and apple orchards by the hundred acres. The Orcas Island Fruit Co. will this year plant fifty acres of prunes and twenty of apples, and until fall about 150 acres more. The Puget Sound Fruit Co. has just purchased 320 acres

for the same purpose. Both of these companies are located at East Sound, the principal village of the island, and also the point at which the Fruit Growers' Association has its headquarters. The Haven Fruit and Drier Co. will open up 600 acres in the spring, ten acre tracts and planting 200 acres in fruit for their driers and canneries. The East Sound Fruit Co. will plant about 300 acres and erect canneries. These companies are several miles apart, and all the intervening lands are being sold in tracts of from five to forty acres, ten acres being the usual size. Not counting the mountain slopes, which are valuable for certain kinds of fruit, there are about 28,000 acres, all of which will be planted in large and small fruits, and vegetables.

The island is situated in the midst of the markets and everything raised brings prices that would astonish the fruit growers of the east. Apples, now, Gravenstein and Twenty-ounce, bring $1.40 per bushel. There is much money also, in small fruits, blackberries, especially


ARCHIPELAGO DE HARO.

the Lawton, and strawberries, Crescent, Sharpless, Jucunda, etc. are being set out rapidly. The principal apples raised are:—Red Astrachan, Summer Pearmain, Williams' Favorite, Early Harvest, Cole's Quince, Twenty-ounce, Gravenstein, Detroit Red, King of Tompkins Co. Rhode Island Greening, Mammoth, Red Cheek, Peck's Pleasant, English Russet, Golden Russet, Blue Pearmain, Monstrous, Canada Reinette, Bellflower, Dutch Mignonne, Hubbardston's Nonsuch, Tulpehocken, Golden Ball, Yellow Newton and Danvers Winter. In addition to these varieties we have the Baldwin, Northern Spy, New York Vandevere, McIntosh Red, Winesap; and other kinds have been tried and are being planted in large numbers.

The peaches grown are the Alexander, Waterloo, Fidalgo (local seedling) and the early and late Crawford. The apricots are chiefly Moorpark and Breda. Pears, Bartlett, Onondaga, Clapp, white and Gray Doyenné, Louise Bonne de Jersey, Kieffer, Buerre Diel, Duchesse d'Angouleme and Vicar of Winkfield. Many kinds of cherries are grown and they sell well; Royal Avon (Napoleon ?) and Black Republican are chiefly grown. All kinds of plums are raised in the richest profusion; perhaps the most valuable, because it is late, is Coe's Golden Drop. The true Green Gage is not yet grown on the Pacific slope, so far as my observation goes. There are dozens of so called green gages which are merely poor seedlings of Imperial gage.

Prunes are becoming the most important of all fruits. The Fellenberg (or Italian Prune), the Prune d'Agen and the German, in the order named, are the most valuable varieties, although the true St. Catherine has not yet been tested. Perhaps on account of bearing qualities and size the Fellenberg will always rank first. There is a so called Hungarian prune grown on the Pacific slope, which is a seedling of the Orleans plum and is no more fit for drying than Damson. When ripe it is very large; rich reddish purple in color, with light bloom. The true Hungarian is purplish black, with deep bloom; size, medium. At present, however, the one choice is Fellenberg, and in planting 100 acres 90 per cent. is of this variety, 7 per cent. Prune d'Agen and 3 per cent. St. Catherine.

Apricots are being planted largely for drying, and peaches for the local markets. The apple, peach and prune crop this year is very heavy. Ten year old apple orchards will yield 300 bushels of enormous apples to the acre, and long keepers, which last year brought as high as $2.35, will probably this year bring $3 per bushel.

Orcas Island, like the whole of western Washington, is covered with timber, but the island has very few forests of heavy timber, alder predominating in the valleys and young fir on the uplands. Wherever natural trees grow prolifically, orchards will flourish and do well without artificial help; but here, as well as elsewhere, the man who prunes and scrubs his trees, cultivates and thoroughly underdrains his land, is the man who has the best success.

The soil runs from rich sandy loam to heavy clay loams, and on $\frac{9}{10}$ of the available lands the subsoil is found to be clay at an average depth of three feet.

Perhaps to show the salubrity of the climate it is well to state that the island is fast growing into repute as the best place on Puget Sound for summer homes. The safe boating and bathing and the magnificent scenery lending their aid to the climate of sunshine, to make the place attractive. There are no fogs and but very little cold in winter. Thirty days practically includes all the really cold weather. To give an indication of summer weather, the following table is appended:

| | *Highest temperature.* | *Mean temperature.* | *Total rainfall for month.* |
|---|---|---|---|
| July | 79.1 | 59.1 | .87 |
| August | 77.5 | 58.7 | .01 |
| September | 74.5 | 54.2 | .29 |

The island is also a natural vegetable garden; green corn is raised in profusion, cantelopes, melons and tomatoes yield excellently, and pumpkins, squash, cauliflower and celery are good paying crops.

All western Washington is particularly favored for the farmer, and nowhere on the continent is money so easily made on a few acres. But for fruit and vegetable growing Orcas Island stands pre-eminent as the garden of Puget Sound. There is no malaria, no sickness of any kind beyond the common ills of the flesh. The death rate for the past year has only been two in a thousand.

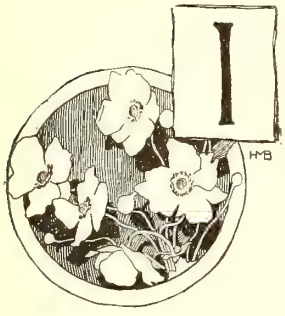
Six years ago there were only a few settlers compared with the present number; and it is only recently that the people have been stirred to see the value of their lands for fruit culture, and they have been willing to sell all they could not use, in small tracts. Very few families can attend to more than ten acres of fruit land, and certainly twenty acres is more than one family can manage. One acre of strawberries, one of blackberries, one of some specialty, such as rhubarb, or celery, or cauliflower, three acres of prunes, five of apples and pears and two of peaches and apricots would tax the largest and most hard working family to its utmost; but the income from such a farm would probably be more than that of most professional men in the cities.

*East Sound.* S. R. S. G.

# NOTES FROM A WOMAN'S GARDEN—JULY.

"The white heat pales the skies from side to side;
At noonday all the living creatures hide."

—H. H.



JULY we have our hottest weather, and the heat in our garden, which is almost entirely surrounded by trees and buildings, is something "truly awful." It is only early in the morning and late in the afternoon that we can spend much time there. But old Levi never complains; on being questioned, he will sometimes allow that it is "purty considerable warm," or "there's a tolerable hot sun ter-day," but he works steadily on. We notice that he chews a little more tobacco, and his visits to the old-fashioned well are very frequent.

The poor garden does dry up; we cannnot help it. It is sad to see the plants parched and wilted, but we do what we can for them, by watering every night the most tender and precious ones. Pouring water over them is of little use; pour it closely around the roots. Sometimes we make small, deep holes with a dibber or iron bar close to the plants, and by filling these holes with water, none is wasted, but reaches almost at once the thirsty roots. For the rest of the garden the frequent "stirrin' of the sile" has to answer, and Levi's constant hoeing does do a great deal of good. True, the soil may seem almost as dry as ashes, but if the top of the ground is not allowed to become caked hard, the heavy dews and the slightest showers will penetrate it somewhat.

"It is good weather for corn to grow," so the farmers say, but for almost everything else, heat a little less torrid would be preferred. Of course, the weeds grow finely; there's no season too dry, no season too wet for their well being. Do not let any go to seed.

We have fine peas for our Fourth of July dinner, but few "messes" after this date; the peas grow hard very fast, and we haven't space for many plantings. Watch the peas closely that are to be saved for seed, or the pods will open and the peas sprout and spoil from lying on the ground. If the squash vines are large enough, occasionally we help the children celebrate the "glorious Fourth" by making squash-vine trumpets; but as we have to cut a great many stalks before we can find one that will "toot," we are rather chary of this indulgence.

During the first week in July we have the last of our strawberries, and the first raspberries and currants. If the raspberries and currants have sufficient mulching, they will usually last through the entire month—rarely longer. Our gooseberries, no matter whether in sun or shade, *will* mildew, and are generally gathered and cooked while yet green.

The beans which old Levi carefully planted on the "decrease of the moon," and with due observation of all the other old rules (in which he is a devout believer), grow fairly well. We like the old-fashioned green string beans, so use a bean we call the "Early Purple" for that purpose. The lima beans want to run off from, instead of on their poles, in spite of old Levi's having carefully notched each pole with his hatchet; but he patiently ties on each vine with bits of string until they "get a good holt." Green Mountain, yellow eyes and black beans, are doing very well, in spite of the heat. The black beans are grown especially for soup for winter use; they seem tender, and ripen late.

We have our first good sweet corn the last week in July. The tomatoes should be provided with low trellises, or in some way arranged so that the fruit will not lie on the ground. The seed peas having been gathered, all the vines are pulled up, the ground spaded, well enriched, and the late turnips are planted here.

There are no vacant spots in our garden; every foot is utilized, and whatever the season may be, cold or warm, wet or dry, we find the garden *does* pay, and in spite of much croaking and dire forebodings, we always secure fair crops.

The captain doesn't believe in it, but we thin out the fruit somewhat on the apple and pear trees, and do a little pruning and thinning out on the grape vines. The plum trees should be shaken often, and all the diseased and bitten fruit that falls, burned. If you can catch a curculio, burn it, too; we have never seen one. Even

the weeds in a garden may form an interesting study, as new ones appear almost every year. Last year old Levi left undisturbed what he thought was a melon vine, though it came up in the unplanted pear orchard. This vine grew wonderfully, and soon covered a space at least two yards square, besides ascending several trees. We soon saw that it was not a melon vine, and when it had bloomed aud perfected its fruit, by analyzing it was found to be one-seeded star cucumber (*Sicyas angulatus*), a plant we had never seen before, and most assuredly not planted.

Another year the common nightshade (*Solanum nigrum*) came to join the larger variety (*Solanum dulcamara*), which, festooning a fence with its purple flowers and red berries, had long been with us. Then there is a great plant of the common elder (*Sambucus Canadensis*), another of the pokeweed (*Phytolacca decandra*), motherwort (*Leonurus cardiaca*) and catnip (*Nepeta cataria*) are plenty.

Some years ago we brought from the sea shore a few seeds of pimpernel (*Anagallis arvensis*), which were planted in the part of our house lot farthest away from the garden. The pretty little flowers bloomed there for a year or two, then entirely disappeared from that locality, appearing two or three years later in the garden, where, now they kindly come each year to act as weather glasses.

But a catalogue of all our weeds, common and uncommon, would fill many pages and be of little interest, except, perhaps, to an enthusiastic botanist, or to some one who had a method of extermination.

*Plymouth Co., Mass.* M. E. VIGNERON.

# EL MERCADO CENTRAL, ASUNCION, PARAGUAY.

A STRANGER in the capital of Paraguay wishing to see the sights will in all probability be advised to visit the great central market. This is certainly about as characteristic of Paraguay life, and about as lively and amusing, not to say instructive, as anything to be found in the country. It is situated in the heart of the city on the principal street, Calle Palmas, and belongs to a private corporation which derives a large revenue from its operations. The building is a huge, rambling, brick structure, one and one-half stories in height; or rather, when you enter it, you will find that it is composed of a large shed in the center which, in the beginning, was probably all there was of it, around which has been erected a still larger quadrangular building, the outer building alone having a half story above. This upper half story is divided into low rooms, the ascent to which is by steep stairways in the interior, and the rooms are rented to tenants of small means who pay dearly for their cheap accommodations by being nearly suffocated all summer long with heat, dust, poor ventilation and foul odors.

Around the entire structure runs a brick-floored piazza, roofed over with the peculiar curved, double rowed, red tiles which, may be seen upon most of the houses in Asuncion. A series of stone steps leads up to the floor of the piazza from the four streets upon which it borders; and these steps are generally covered with a litter of corn husks, pea shells, orange and banana peels and other refuse which has been thrown down by the people above. None of this litter, however, goes to waste, as scores of donkeys, cows and cart horses stand along the streets and help themselves from the piles, being scarcely willing to move aside long enough to allow you to mount the steps. These creatures in Paraguay appear always to possess hungry stomachs which are capable of digesting anything. Donkeys in particular, refuse nothing which can be broken finely enough to be swallowed. I have seen them munching melon rinds, thistles, cactus stalks, palm branches, fish bones, pine-apple tops and even barrel staves without the slightest discomposure. On the westerly side of the market is a common which really forms an open air vestibule, and is quite as peculiar as the market itself. Here the celebrated Lopez once tried to construct a grand plaza, and only succeeded in making a grand failure, as he did of so many other schemes in the course of his detestable career. This plaza is a piece of low, flat sand, occupying the space of two city squares; one half of it is enclosed by an ugly wire fence, the posts of which, many of them, lean over as if they were tired and wanted to lie down. One side of the enclosure is graced with a Pindo palm, which is lop-sided and seems undecided whether it has strength enough to live or not; another shows two small casuarinas and a tree of paradise, anything but paradisical in aspect; the third displays a solitary, unhappy looking Mexican agave; while the fourth side is luckily destitute of all such decorative appendages, and therefore is at least natural if not handsome.

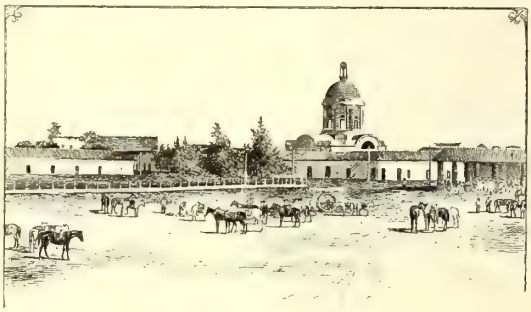
The unenclosed portion of the plaza has been devoted from time immemorial to the occupation of numerous nondescript vehicles, pack donkeys, loads of commodities too heavy or too bulky to be taken into the market house, and the miscellaneous collection of boys, women and dogs who naturally figure in such a scene. Go there at any moment between 5 and 7 o'clock in the morning, and, my word for it, a picture will be impressed upon your mind's eye that you will never forget. The donkeys, which the country market women use for transporting both themselves and their produce to town always excited my deepest interest. They are hardly larger than a good sized Newfoundland dog, and usually have a couple of

hide panniers somewhat more capacious than bushel baskets, which are used for holding fruit, vegetables and other things strapped across the back ; a rope tied around the muzzle for a bridle and a sheepskin thrown wool outwards across the panniers upon which the woman, accompanied sometimes by two or three youngsters, rides. When he has his whole load upon his back one can see scarcely anything of the donkey but two long ears projecting in front, a short tail with hardly any hair upon it wagging behind, and the lower part of his slim legs : often his panniers are filled with sticks of fuel which stand up above his back like a picket fence, and sometimes a boy sits astride the sheepskin buried up before and behind with bundles of green pasto or alfalfa which he sells for forage to the city folks who keep riding horses. When his owner is not using him the patient donkey streches himself upon the sand as well as his panniers will admit, and never remonstrates at his hard lot except in that long drawn, gasping bray which is a fit utterance of the breaking heart that he carries within his tender bosom.

I will defy the world to match the Paraguayan country wagons which may be seen upon this plaza, or wending their way toward it in the early morning hours. The bodies are springless, mounted upon two wheels from six to eight feet in diameter, and drawn by bullocks which are always hitched to the tongue by cords fastened around the horns, and draw the load by the head, and not according to our fashion by a shoulder yoke. A very common sight is a heavily laden wagon drawn by six wide horned oxen which follow a woman or girl walking in front of them, or, perhaps, there is only a single ox hitched to a wagon not much bigger than a hand cart. These vehicles which are employed throughout the country where there are no railways for the transportation of merchandise, are usually roofed over with a semi-cylindrical covering of zinc, bamboo slats or hides. Not unfrequently the roof consists of a single hide which scarcely serves to cover half the cart, or maybe there is only a make shift of poles thrust up the sides, over which a piece of old carpet or a poncho is thrown. The interior is usually filled with some kind of marketable commodity, such as oranges, vegetables, melons or poultry, and oftentimes the whole family of the owner may be observed peeping out of the front or back. Not the least noticeable among the odd carriages which find their way to this plaza are carts with huge wooden wheels that grind out the most ear-piercing music as they slowly roll over the sandy streets. I used to object to this kind of music when I was new to the country, but I soon found it went against the Paraguayan conscience ever to grease the axles, and I was politely given to understand that my musical education must have been sadly neglected.

After you have sufficiently inspected the comical donkeys, the elegant ox-chariots, the piles of fuel, bales of hay, bags of charcoal, the rush mats and other things which are exhibited upon this common,—and perhaps have essayed to get the sun which is just pouring his morning beams into the plaza to form a picture of the curious groups upon the plate of your camera, as I once did,—and if you are at all nervous about photographing in the midst of a hundred people crowding about you and regarding you, your instrument and your proceedings with the liveliest curiosity, when you are dead sure to make a failure of it—after all this you will please step with me into the adjacent market.

"Step with me" I say, but that is not so easy as it might seem, as the piazza is thronged with people, and its floor is literally spread with all kinds of market merchandise. Women are squatting upon the bricks the whole length of each side, every woman with her little store of garden stuff before her so that one can scarcely find room to tread without stumbling over a vegetable heap or its owner. Women, women, women everywhere, bare headed, bare footed, bare bosomed, with rarely a man in sight unless it be some looker on from abroad, who, with his natty European costume, his silk hat, kid gloves, shining shoes and dudish cane stares about as if



THE ASUNCION MARKET.

he had wandered by accident into a menagerie, and is stared at in return as though he had dropped from a distant planet Women, who outnumber the men in Paraguay four to one, have usurped the entire market business, and it is one of the few mercantile employments that they are considered capable of performing ; they do all the vegetable raising, all the selling and all the buying. Some of the hucksters traverse the streets with baskets of produce for sale ; but most of them rent a space upon the benches or the floor of the market, even if it be no more than a foot square. There is the small dealer who exposes merely a half dozen potatoes, or a little pile of shelled beans, or two or three bunches of herbs like summer savory. She pays, daily, a real for that privilege, small as it is, and she has to pay it promptly every day, too, or else her place is taken by some one else. No credit for rents or sales is ever given here ; it is all a strictly cash business. Of course many of the more ambitious sales-women occupy more room and do business on a larger scale—and so you will see on this piazza a whole cart load of golden oranges or a big pile of sugar cane, the joints of which Paraguayan ladies are fond of sucking between their sips of water. About everything which can be grown in the soil around Asuncion, fruit, vegetables and flowers, is exhibited in the course of the

year upon some part of this piazza, in varied conditions of luxuriance.

With great difficulty we pick our way among these obstructions to one of the four main entrances which lead into the interior, only noticing as we go the gullies worn in the brick pavement by the feet of an unknown number of generations, and never repaired since it was first laid.

If the throng and confusion are so great without, what shall we say of the interior ? Here are congregated 500 women at least, all laughing, screaming and talking at once in that strange guttural jargon known as the Guaraní language, and the hubbub is equal to that of Babel. I don't understand Guarani, but I judge from the merriment exhibited on all sides, that it is an easy tongue in which to crack jokes !

The most of the rooms contained in the quadrangular part of the building are used as stores, eating houses and liquor shops; but four of them are reserved as butcher's stalls in which sides of fresh meat killed only last night, beef and mutton, are hung up or laid upon marble benches. Women do all the service here as well as elsewhere in the market, but as for the meat cutting, heaven save the mark ! They apparently haven't the slightest idea of roasting pieces, cutlets, joints, steak, tenderloin, rump or saddles; the flesh is hacked up into junks and you take it as it comes, have it cut off by the foot or yard as you like, paying for it about seven cents per pound, Paraguayan money (some five cents in our currency). The beef of Paraguay would be very nice if it were properly cut and kept somewhat longer. The beeves are well fed, fat, peaceful and good natured, and their flesh is tender and juicy.

Along this side of the building just inside of the meat stalls is a long row of benches upon, under and around which are heaps of mandioca roots, lettuce, cabbages, radishes, parsley, beets, tomatoes, peppers, onions, egg-plants and the like, all of which are sold by the single piece or dozen, and never by the peck or bushel. Next to these are benches bearing baskets or heaps of lemons and eggs, and here are two women chaffering over the price of eggs. "*Quanto vale?*" says the buyer, picking up an egg and holding it in a scornful way between fingers and thumb, "*Cuarto centavos*" (four cents) answers the other in a sharp tone, as if nettled to have any one put such a simple question ; then up fly the arms of the purchaser and she gesticulates, wildly. "*Que esperanza !*" (what a hope!) she cries, making as though she would throw the egg at the other woman's head. "*Huevos frescos, lindos, lindos*" (fresh eggs, beautiful, beautiful) shrieks the seller, bound to hold up her end of the bargain : but finally she consents to take three cents, and the purchaser buys two eggs at that price, and walks away triumphantly ; but let me whisper in your ear that she had better look out when she breaks those eggs into a bowl, as they are neither over clean on the outside, nor by any means sure to be fresh on the inside.

Just across the way are screaming loros (parrots) and loritos (paroquets), chattering monkeys, magpies and other birds, many of them with brilliant plumage, and even fawns, armadillos and agoutis. On the floor near by are scores of turkeys and chickens, tied together by the legs, and generally remonstrating loudly against their confinement. Poultry is always sold alive throughout South America.

Yonder are the milk, butter, lard and candle quarters, where you are offered a bottle of milk containing about a gill for ten cents, or pats of white, unsalted butter which usually turns to oil before you can get it home, or dip candles which are in universal use among the common people for lighting their houses at night. Hard by are benches on which are spread piles of galletas, or the round biscuit, so hard that you have to break it open with a hammer, and which, in consequence, has the excellent quality of being able to keep good for months; or the soft fresh wheat flour cakes which are baked every night by the bakers of Asuncion, and are in so much request at all the city restaurants. Here, if yon prefer, you may obtain the bread peculiar to the country, made of what is there called farina or mandioca flour. This bread is made into rolls or rings of a mixture of cheese, coriander seed and mandioca flour, and is both palatable and cheap in price. It is the bread of the country outside of Asuncion.

If you are disposed to purchase other things outside of the line of provisions, you may obtain in another quarter jewelry, most of it very rich and expensive, for even the commonest Paraguayan will wear nothing but silver, gold or stones of the first quality ; glass ware, the delicate hand made laces of the country, toilet articles, the large pottery jars with long necks and large round bottoms which are used all over Paraguay for holding and cooling water, and nice dining-room ware made of the same pottery. Then if you are a smoker, you will find great stacks of tobacco leaves and the *cigarros del pais* as they are named, the cigars of the country, made of excellent material, but rolled in the roughest style, and sold for a media (five cents) a dozen. By the way, nearly every woman you meet has a cigar in her mouth, for they are inordinate smokers, but they prefer a cigar which is nearly twice as large at the outer as at the inner end, a peculiar taste which I could never understand, for such cigars as these are seldom or never offered for sale, and I never saw a man using them.

Another thing which is pretty sure to excite your attention is the absence of tills and purses. These are common enough in the city stores, but I never saw either among the market traders; there the bosom of the dress is the invariable purse that holds any amount of change, whether copper or paper (Paraguay has no gold or silver coinage); and if I ever dreaded touching paper fractional currency, it was there—ragged, soiled, defaced, I never put a piece of the stuff into my pocket-book without wishing to wash my hands with a disinfectant !

Half of the women who frequent this place are cooks or head servants, who are sent daily from the households of the city to obtain the necessary provisions for the family table. They bring large open baskets, or big

earthern or tin platters, in which they heap the fruit, vegetables and meat bought, and which they invariably carry upon the head. Should you pass through the streets early in the morning, you will meet scores of these stewardesses bearing their loaded provision baskets so skillfully poised upon the head that there is no need to touch them with the hand. I have often seen them balancing an erect bottle or pitcher or pail of water upon the head, holding it so adroitly that never a drop of water is spilled. Once, as I was writing the very notes from which this account is taken, I looked out of my door and saw a woman passing with a child in her arms, and a basket of meat on her head which I thought from its looks could not weigh less than 50 or 75 pounds, both of which she bore with the utmost ease. On another occasion, I saw a young girl, who bore a tall jar upon her head and a bundle in one hand, lift with her foot a handkerchief which she had dropped, take it in her other hand without stooping, and go on as unconcernedly as if her gymnastic achievement were a very simple affair. I should like to recommend that girl to Barnum as a first class gymnast.

But as yet I have said nothing of the most extraordinary sight to be witnessed in this curious market. One considerable section of it, lying just inside of the outer rooms of the quadrangle, is occupied by the frying-pan brigade, if I may designate them by that term. Here may be seen a large number of women squatted upon the floor and frying over charcoal fires all sorts of meat and flour compounds,—pieces of beef and mutton, sheep's entrails, cakes of maize dough, pastels, and strange things full of pepper, garlic, olive oil and grease which you do not recognize, and which if you should happen to taste you will vote to cast to the dogs—who, by the way, bear the name of legion in Asuncion, and will be only too glad to act as your proxy.

Around these fryers are policemen off duty, working men, boys and women who come into the building just far enough to reach this point, where they spend all the little change they have in buying these delectable compounds and devouring them on the spot without plate or fork.

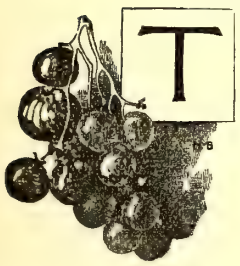
You can get, if you wish, ladled hot out of the boiler, a nice bowl of *arroz dulce y leche*, sweetened rice and milk, or, if it be hot weather, a glass of molasses and water into which a spoonful of ginger has been thrown. or a lemon squeezed.

It was my custom when I kept a bachelor establishment in Asuncion (which I did for a long while) and purveyed for my own café and almuerzo, to visit this market every morning; and I seldom came away without patronizing a nice looking Paraguayan matron, Anita by name, who sat on a low stool and presided over a pastel manufactory. Pastels are small flat cakes made of flour paste, having much shortening in the dough and in the center a composition of hashed bread, meat and vegetables. They suited my taste much better than any other dish of the market that I ventured to try, and Anita who prepared them was quite attractive in spite of her bare feet, her culinary occupation and disagreeable surroundings. Her long black locks were neatly done up and fastened with a high gold backed comb, her ear pendents sparkled in the light of her charcoal fire, and she wore a clean white frock which was flounced below with folds of Paraguayan lace which is as fine as genuine Honiton or Valenciennes. Her pastels were always nicely rolled up in fresh banana leaves and handed to you with a graceful bow. She usually had two children between her knees or at her side, one of them, a little girl of five or six summers, as bewitching a chichita as I ever encountered, with flashing black eyes, round, chubby cheeks and pearly teeth, who could just shake me by one finger and greet me in about the only Spanish she knew; "*Buenos dias, Senor.*"

Well, as I look back upon it all from this distance, I must say that poor and ignorant as are the women who carry on this market, I can but honor them for their commendable efforts to earn an honest living for themselves and their families, which their lazy, shiftless husbands will not or cannot do. Many of them daily trudge on foot to town from the country for a distance of from five to ten miles, bearing their loads of produce upon their heads, and return the same day after earning perhaps a half dollar or a little more. I often met troops of them walking along the sandy roads and in the burning sun. Their lot is a little better if they are rich enough to own a donkey and a lemon, orange or banana grove, or a vegetable garden. They are good humored, industrious, social and even merry in their own homes. I am sure that with all the hardships to which they are subject, they are more contented and happy than scores of refined and educated ladies of our own country, who waste time and health in fashionable excesses, and with all their luxury and ease are devoured with ennui and are weary of life long before the appointed three score years and ten.

THOMAS MORONG.

# HOW THINGS GROW IN SOUTH DAKOTA.



THE STATES west of the Missouri line—Kansas, Nebraska and the Dakotas, have long been known as the arid region of America. And their development has been in a measure hampered by the belief, firm seated in the eastern mind, that they could only become great agricultural commonwealths by the aid of irrigation. In the beginning, the school geographers were largely responsible for the slander. In every school-room in the country, twenty years ago, the pupils were taught to locate the "Great American Desert" between the Rocky Mountains on the west and the Missouri and the Red River of the North on the east. Gradually this vast region established for itself a better name. In the states of Kansas and Nebraska the "desert" line has been pushed westward, until only a small part of them will acknowledge being semi-arid, and the word "desert" has no place within their borders. Every person knows that the famous Red River Valley of North Dakota is the greatest wheat-producing region in the world. South Dakota, also, notwithstanding recent dry seasons, which she has shared with Iowa and Minnesota, states that in pioneer times were also known as desert regions, has proven by her rapid development and great agricultural resources that the American Desert of twenty years ago has no place within her limits, or at most is confined to that rendesvous of the Sioux Indians, the Bad Lands.

Horticulture is not a pioneer art. In the development of the entire west—beginning with the century, when that word meant Kentucky and Ohio, until the present time, when the more restless people of Dakota pull up stakes and move "Out West" to Montana or Washington—agriculture has always been well established before the finer processes of horticulture were thought of. The reason is plain: man must have bread and meat, but he can exist, though he can hardly be said to live, without fruit and flowers. And in these first pioneer struggles, so much of the energy, mental and physical, of the settler has been expended in opening up the farm, such close attention has been demanded by the field crops, that usually the frontiersman has been led to believe that nothing will succeed except grain and stock. Hence there was a time in the history of Illinois when her people scoffed the idea of fruit raising in that state. The older citizens of Iowa yet affirm that apples cannot be grown successfully there, despite the yearly crops of native fruit they enjoy. It is true orcharding is not as yet a great industry of the state, but certain counties are establishing for their orchard fruits a recognized place in the western markets. Kansas and Nebraska plant thousands of acres every year to fruit trees, and South Dakota also, so much younger than its neighbors as to be still in the pioneer stage of development, has, in all the older counties, enthusiastic fruit men, who are every year proving their faith by their works.

Any map will prove useful in giving the eastern reader an idea of the horticultural geography of South Dakota. The oldest settled part of the state, and the most favorably located for fruit growing is the valley of the Missouri river, on the south line, including the counties of Union, Clay, Yankton and Bon Homme. These counties are crossed by numerous streams that flow into the Missouri, and the broad valley of that great river, with the fertile, well watered uplands, seems to be adapted to the hardier orchard fruits.

I have never seen finer specimens of Fameuse, Wealthy and Duchess apples than are yearly exhibited at the South Dakota state fair and the Sioux City corn palace by the fruit growers of the counties named. Finer fruit is not grown anywhere. The orchards are not numerous as yet, but every year adds to the acreage, and I have no doubt it will be but a short time before Dakota grown apples will appear in western markets. Probably one drawback, a difficulty always experienced in a new country, has been the use of tender varieties. It is difficult for the eastern man to understand that the temperature and moisture lines do not correspond with the parallels of latitude, and it usually takes experience to prove that hardy fruits in the east are tender fruits in the west. But even in South Dakota some of the Eastern favorites succeed. I am informed that in the Black Hills region, in the southwestern part of the state, the Ben Davis apple has been largely planted. At our state fairs, however, more plates of Wealthy are shown than of any other variety.

In Turner county there is an orchard just coming into bearing that contains several thousand trees. I know of promising young orchards in Lake, McCook, Davison, Sanborn and Grant counties.

The experiment orchard of the Agricultural College, in Brookings county, contains over five hundred trees, that have passed through two winters; the orchard is rich in promise; the trees made as fine growth the past season as could be desired. These are but a few instances. But they show that throughout the older part of South Dakota, the people are beginning to work out their horticultural salvation.

The apple has come to be regarded throughout the great part of America as in a certain sense a synonym for "fruit," but there are other fruits which are more promising in our state. Along all the streams are wild

plum thickets, and some of these produce fruit of the finest quality. Two years ago I received from G. J. Millette of Hughes county a peck of small red plums. They were picked August 10th. The fruit was pleasant flavored, but not particularly good to eat from the hand. As a cooking plum, however, I have neven seen its equal. Mr. Millette has a yellow sort that he esteems very highly. Both were found in native groves on the Missouri river bottom lands. I have no doubt that as our wild plums are studied, selections of peculiar value for the west, where the early frosts are so destructive to this fruit, will be found.

The sand cherry (*Prunus pumila*) is another native Dakota fruit which is destined to prove valuable. The plant grows in the bush form, standing low. The fruit is produced in small clusters at each leaf. The little trees or bushes are covered with the black or greenish yellow fruit, which matures just after the currant. I have never seen any sand cherries that were good to eat from the hand, but I have been assured by reliable men who are familiar with them where they grow wild, that good fruit can be found, the quality varying greatly. As the species is very hardy, it is to be hoped it may prove useful for crossing with cultivated sorts, increasing their hardiness.

The Buffalo berry (*Shepherdia argentea*) is a beautiful native tree found in the coteaus of the state west of the Sioux Valley. It grows to a height of ten to twelve feet; its silvery foliage and coral berries, which are almost sessile and almost cover the branches, make it an object of great beauty in September and October. The fruit is small, and gathering it is a tedious operation, from which one is usually relieved by the birds. It is rather sour to the taste, but makes a delicious jelly. The trees are dicœcious, and must be planted in groups to secure fruit.

Of the cultivated small fruits, the strawberry is successfully grown wherever there is moisture enough to produce a crop. The Turner raspberry is largely grown, and some other red sorts are cultivated. The black caps are not generally successful. The currant and gooseberry are hardy and productive throughout the state. Houghton seems to be the favorite variety of gooseberry. The new Industry does not succeed and Chas. Downing is not quite hardy. Grapes are grown successfully in the southern counties of the state, and there are a few planters, having peculiarly favorable situations, that succeed with them in other localities, but generally speaking they have thus far proven a failure.

South Dakota produces the finest vegetables I have ever seen. Not only the various roots and seeds, but celery, cauliflower, and other vegetables difficult to cultivate are produced in great abundance and of the highest quality. The display of garden vegetables from Yankton county at the last Sioux City corn palace, would have reflected credit on the best truck farm county in New Jersey.

South Dakota is a new state, and some of its citizens seem to imagine that it is having more than its share of the ills that are incident to babyhood; but when the trials through which the other western states have passed are recalled, it is safe to affirm that our state has suffered no more than its fellows. Surely a state that can show such beginnings in horticulture as are apparent on every hand in South Dakota, must be considered as having almost passed the pioneer stage. Many of the complaints of drouth that have been circulated throughout the country are undoubtedly due to poor tillage. Having passed the age of infancy, a better agriculture will do for the greater part of our state, what irrigation must be relied upon to do for a restricted area.

CHARLES A. KEFFER.
*South Dakota Agricultural College.*

# A DISCOVERY OF THE FIRST IMPORTANCE TO FRUIT GROWERS AND GARDENERS IN GENERAL.

HOW TO DESTROY THE ROSE-BUG OR ROSE CHAFER IN AN ECONOMICAL, PRACTICAL WAY.

THOUSANDS of vineyards are being devastated at this time by the hitherto invincible rose-chafer, which has defied every known insecticide not harmful to the foliage. Its increase during the past few years has been so rapid that discouraged farmers in many sections are destroying the vines and devoting their lands to other crops. The discovery, a detailed account of which is presented below, was made by the editor of *The Rural New-Yorker* recently, to whom the horticultural public is already indebted for much valuable experimental work.

NOTES FROM THE RURAL GROUNDS.—THE R. N.-Y.'S VICTORY OVER THE ROSE-CHAFER.

On June 15, during the hottest part of the day, when the mercury stood at 95 in the shade, the writer noticed that the rose-bugs on grape vines and rose bushes sought shelter. Comparatively few were to be found upon the flowers, and those were sheltered from the sun. Acting upon this, a number of the beetles (25 perhaps) were caught and placed in a white paper box. The cover was placed loosely upon it so as to admit air, and the box was exposed to the sun. An hour or so afterward the beetles were dead—every one. A thermometer placed in the box showed the temperature to be 110 degrees. Our next step was to gather beetles from their shady quarters and *drop them upon the soil* which was exposed to the direct rays of the sun. To our surprise they were apparently dead in 30 seconds! A tin thermometer placed on the soil showed a temperature of 129 degrees. Some of these beetles were then carefully placed in an ice box to see if they would recover. But they were quite dead.

Twenty or more beetles were then placed in the white pasteboard box and a tablespoonful of water of the temperature of 129° was poured into the box and immediately poured out. The beetles were instantly killed. Water at the temperature of 122° was then tried. Most of them were dead in half a minute. The rest died in ten minutes. Water at 119° was then tried. The beetles were not seriously harmed and soon recovered.

Thus far, it would appear, water at a temperature of over 122° is a sure and speedy death to the rose-chafer. The next step was to ascertain if this method of destruction could be put to an easy, practicable use. Water was heated to 170° and poured into a pail. A small hand force-pump with eight feet of hose and a half-inch iron tube of five feet (13 feet in all) terminating with a cyclone nozzle, was then used to force the water upon the rose-chafers of magnolia flowers (*Magnolia macrophylla*), in one of which there were not less than 150. The first spray upon the beetles was shown by the thermometer to be 120°. The rose-bugs receiving the direct spray were dead in about one minute. The others recovered. The temperature of the water was then raised so that the mercury rose to 140, when the thermometer was placed within *two inches of the nozzle*. This was sprayed into a partly-open magnolia flower containing 50 or more beetles. All were almost instantly killed. Neither foliage nor flowers were injured. It appears, therefore, that this terrible pest, which can neither be killed nor repelled by any of the insecticides which may be used in a practical way, cannot endure a heat of 125°, and that it may, therefore, be exterminated by the simple, cheap remedy of water of that temperature sprayed upon them.

LATER.

Temperature of the air, 85°. Water in the pail, 170°. Forced through 13 feet of hose, the temperature six inches from nozzle is 128 to 130°.

Temperature of the air, 60°. Temperature of water in the pail, 188°. At six inches the spray was 122°; at one foot, 110°.

It should be stated that the cyclone nozzle is not suited for spraying hot water, in that it divides the water, as soon as it leaves the nozzle, into an unnecessarily fine spray—a vapor, in fact—that gives up its heat so soon that the rose-bugs must receive the spray not over twelve inches from the nozzle, or the heat will not be high enough to kill them. It is plain that a coarser, more concentrated, or less vapory spray would be far more effective at a greater distance. For grape vines or other low-growing plants a shorter hose would obviously be more effective.

It was found that water of 130° temperature would not kill potato beetles or their larvæ, or cherry aphides. A temperature of 150° was found to kill both the beetle and grub. It was not tried upon the cherry aphis.

# HORTICULTURAL MEETINGS.

HAVE thought it fitting that upon this thirtieth anniversary of this society, where are gathered representatives from nearly all of the local societies throughout our state, to allow the subject of "Our Horticultural Meetings" to claim our attention for a few moments.

And first, what do we understand a horticultural meeting to be? What is the object for which it is held? What are the essentials to a successful horticultural meeting? And are our meetings as full of life and interest as we can make them?

In assembling with this society two years ago I was astonished to see so small an attendance of ladies. During the different sessions I queried, why is this so? And I have not yet reached a solution. I will not admit that the wives and daughters of horticulturists are not an intelligent, wide-awake, interested body, who would thoroughly understand the proceedings of this meeting, and who could discuss any paper here presented, with the best of you. Neither will I admit that the horticulturists themselves are selfish enough to participate in this general feast of intellectual and social good things, without at least inviting the women of their households to share it with them. Nor will I concede that they are ashamed of their wives and daughters. What, then, is the reason for their non-attendance? *for cause there must be!*

If I rightly understand the object of these meetings, it is to increase our knowledge and broaden our interests in this great science of horticulture which we are desirous to forward; and by thus meeting with our com-

mon interest, and sharing each one his talent with the other, new thoughts are developed; theories are propounded for test, and being tested, are either resolved into facts, or rejected as useless. Intelligence in one branch rubs against intelligence in another, and the friction is beneficial to the whole body. But, in order that this may be accomplished, our hearts must be in the work, for, as Longfellow has beautifully expressed it,

"His heart was in the work,
And the heart
Giveth grace unto every art!"

It has seemed to me, a very important—I think I may say the essential thing to secure interest in, and good attendance of these meetings, to have good presiding officers, those who are themselves horticulturists in heart and practice, whenever such can be secured; who will attend our meetings regularly, and enter interestedly into the work before them. "Like begets like," and the president of a society can do much with his own enthusiastic interest towards kindling the latent fire of enthusiasm in the members.

I do not thing it essential to offer premiums in our meetings, thus, in a measure, buying our membership. He who will not. for the love he bears this science, cheerfully attend his local society and there exhibit whatever result of horticulture he has produced that is worthy of notice, is not, at heart, a horticulturist.

"But," you may say, "it has taken his time and his thoughts to produce it!" I grant it. But has not his competitor expended a similar amount of time and thought? Is not the superior quality of the fruit a fair equivalent for his labor? And will he not realize thereon in the markets? There may be, and most probably there are, cases where premiums are justifiable, but in a large proportion of the cases "the ends do not justify the means." "Dollars and cents" is but a sordid principle on which to base one's regard for any society that is formed to advance the knowledge and interest of mankind.

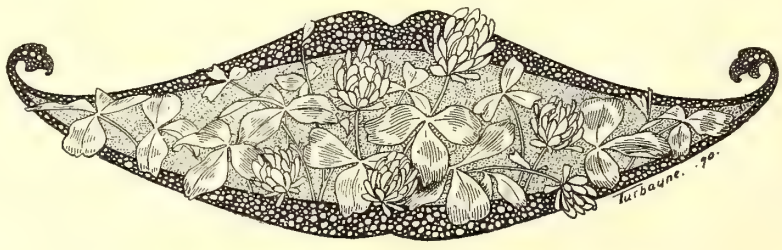
It is claimed that only an educated man should be placed at the head of a horticultural society, and I grant it is far more agreeable to listen to one who understands the "Rules of English Grammer", than to hear him say "he has went"—and "I haven't saw him", but after all we must acknowledge that a man with a great, generous nature, brimfull of energy and vim; who can grow fine fruit and can tell you how he grew it; whose heart is full of love and sympathy for every fellow fruit-grower, and vibrates in unison with the great pulse of nature all about him, can do more to secure and keep an interest in a meeting, than can his college-bred neighbor whose horticulture is only a theory;—for his very earnestness causes you to overlook the grammatical errors he has committed.

A few more questions, and my interrogatories are ended. Can you give me one instance of an atheistic horticulturist? It seems to me it would be impossible for anyone to watch the transition from apparent lifelessness to leafage, from leafage to bud, from bud to flower, and from flower to fruit, and not bow his head in reverence before a Power, mighty in His intelligence! Who can explain to me just how this marvelous process is accomplished? And who can tell me just how the lovely color is given to apples and the flowers, so charmingly displayed before us? Can he who grew those apples, demonstrate at just what time in their formation, and how, some were produced with the tint of the sunset and the beauty of the after glow, while on others the color out-rivals ruby? Can he look upon this blended coloring, which no artist's brush can exactly re-produce, and not acknowledge that only the hand of the Divine Artificer could have performed this wondrous thing?

Can he tell me, also, why the fragrance of the native crab-apple exeeeds all other blossoms in the exquisiteness of its perfume, when the odor of the wild rose cannot compare with that of the highly cultivated tea rose?

One thought is uppermost in my mind to-day, that in all the wide universe so beautifully planned and furnished there is no more beautiful trio than this—Horticulture—Agriculture—Floriculture—each one a science;—bound close together by one common tie of sisterhood;—so nearly allied that to most minds—one must needs suggest the others! Herein exists the beautiful and the useful, united in the flowers of the fruit-bearing trees and of the grains—and the fruit of the flower bearing plants. And he, who earnestly and with honest purpose devotes his life to any one of the three, is a benefactor to his fellow man, a credit to his neighborhood, and an honor to the parents whose name he bears!

Let me urge the study of this subject of Horticulture more and more until we have thoroughly practical Horticultural meetings, whose praises shall be a household word, and whose benefits shall reach to our own and future generations.—*Miss Mary Parav, before Indiana Horticultural Society.*



# TARRYTOWN LETTERS—XV.

BY A. B. TARRYER.

A MATTER OF WALKS AND GUTTERS.

NOW the women and children are complaining of the dug-out walks where the water either stands in puddles or runs zig-zag, guttering its way, and changing from glare ice to deep mud or dust, as the weather may be. The dotted line, Fig. 1, shows just how much that walk in the picture lacks of being filled and finished with something fit for the human foot at all seasons.

During the Christmas holidays, a delegation of country school mistresses and masters called on Lady Schnipticket to thank her for ordering M'Tavish and his gang to lay down samples of good foot-path in various places throughout the surrounding country, wherever the people don't seem to know how to do such things right. In several places the example spread. Many rods of improved walk, and in one instance, nearly three miles of it, were built, because the little bits well done made so many friends, and the leaven is still working.

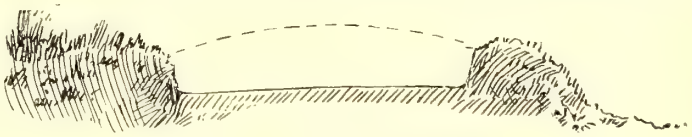


FIG. 1. AN UNFINISHED WALK.

One reason why our walks are so bad is because we have no easy means of draining their surfaces. There are pipes of all sorts, but nothing of cast-iron, as there should be, fit for this business, that everybody can get. That pipe in the sketch (Fig. 2) anyone can see, laid just beneath the surface of that walk, and covered with the heavy round grating to keep leaves and rubbish out, will take all water that may gather from the inside gutter under the walk, from grass to grass, so there can be no washing with every rain or thaw. These conveniences can be put in when the walk is built, or afterwards. As each piece of pipe fits any other of the same size, and as the pieces are practically indestructible by fair means, they can be exchanged and shifted about when alterations or mistakes are made, and are as near specie forever as any piece of property a town can own.

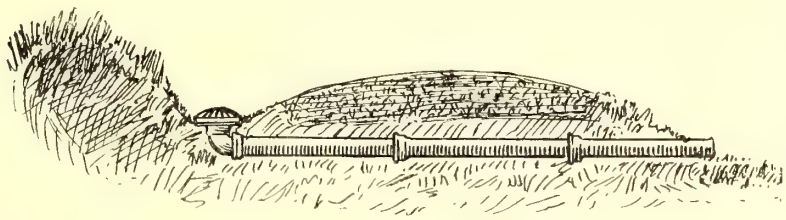


FIG. 2. A DRAINED WALK.

Moreover this iron pipe drainage is quite as applicable to roads as it is to foot-paths. It will cross-drain from a gutter perfectly in many rather flat places where too bulky stone culverts, costing much more, would be filling with sand and mud. A small drain will carry a deal of water if it is always ready to work.

One of the young women teachers made a remark that pleased Mrs. Tarryer and Lady Schnipticket very much. "Some think that where people are few it makes no difference whether they have good walks and roads or not. But I believe the fewer there are to enjoy good walks the more highly they will be appreciated, and plenty of people soon find them out."

"That was what the Colonel used to say," said Lady Schnip. "The conveniences for travel should precede civilization. It is a bad government that makes no provision for the future, and is continually running its citizens into the mud."

The Camperdown place was laid out with considerable expense for engineering, but the depressed roads and walks, under Dingball's management, who was always trimming, raking, hoeing and lugging away cart-loads of gravel and turf rubbish, soon made gutters of the walks and roads, and led surface water from the rising lands in the rear of the house into Mrs. Camperdown's cellar. In summer the foundations of the house were kept damp, though it stood on naturally

dry land, and some serious illnesses resulted. In winter, Dingball made a regular chore of being ready with every thaw to pump out the cellar.

This point is so important that I have had it fully illustrated in Fig. 3. Just at the spot where carriages stop by the main entrance, the road was made flat, and originally three or four inches sunken. In the Dingball point of view this broad gutter was needful to carry the water back and sideways from the house to a certain underdrain of his which never seemed to operate. But in winter this expanded gutter would fill with snow and ice, and whenever a sudden thaw and rain came, the flood had to go into the cellar windows.

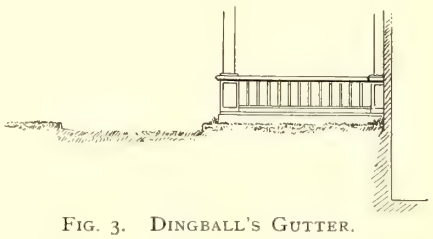


FIG. 3. DINGBALL'S GUTTER.

The women finally took the matter in hand, and it was Mrs. Tarryer who first arrived at the true sense of the situation. She saw that snow-broth could never run out of that flat place, but would stay there and freeze, with the results above stated. She induced Lady Schnipticket to let M'Tavish, who had a stronger mind for grades than Dingball, lend a neighborly hand in the business. By filling, narrowing and rounding the road—forming a shallow, parallel gutter in the sward on the side nearest the house, that water could run away in, the whole trouble was prevented. (Fig. 4.)

Few house-keepers are so amphibious as to be satisfied with water in their cellars, and Mrs. Camperdown is not one of them. This incident naturally tended to cement the friendship forming between the three ladies in question, till now they constitute a very strong party in Tarrytown.

Some of the turf on the side of the road away from the house, which Dingball, according to his obtuse kind, had been heavily top-dressing with earth compost for years, thus raising it considerably, was ordered up and lowered to ensure surface drainage.

These changes, with all the roads and walks in the rear of the house made rotund and water-shedding, and with due attention to shallow drainage by iron pipes under the traveled path wherever there is occasion, have relieved the Camperdown property from every suspicion of muddiness at any season.

The autumn leaves of the place raked and left in piles till they become somewhat laminate and manageable, are carefully spread like a carpet on these dry roads and walks during drizzly or damp weather.

Besides giving soft, clean and noiseless footing, these leaves serve to protect the gravel from washing rains during winter and spring, making wheeling or walking as pleasant as possible.

Parson Camperdown is apt to say, after dinner, that his road improvements save enough in mud, dust and door-mats to pay all expenses. And Mrs. Camperdown declares that even Dingball feels relieved from his ruinous and absurd digging of road surfaces, and finds abundant time now for useful things—making plants, shrubs and trees fruitful—subduing weeds, insects, fungi—keeping his outhouses, composts, etc., tidy.

In replying to the delegation of school teachers, Lady Schnipticket said that we should never improve public roads while private parties were destroying their own walks and drives by foolish management. "It is your business to teach the children better. As the child Jesus disputed the doctors who afterwards slew him, so it is the business of children continually to watch lest their heritage is wasted in costly and useless and blundering labor. Why should the roads of new America lead to some destructive center like the roads of dead empires?" This as she waved the party towards a bountiful lunch table. I have noticed that a good lunch is quite a binder for reform remarks, applied at the right time.

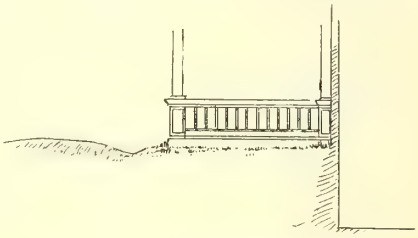


FIG. 4. MRS TARRYER'S GUTTER.

## WHAT IS THE GOOD OF IT?

A GOOD many people seem to think it is wise to indulge in a general wail over the decay of country life. Perhaps they feel better for it; like certain kinds of women, it does them good to cry. To hear these persons talk you would certainly think that the land is full of abandoned farms and that the cultivation of the ground is sure to result in loss and disaster. All the young men are going off to the cities in search of the fortunes they never can find in the country!

Now while this melancholy company may feel better for their wailing, it doesn't do a particle of good to anybody else. If they were polite they would pull down the curtains and have a good cry all by themselves where nobody could hear or see them.

It is not wise, it is "not good business" to listen to these people. It is one of the everlasting verities that out of the ground comes all food, all raiment, all wealth, all good things worth having. One kernel of corn will grow into a plant bearing two ears of corn containing 200 kernels or an increase of 400 per cent. in six months on a piece of the earth measuring 2x2x1 feet. Where is the trade or business in any city that will pay such an increase? Wall street is ridiculous beside such a percentage, and yet they say it does not pay to raise corn! It pays nature—she grows rich. And if a field of corn increasing at this rate, does not pay the owner, there is something the matter with the man. It is not the plant, or the field. Forever and ever, so long as the world holds men, there will be a demand for food, and every particle of it must come out of the earth or the sea. Every ounce of food is, first of all, a plant. Forever and ever, then, will there be a demand for plants. The growing of food can never be unprofitable, if the right man be at the plow.

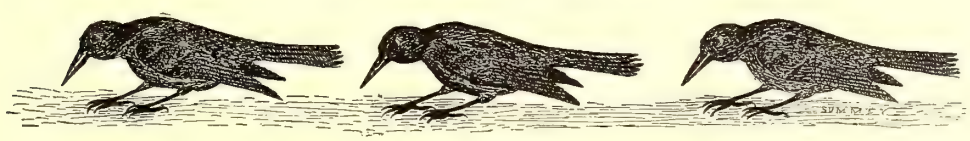
Never in the history of the world were there so many to eat in proportion to those who gather food from the earth. Never did the earth yield so much in proportion to the labor spent upon it. Never before did it cost so little labor to earn food. The great cities of to-day would be impossible if the food they consume had to be raised by hand tools or teamed to market by horses. There are not horses enough in the world to haul the food from the farms to the towns. There are not men enough in the entire country to cut the grass or gather the grain by hand. How then is it possible that the ancient art of gardening is falling into unprofitable decay? It is not. Gardening or producing plants and food on small pieces of ground is simply in a transition state. Take the potato. It was a garden crop, it is now a farm crop. To raise potatoes at a profit it must be treated as a manufacture; it must be done on a large scale, with the largest, best and most powerful tools.

The man who harvests one acre of potatoes by hand cannot compete with the man who harvests a hundred acres by machinery. Shall he, therefore, give up his acre garden and say that gardening does not pay? Not a bit of it. Cover the acre with glass and don't raise potatoes. It's business, not sentiment. Gardening will pay, always did pay—the business gardener.

Moreover, never before did the great mass of the eating population (that's everybody) want so much food. Never before were the eaters so particular as to what they eat. The American wants the best and he can pay the best. He uses more fruit than any man who ever lived. His wife wants more flowers than ever woman wished for before. It is idle to say that it does not pay to produce fruit and flowers. Perhaps it doesn't pay you. It pays somebody and if it is not you, why, did it never occur to you that there was something the matter with you?

You and I and all of us who are producing food from the ground, are tired of the people who wail about the unprofitable farms and gardens; we are too busy to stop to listen to such creatures. Let them go off to the cities and stay there. They are not worthy to live in God's country. We know that seed time and harvest shall not fail. We know that the food producing business is simply suffering a great and grand change for the better. The changing may be a trifle uncomfortable (moving day always is), but the move is an advance. Gardening is growing safer and surer. It is becoming more scientific, more exact, more like a manufacture, and therefore more profitable. We are looking forward and not backward, and much prefer those who will lend us a hand to those who merely sit on the fence and howl. What is the use of wailing?

CHARLES BARNARD.



# The Editor's Outlook.

*AGRICULTURAL EDUCATION.*

THE RECENT celebration at Cornell University in honor of the prosperity of the College of Agriculture outlined clearly and boldly the policy of agricultural education in that institution. There are two distinct theories of agricultural education in the land, although they do not appear to have been clearly comprehended by educators. The older and general theory endeavors to make farmers of its students; the other, having secured the farmer's son, aims to educate him. The one aims to train mere tradesmen or handicraftsmen; the other desires to give the farmer a broad education, and to fit him for the best citizenship, as well as for farming alone. It is the difference which exists between the trade school and the university.

The common conception of an agricultural education supposes that farming as a trade can be taught at college. But this supposition is untrue. Probably there are few educators who seriously hold this idea at the present day, and certainly no one who has made the endeavor to teach the complete trade to students can believe in it. It is little more than a pleasant deceit. The place to learn the common farm operations is on the farm, and if it is the purpose of our colleges to teach these operations as a prescribed part of their courses, they are, by so much, necessary failures. The college cannot take the place of the farm. Its purpose is to supplement it and ennoble it. If the student who seeks an agricultural education is not already familiar with common farm operations, he should first acquire them, or he should spend one or more of his vacations on a farm. In other words, like all other students, he must prepare for college before he enters it. Many farm operations can, of course, be learned at college, but everyone familiar with the subject knows that much of the college farm labor is little more than a travesty, even when directed, as it usually is, in the utmost seriousness and earnestness.

This opens up the whole question of compulsory paid student labor. It was a noticeable fact that three of the professors who took part in the Cornell celebration had been connected with institutions in which the compulsory student labor system was maintained, and all of them are now opposed to the system. Having known both sides of the question, their opinions should carry some weight. The compulsory labor system steals the student's time. One cannot afford to go to college, at an expense of $150 to $300 a year, for the privilege of doing common farm labor for eight or ten cents an hour. He can do the same work at home without expense, and receive fifteen cents an hour for it; and the chances are all in favor of his learning more careful methods at home, when pressed by necessities, than in the half-comic gang labor at college. When the student has acquired the common operations, and has obtained the money, let him go to college. An education is supposed to teach one to think, rather than to work; and even were it otherwise, it is nevertheless true that no amount of perfunctory labor under surveillance can make an industrious man out of a drone. All industry, energy and efficiency are conceived in the mind: give the student the motive for work, and work he must.

We believe in teaching the student farm operations in college, but we cannot believe in the common perfunctory labor. The labor required of the student should be purely educational—laboratory work—and like all laboratory work, should be without pay. There are very few institutions which have facilities for conducting true laboratory work in farm and garden practice. It is the boast of the compulsory labor colleges that the work they require of students is educational, but such is only infrequently and incidentally the case; and even if true, it is a strange philosophy which requires the institution to pay for teaching a student! So long as the student is paid for his labor, so long is his work necessarily measured by the pay he receives, and so long must there be an endeavor to make him earn his money, whether he is learning anything or not. The money standard is not the true measure of the student's endeavors. The paid compulsory labor system is fundamentally wrong, and there is no law in the philosophy of pedagogics to sustain it.

There are two other pleas for compulsory labor which were mentioned at the celebration in question. One is the assertion that it keeps the students in health; but a comparison of the students of labor colleges and others shows no superiority in the former in this respect. It is also said that compulsory labor keeps the student in sympathy with

labor. This assertion seems almost trivial. It is certainly a new philosophy which teaches that love for any system is bred by compulsory and perfunctory labor in it. But the best answer comes from the institutions which do not practice it. The graduates from the Cornell College of Agriculture—and they are as many as from any *bona fide* agricultural school in the country—all follow agricultural pursuits. It would be impossible to find a more enthusiastic lot of "farm boys" than those graduating this year. The compulsory student labor system is really a relic of the old fear that education unfits the boy to be a farmer, and it seeks by this means to prevent him from drifting off into agricultural heresy. It puts a stone in his pocket to counterbalance any lightness of the head.

We do not wish for a moment to criticize any institution, nor to make comparisons. We are simply speaking upon principles of education. The labor colleges have done a great work, and the leading exponent of this system has been a beacon light in agricultural education. But the good results, in our opinion, are not so much the outcome of the labor system as we have been led to suppose. Certain strong men in these institutions have impressed themselves indelibly upon their students. There is now to be observed a gradual weakening in the old labor system in some, at least, of these colleges. True, unpaid laboratory work is gradually taking its place. This is indication that agricultural education is rising into riper and truer ideals.

* * *

*HORTICULTURAL CONGRESS.* WE MUST again call attention to the desirability of securing an international horticultural congress, of the broadest scope, at the World's Fair. No one can doubt the good which such a gathering might accomplish. It would teach us the best methods of other peoples, and would familiarize us with their products; and it would afford an accurate measure of our own horticultural industries. Other interests are arranging for international congresses; why should not horticulture?

* * *

*OLD PREJUDICES.* THE MOST noxious weeds to fight are old notions and old customs. You cannot cut them down right and left; or even if you do uproot them they live on as briskly as before. They are not born of reason or polity; they simply came, and now they abide. We are thinking particularly of that common, all-pervading notion, that to work in the soil is menial, and yet those whilom individuals who think so look upon the machinist or engineer as one occupying a more elevated position. This general feeling is apparent everywhere, in the city and in college. And yet, the tiller of the soil is called upon to exercise the wider judgment, and he should possess the more skill. But the two things are really not comparable, because they are essentially different, and both are indispensable. These common notions are simply survivals of an old prejudice.

* * *

*FRUIT REPORTS.* EVERYONE must have felt the unsatisfactory character of crop reports from year to year. Every spring there come the discouraging reports of heavy frosts, falling of fruits, blasting winds and cold rains, until it would seem as if all fruit were to be swept from the face of the earth, and in August and September we hear of bountiful harvests in the same regions! So sensational and so customary have these discouraging spring "fruit prospects" become in some sections that consumers look upon them with distrust. There are many reasons for these unreliable reports. Some people are always prone to exaggerate difficulties. One of our neighbors reports regularly every spring that the peach buds are killed, and he believes that they are. He seems to enjoy making some startling report. It relieves the monotony of life, and it affords food for reflection in the local Farmers' Club for a whole month; and perhaps he enjoys the distinction which the local press gives him when it says that "Mr. Smith has made a careful examination of the peach buds, and he finds all of the early kinds dead, and fully 99 per cent. of Hill's Chili and Old Mixon are destroyed. He advises that the Farmers' Club be called together at once to consider the advisability of cutting down the trees." Many growers, we are convinced, do not know when a fruit bud is dead, and nearly all the spring reports are premature.

All this should be remedied. There should be reports of such character that both dealers and growers can determine how to shape their business for the year. Some bureau in each state should collate and publish reports two or three times during the season, and only the most reliable observers should be employed. Their observations should comprise a whole state, and they should be published promptly in bulletin form. The state horticultural societies are at once suggested as the proper authorities to conduct this work. Two or three have already done it. Their labors should be extended, and every state should aid. Our horticultural interests are becoming so extensive that some such system is a necessity.


*** THE AMERICAN GARDEN *stands for simplicity, good taste and correctness in names of varieties. In general botanical nomenclature it follows Bentham and Hooker and Nicholson's Dictionary of Gardening. In the names of fruits, it adopts the catalogue of the American Pomological Society, and in vegetables the Horticulturists' revision in Annals of Horticulture. In florists' plants, it follows the determinations of the Nomenclature committee of the Society of American Florists. It opposes trinomial nomenclature, and therefore places a comma or the abbreviation* var. *between the specific and varietal names. It uses capital initials for all specific and varietal Latin names which are derived from proper nouns.*

* * * *Hereafter all editorial correspondence and all manuscript for publication should be sent direct to the New York office.*

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THE NOMINATION of Walter S. Maxwell, for chief of the horticultural display at the World's Fair, has been rejected by the board of managers. Gen. Chipman of California was nominated, but was not confirmed. As we are going to press, William Forsyth of California is nominated, and he will probably be confirmed. The horticultural building is to be placed in Jackson park, rather than on the lake front.

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A NEW STRAWBERRY.—Mr. Peters, of Fruitland, Md., shipped a 32 quart crate of berries Friday last (May 29) to New York, which brought 27 cents per quart. They were from a seedling propagated by Mr. Peters, and bear his name. This is the highest price we have heard of this season.—*Wicomico News.*

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ELLWANGER & BARRY gave to the city of Rochester last year, for the use of the children of the city, a commanding pavilion built upon an eminence in Highland Park. It is built in circular form, three stories high, with a diameter of 62 feet. The dedicatory exercises accompanying its presentation are printed in an attractive little pamphlet, which has just come to our table.

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SOUTHERN DELAWARE FRUIT OUTLOOK.—Strawberries are little, if any hurt, here, and a good yield is expected. We are shipping some, but the bulk will go in next week. Blackberries are hurt on Wilson, though not on Early Harvest. Raspberries are in splendid condition. Peaches hurt; not one-third crop here. Some varieties are full and others very thin. Elberta is quite full. I have an old orchard that is full of all varieties. Pears are not hurt much, but apples are.—CHAS. WRIGHT, *May 26.*

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FIRST MARYLAND PEACH.—Mr. L. B. Price, of Allen, Md., seems to be the champion strawberry grower of the county, judging from the size of the berries he sent us Monday. They were the Sharpless variety. Last week he sent us a quart basket of choice fruit, 35 berries filling the basket. Monday he beat this, sending us a quart basket which was well filled with 26 berries. Mr. Price said he used Humphreys & Tilghman's mixture T. as a top-dressing. Accompanying the berries was a delicious peach.—*Wicomico News.*

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CELEBRATION AT CORNELL.—One of the most unique educational celebrations ever held in this country took place at Cornell University, Ithaca, N. Y., June 11th. It was a jubilee-banquet in honor of the prosperity of the College of Agriculture, and was inaugurated and managed by the students themselves. Toasts from students and prominent men outlined the philosophy and policy of agricultural education more fully than it has ever been outlined before in the country, probably. The menu was made up entirely, except sugar and spices, from articles grown upon the university farm and gardens, and it comprised over 50 articles. The entire proceedings will be published in pamphlet form.

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TASMANIA PEACH TREES.—Five hundred young peach trees have been imported by the Delaware College Agricultural Experiment Station from Tasmania, an island lying south of Australia, because of their freedom from the yellows disease. The freight and express charges on the same were $500. These trees will be distributed among the following responsible fruit growers in the state: Charles Wright, Seaford, 200 trees; S. H. Messick, Bridgeville, 100, and Daniel W. Corbit, Odessa, 72. They will thus be carefully nurtured and experimented with in all three counties, and if they prove thrifty and invulnerable to the diseases which are so destructive to native trees, their introduction will probably be very general throughout the state.

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NOTES FROM THE NORTH CAROLINA EXPERIMENT STATION.—We have a good crop of fruit generally, but I fear the Japan plums, particularly Kelsey, will be very unreliable. They bloom too soon and get killed. Have had no Kelseys since '89, and none this year. Am glad to say that the Satsuma orange is all right. One tree lost leaves, but I think it was from an enfeebled condi-

tion before winter set in. The other one did not drop a leaf nor lose a twig, and is now making new growth and bloom. I am building a grapery for cross fertilizing purposes, mainly to produce a late grape for this country. We are entirely dependent upon northern grapes after August (except Scuppernongs). I shall use Herbemont, Herman and Lincoln largely for native sorts, and cross on Prince Albert, Lady Downs and Muscats. I am also beginning experiments in root-grafting some French grapes on our native roots for trial out doors. Grizzly Frontignac does well here on its own roots for a number of years, and so does White Chasselas, and we hope, by getting them on resistant roots and by careful treatment for mildew, to grow them successfully outside. The California Mission grape grows luxuriantly here, but fails to ripen on account of mildew and rot. The vines have heretofore had no treatment, but I am spraying them this season, and hope to get some results from the splendid wood growth they make.—W. F. Massey.

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Fruit Transportation Rates.—Chairman Blanchard has issued the following circular concerning railroad rates on fruits from Ohio river points:

In accordance with the action of the freight committee May 13, 1891, and taking effect June, 1, 1891, the following will be the basis of minimum rates from Cincinnati, Louisville, Jeffersonville, New Albany, Evansville and Cairo to all points in the territory of the Central Traffic Association, to be used as proportions of through rates on the articles named below coming from the territory east of the Mississippi river, south of the Ohio river, except Mississippi Valley points and junction or terminal points on and west of the Mobile and Ohio railroad, from which authorized percentage divisions are in effect:

| | C. L. | L. C. L. |
|---|---|---|
| Fruits, all kinds, | Fourth class | First class |
| Cabbage and melons | Fifth class | Third class |
| Vegetables not herein otherwise specified | Fourth class | Third class |

Except the rates on pineapples, bananas, and cocoanuts, car loads, from South America via Port Tampa, Fla., will be:

To Chicago from all Ohio river crossings, 12 cents per 100 pounds.

To Indianapolis from Cincinnati, New Albany, and Jeffersonville. 8 cents per 100 pounds.

In the application of these proportional rates the rules of the official classification shall govern, except as to minimum car load weight, which shall be 24,000 pounds. Where the use of the class and minimum weights according to the official classification would produce lower rates it shall govern.

The proportional rates from Cincinnati apply from the depots of the Louisville and Nashville and Cincinnati Southern railroads in Cincinnati. The proportional rates from Louisville, Jeffersonville, New Albany, Evansville and Cairo apply from the depots of roads leading north and east from those points.

Prorating from Louisville on articles named herein shall be confined to traffic originating at Louisville proper, and to shipments delivered to lines leading north and east from that point by connecting railroads, but it shall not be permissible for the Louisville and Nashville to prorate from Louisville on shipments reaching that point via its own line. The proportional rates named herein from Cairo shall not be prorated through East St. Louis.

If the initial lines so desire, the foregoing basis of rates (excepting rates named on pineapples, etc., to Chicago and Indianapolis) may be applied on the same commodities when shipped from Ohio river points proper.

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Dutch Horticultural Society.—At the meeting of February 14 a first-class certificate was awarded to E. H. Krelage & Son, Haarlem, for *Iris Bakeriana*, a new plant. Second-class certificates were given the same party for *Iris reticulata*, M. B., var. *Sophenensis*, Hort. (new introduced plant), *Convallaria majalis*, L., var. *prolificans*, L. Wittmack (new plant), and *Galanthus nivalis*, L., var. *poculiformis*, Hort. (uncommon plant). Honorable mentions were given C. G. Van Tubergen, Jr., Haarlem, for *Calanthe vestita* var. *oculata gigantea* and *Phajus Wallichii* (as good cultivated plants); and H. J. Van Heijst, Wijk bij Duurstede, for *Amaryllis Tettani* (good cultivated plant). "Thanksgivings" were made to E. H. Krelage & Son for *Galanthus nivalis*, L., var. *umbricus*, Hort. (new plant), *Galanthus nivalis*, L., var. *lutescens*, Hort. (uncommon plant), *Colchicum Bertoloni*, Steven (new introduced plant); and to the Zoölogical Garden at Rotterdam for *Vanda Cathcarthii* and *Enkyanthus quinqueflorus*.

At the meeting of March 14 first-class certificates were awarded to E. H. Krelage & Son, at Haarlem, for *Clivia miniata*, Rgl., var. *Natura Artis Magistra* (new plant); *Puschkinia scilloides*, Adams (uncommon plant); to C. G. Van Tubergen, Jr., Haarlem, for *Anoiganthus breviflorus*, Baker (new plant), *Iris stylosa*, Desfont., var. *alba* (new plant), *Lachenalia hybr.* (*hybr.* of *L. luteola* and *L. quadricolor*) (new plant), *Iris Sindjarensis*, Boiss. et Hauskn. (uncommon plant) and *Iris Kolpakowskiana* (uncommon plant); and to Phil. Henkel, at Hilversum, for *Cyclamen persicum*, Mill., var. *giganteum fl. alb.* (new plant). A botanical certificate was awarded Ant. Roozen & Son, at Overveen, for *Plagiolirion Horsmanni*, Baker. Honorable mentions fell to E. H. Krelage & Son, for *Collection of Clivia miniata*, Rgl.; to C. W. R. Scholten, Jr., Amsterdam, for *Dendrobium densiflorum* (good cultivated plant), *Schomburgkia undulata*, Ldl. (good cultivated plant); and to C. G Van Tubergen, Jr., for *Fritillaria aurea*, Schott. (good cultivated plant). "Thanksgivings" went to E. H. Krelage & Son for collection bulbous and tuberous plants (*Scilla puschkinoides*, Rgl.; *Leontice Altaica*, Pall; *Leontice Alberti*, Rgl.; *Scilla bifolia*, L., var. *alba*; *Scilla Sibirica*, Andrews var. *pallida*; *Narcissus Bulbocodium*, L., var. *monophyllus*; *Tecophilea cyanocrocus*, Leyb.; *Iris persica*, L., var. *purpurascens*, Baker; *Bulbocodium ruthenicum*, Bunge; *Narcissus minor*, L., var. *minimus*, Hort.; *Muscari azureum*, Fenzl., and *Colchicum luteum*, Baker), and for fruits of *Physalis Peruviana*; to Ant. Roozen & Son for a collection of cut-flowers from *Iris reticulata* var. *histrioides*, *Iris reticulata* var. *Sophenensis*, *Iris histrio* and *Urceolina pendula*, Heal; to H. J. Van Heijst for *Ranunculus anemonoides*, *Saxifraga Bur-*

*seriana, major, Primula pulcherrima, Primula elatior, cærulea* and *Dondia epipactis*; the Zoölogical Garden for *Amaryllis Johnsoni*; and to J. C. De Lange, Rotterdam, for *Hamamelis Virginica, arborea.*

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American Associaton of Nurserymen.—The Nurserymen, as has been the rule of late years, met in a most interesting session in beantiful Minneapolis, Minn. The meeting was a most representative gathering from all sections of the country. President Emery's address abounded in practical points, the more important of which follow as being recommended by the committee for action, the report being, in each instance unanimously approved.

Resolved, That a committee of three be appointed to consider the recommendations relative to insurance of nursery stock in the field and cellar, and report at the next meeting. It is also urged that a committee take into consideration and report upon the adoption of a telegraphic code, for use by the Association.

*Whereas*, We believe the classification adopted for the World's Columbian Exposition relative to horticultural subjects is faulty and unjust to the horticulturists of the country, and if allowed to stand will tend to hinder the success of that department of the Exposition; therefore, be it

*Resolved*, That we, the American Association of Nurserymen, representing every state in the Union, do most earnestly protest against such classification and ask that the same be changed to conform with the acknowledged reasonable classification accepted by the horticulturists of the world. Without fixing the various classes under which exhibits might be made, we suggest the following grouping as satisfactory to the nurserymen, fruit-growers and florists of this Association:

*Department B.—Horticulture.*

Group I. Pomology, including all fruits on exhibition.

Group II. Floriculture, including flowers, flowering plants, shrubs, cut-flowers, etc.

Group III. Arboriculture, nurseries and their products.

Group IV. Kitchen and market gardening and their products.

Group V. Horticultural appliances, methods and tools.

Group VI. Seeds used by nurserymen, florists and gardeners.

*Resolved*, That we most earnestly protest against the appointment of Mr. Walter S. Maxwell of California as chief of the Division of Horticulture of the World's Columbian Exposition, believing, as we do, that there should be a man at the head of this great work, who, by taste, knowledge, experience and acquaintance is in full touch and sympathy with every horticultural interest of this great country.

*Resolved*, That William C. Barry of New York, C. L. Watrous of Iowa, N. H. Albaugh of Ohio and Charles W. Garfield of Michigan, be appointed a committee to meet the committee of the Board of Directors of the World's Columbian Exposition, in Chicago, on the 9th day of June, to present to that body the action of this Association and ask their favorable consideration.

The following is the result of the election for officers: Pres., J. Van Lindley, North Carolina: Vice-Pres., W. J. Peters, Ohio; Sec., C, A. Green, New York; Treas., G. A. Whiting, Dakota. Executive committee: W. F. Heikes, Alabama; W. C. Barry, New York; G. J. Carpenter, Nebraska. As a place of meeting for 1892, Atlanta, Ga., was unanimously chosen.

Southern fruit growing, as described by May Gessner, of Georgia, at the convention, is in a most encouraging state, especially as regards peaches. Within five years the growers, thanks to rapid railway transit, finding themselves within reach of the great northern markets, have planted extensively; having realized as high as $20 per bushel for first shipments of Alberta peaches, usually made about May 20th by express to Savannah, then by steamer to New York, requiring for the trip 2½ to 3 days.

Many grapes are also shipped, the bulk of which sell for 4 to 5 cents per pound on the track, realizing $19 per ton against $17 per ton for California grapes, because of getting the fruit to market in better shape at less cost for transportation, which, therefore, yields a greater profit.

Near the center of Georgia three companies have been organized for the purposes of fruit growing, by Ohio men, having an aggregate of 3,100 acres, of which 400 acres are already planted with 70,000 peach trees. Hale Bros., of Connecticut, have secured 800 acres in the same section, while large tracts have been also taken by parties from Michigan, New York and other states, and as this land is all intended to be devoted to tree fruits, it is plain that here is an opening for nurserymen, it being a fact that it is impossible to secure as many peach trees as are wanted.

In 1889 one grower, from his own peach orchards, shipped an amount which netted him $50,000. Numbers of others made from $5,000 to $10,000 clear on their crops. A few apples are grown both in the middle and northern portions of Georgia, but only for home use. Altogether we believe they have one of the best fruit sections in this country, being but little troubled with frost, and the soil being peculiarly adapted to small and tree fruits, as well as to the vine.

Regarding the much discussed question of Russian apples, Wm. C. Barry, president of the Western New York Horticultural Society, very concisely informed the western nurserymen as to what eastern people desired to know on this subject and urged them as follows, to endeavor to supply that information as quickly as possible:

"We are very anxious to know which have proved valuable, as many years ago eastern nurserymen imported many Russians in an endeavor to determine their value, but few, if any, were found to equal the Duchess of Oldenburg; much expense having been incurred and pains taken, the result was so valueless that they become discouraged and dropped the matter.

"Now, as it must be 15 or 20 years since experiments were began in the north in this direction, we would like to know which of the Russians, other than the Duchess, have proved to be desirable. We occasionally read of sorts which have done fairly well, but I am, to-day, un-

able to say with any accuracy, which are worthy of being catalogued and disseminated; while I have attended many exhibitions in different parts of the country, yet I have not seen this apple on exhibit, named or described in any way, and it is one of the objects of my visit to Minnesota to find out, if possible, which are good.

"The Duchess is just as valuable in the east as in the west and if we can get one, or more sorts equally or nearly as valuable, we want to know as quickly as you do, and I can assure any one that has such sorts to offer for sale, that he will find a market in the east as well as in the west."

On the same topic Mr. Albaugh said that in central and southern Ohio, out of 37 sorts of grafts obtained from Prof. Budd, of Ames, Iowa, only one, the Longfield, made a healthy three-year old tree; all the others were injured by winter, which did not hurt Ben Davis or the Yellow Belle. He said that the Wealthy, as an August apple, had, for city markets, proven profitable, as has the Maiden Blush, an apple that has greatly benefitted Ohio. Whether it is in the atmosphere or the moisture, the fact is that outside of the Duchess, none of the Russians have been a success in the valleys of southern Ohio.

Concerning "One Good Way to Sell Nursery Stock," G. L. Grant recommended that more attention be paid by florists to having a fair stock of fruit trees, etc., and that nurserymen should offer special inducements as to rates, etc. to the trade, and thus not be so dependent on their costly agents, and from whose misrepresentations they often severely suffer.

In the discussion, N. H. Albaugh said that while he believed in the ability of the florists to designate to planters, the best and most successful varieties of ornamental trees, plants, etc., for their several localities, yet he did not have the same faith in their being able to compete in the line of fruit trees, with the men who travel directly for nursery firms, endeavoring to make sales day by day to the people of the whole country, many of whom the florists never come in contact with.

Again, it is not every person who ought to plant trees that is willing to go the florist and get enough horticultural knowledge imbued into his head;—it is hard to get him to that point where he would be willing to invest in trees that are necessary to protect, embellish and render more valuable his home. He further believed that but few florists could give sufficient attention to a retail tree business to warrant any nurseryman in giving up to him any county in a good fruit growing state to canvass for orders for his establishment, as one good, enterprising, intelligent tree man will sell, by far, many more goods to persons who take no interest in the florist business.

In Ohio, resident agents are not so efficient as are men who devote their whole time to tree selling, being energetic, upright, honest business men, who, for a fair compensation, can make a legitimate business out of it. When nurserymen have grown their trees their work is not half done, as it is a serious question as to how they shall sell their goods. Mr. Albaugh stated that five or six plans had been tried and abandonded by them, until they adopted the method of giving their agents certificates that made the firm legally responsible for all their agents' acts, and the plan, he believes, will be a permanent success.

Mr. Grant wished to add that he offered his idea not as a substitute for the agency system, but merely as an accessory to it by which, he believed an opening would be made for sales of some magnitude, especially in the larger cities: many people had come to him and inquired where they could get ornamental and other nursery stock, saying that they had been stuck so often by agents that they wanted no more to do with them.

Mr. Harris did not believe that a genuine florist would be worth a red cent to sell fruit trees, as local agents should have "get-up" enough in them to raise object lessons in the way of bearing trees, for people would much rather see the trees than the pictures carried around by traveling agents. I do not know a nurseryman that grows his own stock that sells worthless trees; it is the fellows who are not nurserymen and who do not know whether pumpkins grow on trees or not, that sometimes swindle you, but not genuine nurserymen.

J. H. Hale thought the suggestion a good one, as there are many planters who must have the trees almost forced upon them, and there are also others who have been defrauded, or perhaps who partially deceived themselves by expecting stock about twice as good as it could be made; nurserymen who are seeking all the markets they can get might make a specialty of this outlet by offering stock on certain conditions. He believed from his work in the canvass department, that the florists are keeping pretty near the head of the procession, in the way of business, it having increased to an enormous extent in the last 20 years. The florist has remained right in touch with the people and should be able to sell considerable nursery stock.

Mr. Hill was of the opinion that a florist might make a good tree salesman if he gave time and attention to the matter, but any florist who has not business enough in his own legitimate line at the tree selling time had better retire from the florist business, as the two trades come right together.

Horticulturist Keffer, of the South Dakota Station, presented an outline of what was essental to the securing of a field for nursery stock in the vast section of the Dakotas, saying that the cry that comes forth from millions of fertile windswept acres, to which each passing year adds volume, is to the nurseryman, "Come over and help us; our farms would be profitable if they were tree protected; our homes would be beautiful if ornamented by your wares; our lives bearable if sheltered by your conifers; our stomachs would rejoice in the products of your orchards."

The Northwest needs the spread of sound horticultural gospel and hardy horticultural stock, but before a profitable trade can be had in the prairie region, climatic conditions must be modified by universal grove planting. The winds must be conquered before orchard fruits can be, to any extent, grown. Western nurserymen realize this, and the farmers recognize its import-

ance, as shown by their making grove planting their pioneer horticultural work, and now that the government has withdrawn the slight encouragement hitherto given, it is of the utmost importance that the combined efforts of all interested classes be secured in the promotion of this form of enterprise.

The western farmer will grow his own fruit as soon as he has provided a sheltered location for his orchard; by attempts to push the interests of the fruit nursery where the windbreak has not been planted failure is not only the immediate result, but discouragement and prejudice attend the failure and prevent trials under more favorable conditions.

The plum is the pioneer fruit of the northwestern states, especially the native *Prunus Americana*, from which many sorts of good quality are being secured, and is much hardier than *Prunus Chicasa*, which has a more southern range, from which have come Miner, Wildgoose and others. It will be sound business policy for the nursery trade to discard all the entire Chickasaw family for planting north of central or northern Iowa, even though it is necessary to substitute a poorer quality and of more difficult propagation, so long as perfect hardiness is secured.

The De Soto plum is the standard sort all over the northwest, but in Dakota is too late to be relied upon, being injured by frost some years. Fruits which will withstand cold, and also heat and drouth are constantly being discovered, and although the greater part of the "discoveries" are discarded after general trial, still it must be with nursery stock as with living things a case of the survival of the fittest, which at last will produce something to be relied upon.

If this association could lay dense lines beyond which its members and the trade would *not* go in the matter of varieties of fruits for the northwest, a great stride towards a mere general use of nursery stock would ensue.

Forty varieties of plums are being tested at this station, where precautions are taken to insure the thorough ripening of the wood in the fall, but many sorts must be dropped. In addition to Miner and Wildgoose there is Forest Garden, which is so weak in the joints as to be worthless. Wolf not hardy, an example of many more. Besides De Soto, Harrison's peach promises to be of great value.

The northwest has definite needs in the apple line, and does not care whether a sort is Russian, Yankee or Turk, as long as it will live through our winters and withstand intense heat and sunshine even if it yields only a moderate quality and quantity of fruit. The crab, which must be the predecessor of the standard apple, while hardy, is subject to a severe blight which is a serious drawback. Nurserymen anxious to extend their northwestern trade will do well to disseminate the best varieties of crab apple; root grafts with long scions make the best trees, as although it is easy to secure hardy plum stocks for budding, yet there has been so much budded stock broken by the wind at the point of union, that it is not safe to invest in anything but grafts.

The northwest Iowa, Minnesota, Nebraska and the Dakotas have been planted thickly with orchards and fruit gardens, for it is inhabited by men who are not only farmers, but home-makers as well, who would reproduce on the prairies the surroundings of their eastern and European homes; failures have been countless, successes few, but this region is in the morning of an increased activity in horticulture.

The following stirring and emphatic resolutions of Minnesota State Forestry Association were adopted by the nurserymen:

WHEREAS, The beneficent effects of great forests, in compact form, are not circumscribed to any special locality, but extend over vast territory, protecting against cyclonic storms so often destroying the crops, economizing the snows and rains for slow and healthful evaporation, preserving the flow of our springs that feed our lakes and rivers, imparting humidity to the atmosphere, thus promoting rain-fall, serving everywhere as a factor in the agricultural and horticultural industries and all correlated business interests of the country; and

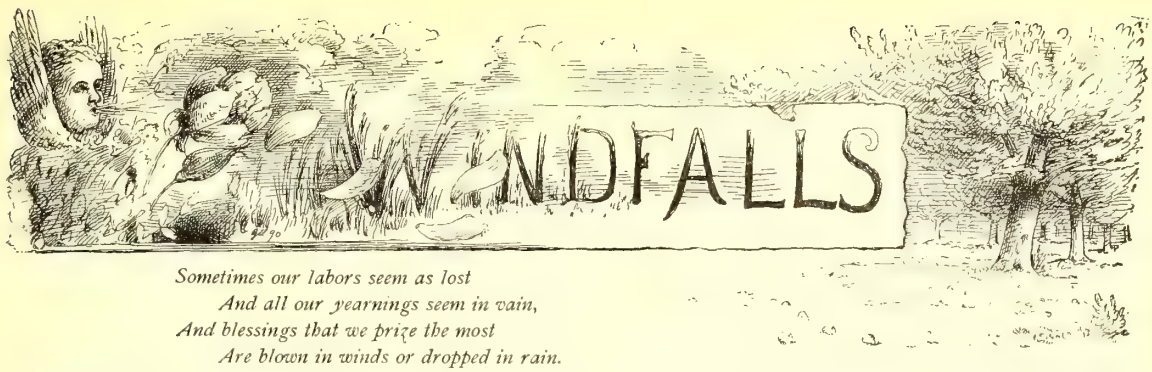
WHEREAS, Congress had delegated to the President the right and duty to reserve to the people at large, under the control of the National Government, such woodlands as in the judgment of citizens of states and territories where such lands are located, will tend to secure these benefits in perpetual inheritance to the people; therefore,

*Resolved*, That the American Association of Nurserymen recommend and urge our agricultural and horticultural co-operators in every part of the country to take immediate steps for the security of such reserves of woodlands, not privately entered, wherever it is possibly practicable, and that special attention be given to this matter by the people occupying the Rocky Mountain regions to save the native forests there from further vandalism of axe and fire, so that their great reservoirs of water may be wisely economized for general atmospheric humidity and for irrigation over and on the great plains of the west.

*Resolved*, That such a reserve of the beautiful woodlands in the northern part of Minnesota, not yet entered, to be used as one of the national parks, is essential to complete the interlocking chain of forests to be stretched over the country, and that such reserve comprise at least four or five millions of the six millions of unoccupied acres, and that said park be located in as long a belt east and west as possible within the Governmental domain, and extend south where its waters, by natural or artificial channels, can help feed the sources of the Mississippi river.

*Resolved*, That printed copies of these resolutions be sent to the executive officers of the Government, of the Forestry divisions and organizations, and to all the governors and congressmen of the states, and measures be provided to have them circulated to the people through the principal papers of the country.—ELMER E. SUMMEY.

(*Concluded next month.*)




*Sometimes our labors seem as lost*
*And all our yearnings seem in vain,*
*And blessings that we prize the most*
*Are blown in winds or dropped in rain.*

**Avoiding Frosts.**—Major Powers decided Wednesday night to get ahead of the effects of any frost that might visit this section, and so he set fire to some stumps and brush surrounding his peach orchard, a transaction the effects of which may be made visible later in the season. Since the above was in type we learn that A. S. Packard had from twelve to twenty men in his orchard Tuesday and Wednesday nights attending to fire to keep off the effects of any frost that might come, there being some on each night.—*South Haven* (Mich.) *Sentinel, May 9.*

**Old Crates and Heavy Charges for Same.**—An inspection and inquiry in the Washington, D. C., markets brought to light the fact that some of the Norfolk shippers are charging as high as a dollar apiece for old, dingy, weather-beaten 24-quart American basket crates, in which were shipped their early strawberries. This was no little surprise to both the retailer and the writer when I told them that the whole thing—quart-basket and crate—brand new, cost but thirty-five cents, and moreover, that there was a crate equally as good, if not better, with the same capacity, that cost only fifteen cents, and known as the square 24-quart crate. This is certainly another piece of imposition upon an innocent buying public that should receive a hearty protest from everyone. In the first place, no such unattractive and unsightly packages should be used, and in the second place, no such charges should be demanded for them, for if paid by the middleman, surely the ultimate result is that the consumer pays enough extra to make good these exorbitant charges and save the middleman. Consignees have the privilege of returning the crates at a considerable cost or pay for them as stated. We will say that the time has come when sharp competition will "floor" any man who grows fruits for markets and does not use a new, clean and attractive package; and he should be downed. Using old packages is saving a nickle and losing a dollar's worth of reputation. Reputation to a fruit grower is worth often more than his crops.

Returning crates is a thing of the past, and should be totally discarded. None but new, bright crates, and especially boxes, are profitable. If orders are sent in to the manufacturer in the fall for early spring delivery, there never would be a time when delayed shipments could be offered as an excuse for using old unsightly packages. We call attention to this error and the overcharge for crates for the good of both shipper and consumer, and especially the shipper, if he intends to keep up respectable business relations with his patrons. —T. L. B.

**An Orchard Record.**—In regard to keeping the names of trees in an orchard, I will give my plan, followed for some time. Plant trees a regular distance apart each way—apples, 33 feet; peaches 16½ feet:

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| A | A | A | A | A | A | A | A | A | A | A | A |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| B | B | B | B | B | B | B | B | B | B | B | B |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| C | C | C | C | C | C | C | C | C | C | C | C |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| D | D | D | D | D | D | D | D | D | D | D | D |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| E | E | E | E | E | E | E | E | E | E | E | E |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| F | F | F | F | F | F | F | F | F | F | F | F |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

This gives letters running one way and figures the other. When Z is reached, simply double the letter. I keep a complete list while planting trees, then take map and mark up, and at same time remove the tag and mark its position on the back by letter and figure, to serve as a check when I come to map the work. This is the list:

| | | |
|---|---|---|
| A 1—Baldwin. | F 1—Mann. | Y 1—Grimes Gold'n. |
| A 2— do. | F 2— do. | Y 2— do. |
| A 3— do. | F 3— do. | Y 3— do. |
| : | : | : |
| A 40—Gol. Sweet. | F 40—Dickins'n | Y 40—Stark. |
| A 41— do. | F 41— do. | Y 41— do. |
| A 42— do. | F 42— do. | Y 42— do. |
| : | : | : |
| A 61—Ben Davis. | F 61—E. Harv't. | Y 61—King. |

I mark each row of trees along the fence by its proper letter, and on the other fence by its figure. I can then walk up to the tree wanted. I am down on tags, for the curiosity of people removes them.—F. M., in *Country Gentleman.*

**The Satsuma in North Carolina.**—The fact that the Satsuma orange has survived the winter unprotected at the North Carolina station, and is now making new growth and blooming, not having even parted with a leaf all winter, shows that this is evidently a species of unusual hardiness, and gives promise of a wide extension of the orange belt northward. That it will survive any of our winters here without protection is by no means certain. The past winter, while not so uncommonly mild as the winter just preceding it was, was not marked by extreme cold at any time. The lowest temperature noted at the signal station in Raleigh, I believe, was 21° above zero in January. But the high hill top, on which the Satsuma is planted, is swept by wind from every quarter, and is fully fifty feet higher than the signal station. It is to be presumed, therefore, that the trees withstood several degrees lower than 21°. But with the little bushes this orange makes when grafted on trifoliata stocks, it will always be an easy thing to protect them.

While on this matter of winter protection I would like to call attention to an arrangement gotten up for another purpose which struck me as a good thing. Passing along one of the business streets in Raleigh a few days ago, I noticed a large crate filled with great hay caps made of fluted paper pulp, and it occurred to me at once that here is the very material we want for the protection of half hardy things in this climate. Under a big cap of this waterproof paper oleanders, agaves and all such things can be carried through our hardest spells, and even the hay caps, in their present form, would be as useful in a southern garden as the clock is to the Parisian gardener, for it must be remembered that it seldom freezes here in daylight, and we could cover our lettuce, etc., etc., on frosty nights and expose them to the sun next day. If the manufacturers will take the hint and make us a lot of plant protectors, it will be a good thing and will pay them well.—W. F. Massey.

**My Experience with Strawberries.**—As I am always glad to hear the experiences of others with strawberries, perhaps my experience with them would be of interest to your readers. My acquaintance with them teaches me that the main point in strawberry culture is to grow the berry that suits your soil and market, let it be an old or new variety, let it be a big berry or a little one. Taking all things into consideration, I find home markets the best, and to these markets come a class that are ready to buy liberally at six cents a quart without regard to size; to supply such, you need a productive kind. Then other classes will buy a large showy berry at ten cents a quart that would not buy the small ones, though cheaper. And with all berries I find it pays to put them into two grades.

I have learned that soil, location and climate make so great a difference with the strawberry, that the only sure method of success is to try several varieties and take those that give the best results. Still I would not decide on one season's trial in every case. From my experience with old and new varieties, I find some of the old "laid aside" varieties have more good qualities than many of the new ones.

Of the old varieties that I have tested on my soil which is warm and rather inclined to clay, the best was the Windsor Chief. The plants are hardy, vigorous and most abundant bearers; berries average large, and do not dwindle at the last picking; a handsome berry of fair quality; would advise every grower to give it a trial where quantity is the desired quality.

Green Prolific was next best, a vigorous grower and abundant bearer. It is said to be a non-fertilizer, but with me it has produced 100 gallons on one-tenth of an acre with not more than one Wilson to every hundred of Green Prolific. The berry is as large as the Windsor, but will not average as large; with fine culture will give the very best satisfaction.

Miner's Great Prolific is truly well named; they are large, but soon dwindle to a very inferior berry.

Cinderella and Captain Jack had a fine bloom but did not have many berries, and they were only medium size.

Sharpless bore a few very large berries, but many were ill-shaped; worthy a trial.

Glendale bore well; the berry very firm and rather large.

Crescent Seedling started very promising. The berry colors all over at once of a bright scarlet, which gives it preference over others, but with me did not carry out its promise.

Crystal City bloomed well but bore very few berries, which were very small; I consider it worthless.

Jucunda, a good berry, large and of good bearing qualities, but requires high culture, which all berries should have.

All the above varieties stood the winters well.

Of the new varieties that I have fruited, Gandy excells all. It is very hardy and quite large, 40 berries as they run will fill a quart, and 20 picked will fill a quart. It is only medium in productiveness, or that is, it will not average over ten berries to the plant. I am now selling them at ten cents more per gallon than the Bubach. Considering their large size, I do not know that they will not prove as productive as the Bubach; but the variety is a vigorous grower.

The Bubach is a magnificent berry too, for it is hardy, a good grower, and very productive; they are large, sixty will fill a quart as they run; I am exceedingly pleased with these two berries.

The Monmouth has proved a worthless berry; plant weakly, blooms well, but they produce but little fruit and not large. By the way, I bought it for its earliness, and it and the Bubach were ripe the same day, May 6; the first ripe Gandy was the 20th.

I am now testing several others this season; may be able to give something of interest of them later.—Thos. D. Baird, *Ky.*

**A New Grape, Spinovitis Davidii.**—*Spinovitis Davidii* is a grape which at present is receiving much attention

in France. It is a native of Eastern Asia, and was discovered by and named for a missionary, Armand David. It was introduced into France some years ago, but the existence of such a grape was doubted for a long time. But now it is no longer a myth, and it is being studied closely. E. A. Carrière gives the following description of it in the *Revue Horticole:*

The plant is very vigorous, climbing and attaches itself to all bodies with which it comes in contact. The tendrils are very strong and enable the plant to obtain a firm hold. The canes are strong and slightly flattened. The bark is pale red and it bears many quite firm spines, which persist two or three years; they are of unequal length, but they are always enlarged at the base; some are blunt and others are sharp, but all are very hard; they are yellowish-white in color. The leaves are heart-shaped and long, coriaceous, quite thick, deeply crenate at the base, the lobes almost overlapping; the leaves are about six inches long and four wide, reddish-green above, glaucous-green below. The petiole is deep red in color and also covered with spines. The clusters are often a foot long, and bear many spherical berries which are almost half an inch in diameter. The berries are very acid, but the flavor is, nevertheless, good.

Altogether this grape seems to promise a good deal. It is exceedingly early and very productive, and may be the origin of a new race of grapes.

SPINOVITIS DAVIDII.

**Judicious Pruning.**—Judicious pruning is one of the chief means of producing good and abundant fruits. This implies, of course, that improper pruning tends to a contrary result. The greater part of fruit-bearing vines, shrubs and trees, is more or less injured by over-bearing, while much of the remaining part is injured by over-pruning. There is nothing gained by this over-bearing, but, on the contrary, there is loss. The tree, by the excessive draft upon its vitality, either sheds its excess of fruit prematurely, or bears its burden and imperfectly matures indifferent or worthless fruit.

To test the value of proper pruning, relieve the tree of the excess of fruit, in a fruitful year, by picking off a third or more of the fruit set, and it will be found that the remainder will, at least, equal in weight and more than equal in quality and value all that the tree could have borne.

The object of pruning, then, is to grow shapely, vigorous fruit-bearing trees that more valuable fruit may be produced.

Ordinary pruning consists in cutting away useless wood, to balance the growth of the tree, and form a symmetrical shape; check excessive growth in parts where it is not desired, and to force it where it is wanted, and to cut away the surplus of bearing branches, so that the productive powers of the tree may not be over-taxed. And to do this properly and effectually, it is necessary that some knowledge of the business be had, and some plan adopted and followed.

Although a tree somewhat advanced may be greatly improved, both in appearance and condition, yet, properly speaking, the nursery is the place to give incipient formation of the tree, and after transplanting, the time

to make of it what the tree should be. Let careful attention still follow it, removing, each season, all unnecessary growth, giving proper shape and training until the tree is well established, and even thereafter necessary pruning must not cease.

It is doing the tree double violence to suffer useless or unnecessary branches to grow, perhaps for two or three years and then cut them away; it is evident, if taken off when young, that which is thus thrown away would have gone to the support of the tree in its fruit bearing. Trees which have been neglected and have grown large and irregular tops should be but sparingly pruned the first year, and in a similar manner the succeeding season, thus gradually bringing them into proper shape and condition, and avoiding, to a great extent, the enfeebling effects likely to follow excessive pruning.

Close and careful attention is the inevitable duty levied upon all who would produce good and desirable fruits; but, fortunately, the duty does not by any means equal the profits derived from such fruits. There is a vast difference in appearance, flavor and value between fruits grown upon well-managed trees and those grown upon trees neglected or improperly treated. While fruits of the first class are potent in the way of inciting demands and enhancing prices, the inferior class causes depression in both.—JAMES I. BAIRD, *Ky.*

**A Revised Nomenclature.**—Forty years ago, the pear widely and popularly known as "Virgalieu" stood higher in reputation for market in western New York than any other variety. W. R. Coppock, of Buffalo, sent several barrels of this pear to New York, a part of which he marked "Virgalieu," and another portion under the name of "White Doyenné," the French name by which it was originally known. He supposed that the high-sounding French would give him a higher price. We have heard him state that so well known was the American Virgalieu for great excellence that the barrels marked with this name sold for just double those under the French label. At the present day the pear most widely known in market, and most highly prized, is the English variety known with us as the Bartlett, but originally in England as Williams' Bonchretien, and if offered in market here by the latter name, they would not sell half so well as under the simple name Bartlett. Of the many thousand persons who are familiar with the simple name Baldwin, very few know that there is such an apple as the one under the high-sounding name of "King of the Pippins," a fruit of no value. Many other examples might be given to show that no fruit sells better for being under a highly laudatory name. The peach which received the name "Incomparable" is never inquired for in the market nor in the nursery, while the plain Crawford outsells it by many thousands to one. With our people the name Washington would be regarded as the highest in praise that could be applied to any fruit, but it has not given a transcendent reputation to the Washington peach, the Washington plum, or to the Washington pear, fruits good in themselves but not adapted to the popular taste. Some of our readers will remember the Colfax strawberry, the name of which, borrowed from the distinguished statesman, has not prevented it from entire extinction from all nursery catalogues.

Yet these facts, and a multitude of others of a similar character, do not apparently at all retard the increasing tendency at the present time to give laudatory names to newly introduced fruits to accelerate their introduction; nor the practice of attaching to the name the word "prolific," "favorite," "triumph" or "pride." Such names do not help the sale to intelligent purchasers, and often excite suspicion that they were given to cover defects or positive want of merit.—*Country Gentleman.*

**Irrigation Associations in California.**—The California fruit growers are making a strong effort to persuade the legislature into the formation of a permanent state association. A beginning was made last autumn, when delegates from the verious local irrigationists, organized under the existing law, met and formulated the petition for a permanent state organization. The importance of this movement may be easily seen by looking at a few figures.

In the six irrigated counties of the state there are twenty-eight irrigation districts. Some of these are strong; but others are weak and need the guidance and help of a state association, and the state board of irrigation which that body contemplates nominating for the Governor's approval whenever it is legally in being. The value of the irrigation districts is estimated at $46,080,315. The number of acres suitable for irrigation is 1,647,993, and the amount of bonds issued for irrigation works is $11,092,000. In 1880 the six irrigated counties had an assessed valuation of $41,121,782, while in 1890 their assessed valuation was $182,157,655, an average increase of over 300 per cent. Some of the counties, where the "boom" was the most spirited, showed an increase of over 500 per cent. The increase of wealth in the six irrigated counties during this decade was $141,000,000, while in the other districts of the state, outside of San Francisco, it was only $205,000,000. The increase of population in the irrigated counties was equally wonderful. In San Diego county the increase was 205 per cent.; in Los Angeles and Orange counties, which were then united, 244 per cent.; in San Bernardino county 227 per cent.; in Fresno 228, and in Tulare about 200 per cent. It would not be fair to credit irrigation with all this increase. Indeed, irrigation is conducted on a small and imperfect scale in other counties than the six. Yet in that system may be discovered the chief motive power.—KHAM.

**Rough Notes from the Arkansas Valley.**—The first lesson from the Pueblo District Horticultural Society was taken December 17, 1890. Dr. Shaw, of Denver, was the orator of the day, and showed himself master of the situation. We shall not quote from his address, but give the substance of some good points made to show that this valley is destined to become a

sort of paradise some day for the horticulturist. He says, of the 65,000,000 acres in the state of Colorado, the largest area of continuous fruit lands is found in the Arkansas Valley, having all the conditions of successful fruit growing to an eminent degree. He told us that the Arkansas River was the largest river in the state, and drains seven of the principal counties; viz, Lake, Chaffee, Fremont, Pueblo, Otero, Bent and Prowers. Altitude from source to state line ranges from 800 to 3,000 feet above sea level. The soil, he says, is rich with plant food, varying from sandy to clay loam, and occasionally adobe prevails. Length of valley from source to state line, about 300 miles. Acreage of the valley in arable lands, greater than any other valley of the state. All the way from the mouth of the canon to the state line is lower in altitude than any other valley in the state, being 1,000 feet lower than any other point where fruit is produced; hence, less extremes of heat and cold. Zero weather is known but a few days in winter, and frequently not known during the year. The doctor says that, in a dollar and cents point of view, orchard culture must be adopted as the coming industry of the Arkansas Valley.

January 21 the Pueblo District Horticultural Society held another of their successful monthly meetings, with fair attendance. This was their annual meeting, and the following officers were elected for 1891; viz. L. M. Sperry, pres.; E. Brayton, sect'y. The greater part of the time was spent in the discussion of the feasibility of establishing a canning factory at Pueblo. The sense of the meeting appeared to be that it was just what is needed and must be had, and that it would be worth more to Pueblo county than the large smelters now located here, or at least, this was the opinion of a certain member. Red cedar is the most common wood used for fuel, or more properly, for kindling coal fires (coal being the principal fuel here). The pinon, or nut pine (*Pinus edulis*), comes next to cedar, and is claimed by many to be the best wood for fuel on earth; being very resinous, it produces intense heat. These two trees constitute perhaps nine-tenths of all the wood used for fuel in Pueblo. $3.50 per cord is about the usual price for either sort. This native wood is fast disappearing, and nothing is done to preserve it, or to replace it when gone. Of the many charming conifers indigenous to Colorado, my favorite is the Douglas spruce (*Abies Douglasii*), "the noblest Roman of them all," with bark in some instances twelve inches thick; is it any wonder that it is perfectly adapted to this sunny clime? It is the giant of the Rockies. "A tree is known by its coat," the same as "any other man."

March 18, I attended another meeting of the Society. The sense of the meeting was, that if low-headed trees were better for the great steppes of central Russia, and the prairies of Dakota and Minnesota, then they must be preferable for the plains of Colorado. The bush form was supposed to be the cheapest and best way of guarding against sun scald. The extreme heat at Denver—from a monthly meteorological record of 19 years—shows only one instance where the thermometer was 105° in the shade; but this is hot enough to seriously injure almost any bearing apple tree that has been pruned up four or five feet, and allowed to lean slightly to the northeast. Evergreens have been seriously and contemptuously let alone in Colorado, with no plausible reason for such neglect. There are some 14 species of the pine family indigenous to Colorado, which, for beauty, are not excelled in the United States.—Sam Bucus.

M. V. Lemoine.

**M. V. Lemoine.**—There is scarcely a garden in the civilized world that does not contain a witness of the work of Lemoine. Mr. Lemoine was borne at Delme in 1823. In 1851 he settled in Nancy, after having studied at Vic, with Bauman in Bollwiller, Van Houtte in Ghent and with Mueller in Lille. In 1852 he obtained double portulacas. In 1854 he obtained double potentillas, and introduced the Gloire de Nancy. In 1859 he succeeded in intercrossing the genus streptocarpus and obtained a series of plants, among which was *S. biflorus*, var. *polyanthus*, which is still grown. In 1862 he crossed the monochœtum, a genus somewhat neglected, and also introduced *Spiræa callosa* var. *alba*. In 1864 he introduced *Clematis lanuginosa* var. *nivea*. In 1865 he sent out *Hydrangea paniculata* var. *grandiflora*, and the double scarlet zonal pelargonium Gloire de Nancy. In 1867 he exhibited in Paris the

double zonal pelargoniums Mme. Lemoine and Marie Lemoine. In 1868 he showed by his experiments the influence of the stock upon the cion, and originated *Abutilon vexillarium*, var. *grandiflorum*. In 1871 he introduced the clematis Lucie Lemoine, a variety having double white flowers. In 1874 the first double begonia, *B. Lemoinei*, was obtained, and soon after the Gloire de Nancy. In 1876 he obtained the first varieties of *Primula cortusioides*. In 1877 *Pelargonium peltatum*, of which only one variety with liliaceous double flowers was known, under his skilful treatment produced a series of varieties of different colors. In 1878 he first obtained double lilacs, which have since been grown with purple, rose and pure white flowers.

1879–81, introduction of *Clematis coccinea*, *Carpentaria California*, *Neviusa Alabamensis* was made. In 1882 he crossed plants of different genera, *Montbretia Pottsii* and *Crocosmia aurea*, giving *Montbretia crocosmiæflora*. In 1884 he obtained, during the winter, flowers of *Begonia semperflorens*, var. *gigantea*. In 1885 *Begonia semperflorens*, var. *elegans* flowered the entire year. He also raised the double bouvardias Sanglorrain, and the first double bouvardia with yellow flowers, *B. flavescens*, var. *flore pleno*. In 1888 he crossed *Philadelphus microphyllus*, of California, and *P. coronarius*, obtaining *P. Lemoinei*, which has very small foliage, large flowers, and the odor of wild strawberries. *Syringa Japonica* was also introduced into Europe. In 1889 he introduced *Dodecatheon Lemoinei*, which will soon be extensively cultivated. He also obtained the gold medal at the International Exposition for lilacs, gladiolus and montbretia. In 1890 he introduced the double-flowered *Clematis viticella*, La Nancienne, and *Begonia Baumanni*; and he obtained flowers from the begonia Triomphe de Lemoine during the winter, the double white lilac Mme. Lemoine, and many novel pelargoniums, fuchsias, pentstemons, phlox, potentillas, begonias, etc.

Mr. Lemoine was made a Knight of the Legion of Honor in 1885—a reward which he richly deserved.—*Le Jardin.*

**Rooting Cuttings.**—If you wish to propagate new plants from old favorites, to grow many for bedding and blooming in the summer, or to provide for nice finely growing plants for next winter's bloom, this month will be a good time to take off cuttings and root them. Have a tin pan or wooden box ready, or if only a few cuttings are to be rooted a deep saucer or dish will be as good; fill either with pure sand if you can procure it, and place your cuttings in firmly. Keep the sand moderately wet and place all in a window where they will get some sun, and your slips will be rooted in from two to four weeks—the exact time it will take depends upon the kind of plants. Do not pull them up every few days, to see if they have roots, but watch the cuttings carefully, and when you see new leaves coming out, and the slips starting to grow nicely, you may make up your mind that the cutting is rooted and is a growing plant. When well rooted, take them up carefully, and transplant them to small flower pots and good soil; thumb-pots should be used if possible. After transplanting them do not give them too much water, as it might cause them to rot off, as these young plants are not strong enough nor making growth fast enough to appropriate the amount of moisture that an older plant would. They should have only just enough water to prevent their drying out, for a time; to babies give baby food. Also before removing the rooted cuttings to the pots, it would be wise even in thumb-pots to put a few pieces of broken charcoal or potsherds into the bottom of the pots, before filling them with earth, so as to be sure of good drainage; for pots of one or two inch size, this is an important item. Be always careful about the watering, when cuttings are being rooted; the bad luck so many have is often due to the fact that the cuttings are watered too much, and in that case will rot instead of root; while others let the sand dry out entirely through neglect perhaps once, twice or three times, and then their cuttings are utterly ruined.—G. B.

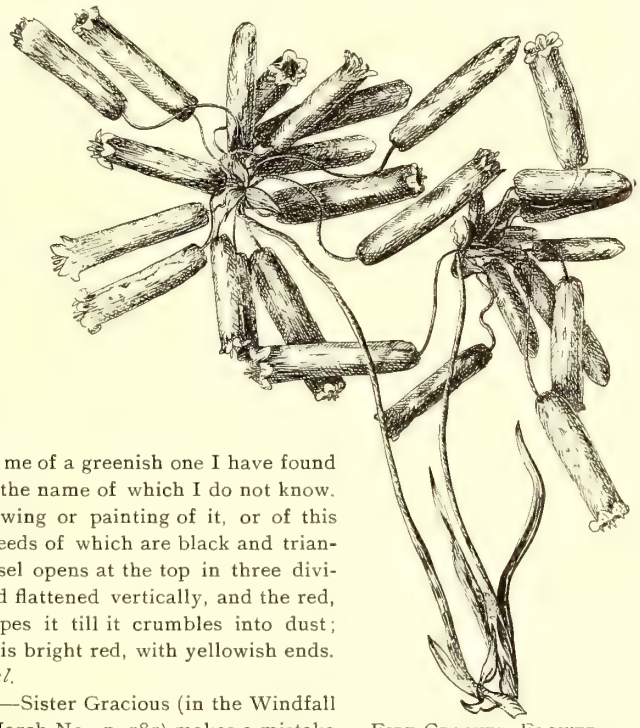
**Cornus Nuttallii** has this year outdone all former seasons so far as the "oldest inhabitant" knows. For ten days it has been the most conspicuous object in our landscape. Throughout western Oregon and Washington great pyramids of snowy white blossoms (or rather the appendages thereto) have been receiving the lion's share of attention in the floral work of this section. The bracts (showy parts) on the flower clusters or heads of this tree have assumed exceptional proportions this year, many individual bracts being two and a-half and three inches long, three-fourths to one inch broad. The bracts are also uncommonly white this year, a feature most noticeable in all our white flowered trees and shrubs. The season has been unusually cold and backward, a great amount of dull misty weather. To this fact we ascribe the exceedingly clean and pure color of these parts.—E. R. Lake, *Oregon.*

**Tradescantia.**—One of the best plants for the hanging basket is the variegated tradescantia; its leaves are striped with light silver gray, olive, pink or crimson and light green, and are very handsome, with a soft silvery luster over all. It is of the easiest culture, and will stand lots of abuse, hot, dry air, sudden changes of temperature and drought, and will grow very fast. It roots so easily and grows so rapidly that from one small piece one may soon have enough of it to fill a basket. It should not be allowed to bloom; the blossoms are not attractive any way, being very small, of no beauty. Let it have a position near the glass, so that it may not become long jointed. Break off several pieces of the tradescantia, and plaee in a tumbler or earthen dish or vase filled with water; set it anywhere on a table or bracket and it will grow nicely all winter; keep a little broken charcoal in the water, to keep it sweet, and occasionally change the water for fresh, keeping the water well above the roots all the time. The plain green variety is very pretty, and adds to the effect if a little of it is planted in with the variegated. For out of door use nothing can be nicer for rockeries and urns as well as for hanging baskets and bracket pots, as it does well in

sun or shade, cool weather or hot. It will grow quite long and is very pretty to edge a portion of an urn where other plants, long growing vines, etc., are growing. It is commonly called the Wandering Jew. This plant does not require rich soil; just common ordinary soil suits it best.—JOYCE RAY.

**A Patriotic Plant.**—A vase of nodding wild "fire-crackers" (*Brevoortia coccinea*) is beautiful, and surely the bulbs might be cultivated. The flower is of the brilliant red shade of the fire-crackers, and each end is greenish-yellow, the delicate stems a gray-purple. The effect is exactly like a bunch of fire-crackers, only they last in bloom two weeks in water, which might demoralize a bunch of the noisy article.

It differs from the brodiæa in having the flower-tube cylindrical, with six little pouches at the base, and in its scarlet-crimson color. Its three stamens are alternate, with large staminodia in the centers of the ends of the segments of the perianth. I should think it would grow as well as any bulb in cultivation; and I know a gentleman who has it and all the California wild flower seeds and bulbs for sale in San Francisco. He says that it does well.



FIRE-CRACKER FLOWER. (*Brevoortia coccinea.*)

The stems are sometimes a foot and a-half long, and the shape of the flower reminds me of a greenish one I have found in the Bahamas, but the name of which I do not know. I never saw any drawing or painting of it, or of this "fire-cracker," the seeds of which are black and triangular. The seed vessel opens at the top in three divisions, is rounded and flattened vertically, and the red, silky flower-tube drapes it till it crumbles into dust; likewise the tiny bud is bright red, with yellowish ends. —K. P. S. BOYD, *Cal.*

**Evergreen Ferns.**—Sister Gracious (in the Windfall department of your March No., p. 185) makes a mistake when she says that native ferns die down in the fall so that they cannot be used in a winter fernery. Here is the rock polypod, *Polypodium vulgare*, the *Aspidium acrostichoides*, *A. thelypteris*, *A. cristatum* and *dilatatum*, the *Camptosorus rhizophyllus*, a botrychium or two, etc., all evergreen natives, and very likely others in various localities. Last winter I stripped a sod of the rock polypod off the stone and fitted it to a large dinner plate. The fronds of all sizes, some in fruit and some very small, grew out of moss and a wreath of running blackberry vines, purple, yellow, scarlet and green around the edge completed it. By pouring water into the plate now and then, it was kept bright all winter. And while upon ferns let me recommend the *Osmunda cinnamomea* as a pot plant for summer. A barrel sawed in two makes a good pot, and the plant is to be set before the fronds have made much growth in spring. Fill up the tub with the muck of its native swamp and keep well watered; no drainage is necessary. With the height of the tub added, the fronds will be as high as your head or nearly so, and the yellow fertile spikes add much to the effect. Give shade at least part of the day and shield from rough winds.—E. S. GILBERT, *New York.*

**Ranunculus and Cosmos.**—The ranunculus, which is one of the best of roots to plant, is known but little by amateurs. It has brilliant colors, and the flowers are full and double as a rose; they measure about two inches across, and are especially fine for cut-flowers. The roots should be planted in masses, about three to four inches apart and a couple of inches deep, in good garden soil where the earth will not dry out too quickly, nor, of course, where it will hold too much water; they rather like a moderately moist soil. In the fall they should be taken up with the gladiolus. When ripened, keep dry and store them through the winter, as you do with gladiolus bulbs; the wet through the winter would be apt to cause injury to the bulbs, if left out in the beds. There are several lovely varieties of this plant, in colors of orange and yellow, reds, purple, violet, rose, etc.

The American cosmos is a great improvement on the old Mexican variety. It is becoming more popular and more cultivated, now that people have seen and approved it. It certainly is very valuable to furnish flowers for cutting. The flowers resemble the single dahlias; they are of good size, measuring several inches across, and are in all the shades from white to deep purplish crimson. The foliage is feathery, very dainty and graceful. The cosmos is most easily cultivated, and may be grown from seed planted in the house in a box or pan in spring; then, when large enough and the weather is suitable, they may be transplanted to the open ground, and in September and October, if all goes well, they will be covered with quantities of bloom. They are classed among the half-hardy annuals. The cosmos may also be grown in pots, exactly the same as chrysanthemums. Of course, they will take up considerable room—a fault that may be easily condoned.—NEMO.

**Venus' Paint Brush** (*Hieraceum aurantiacum*, L.) are the common and botanical names of an interesting little perennial belonging to the compositæ family, which has been introduced into cultivation in flower gardens from Europe. Its leaves are radical, somewhat oblong or oblong-ovate in outline, an inch or more in length, and lie in tufts close to the ground. The almost naked stalk varies in height from a few inches to two feet or more, and bears numerous small heads of dark orange or scarlet flowers, which are quite pretty. I find the seed of this plant offered by a large German grower in his English trade list of 1890 and 1891 at ten shillings (about $2.50) per ounce.

The plant has two ways of propagation—one by means of numerous short stolons, extending in various directions around the plants, and the other by means of its seed. Each seed is provided with numerous delicate bristles, somewhat like the pappus of the dandelion or the thistle, which are, I suppose, nature's provision for the dissemination of their seed, and by means of which the seeds are often carried long distances in the wind. Either of these two ways of propagation would be sufficient to make the plant a dangerous enemy to the farmer; but when they are combined, as in this case, only experience with the plant can thoroughly convince one of the difficulty of getting rid of it, when once it gains a foothold. It does not ripen its seed at one time, or nearly so, as some plants do, but the season for this is prolonged over a considerable period. As soon as a head becomes ripe, it is soon scattered.

In many places it has escaped from gardens, and has already become a great trouble to farmers. In some localities around Bristol Pond, Vt., and South Monkton, it already has possession of whole fields. In parts of Shelburne and Charlotte, Vt., it has gained considerable foothold. A new name has been given to it, namely, Devil's Paint Brush, which seems to suit the farmers who have had it to contend with, better than the first.

Perhaps to relate the experience of one farmer in Charlotte with the plant, will be all that is necessary to show how rapidly it spreads, and how difficult it is to get rid of it. About four years ago George E. Prindle, of East Charlotte, Vt., discovered in his pasture about half a rod well covered with the paint brush. He did not then know its nature, but expected to root it out when an opportunity offered. By the second and third years, it had spread so that he fully realized the danger from it, and went at it determined to root it out. It was, by this time, quite thick on about four acres of the pasture, and scattered more or less over 200 acres in all. He carefully plowed the thickest, using care that none of it was left above ground, and planted it; but it was a moist season, and by the time he had finished haying it was again so thick that in some places nothing else could grow. Dry weather now set in, and he gave the piece a series of thorough harrowing with a wheel harrow, and went over his farm in other places with potato hooks, taking up every plant he could find. In this way, and by first collecting and burning every head that had nearly ripened its seed, he has nearly mastered it. But the thickest piece was thoroughly summer-fallowed the fourth year, and every portion of his farm searched. In a pasture a mile from the principal farm he found a thick patch of it, which had been carried there by the cattle. In some of his heaviest hay, on the richest soil, it grew over two feet high, and taller than the best timothy. Mr. Prindle says that $5 would have taken it all out when first discovered. He has expended $85 alalready on it, and will have to go over his ground for several years yet before it is entirely gone.

It is a plant that would thrive on almost any soil not too wet for it, but a clay loam seems to be the most natural.—F. H. HORSFORD, *Southwick, Mass.*

**Desmodium and Lespedeza.**—There appears to be some confusion in nurserymen's minds and in catalogues with regard to *Desmodium penduliflorum* (or *racemosum*) and *D. Japonicum*, and *Lespedeza bicolor*, for one has been received for the other and descriptions and names are not rarely misapplied. They are, however, quite distinct. The desmodiums are strongly rooted, herbaceous plants about four feet high, with numerous slender stems growing up then curving out and gracefully drooping at the tips, the whole well covered with foliage, and in September bearing in the greatest profusion small racemes of pea-shaped flowers. In *Desmodium penduliflorum* they are violet and purple and in *D. Japonicum* white, the last is probably a variety of the first, but it does not appear to be as hardy as the purple; occasionally early frosts injure the flowers of the purple before they are fully developed

They can be used to advantage on the edge of a mass of shrubs or as a single plant or in groups in the lawn near shrub plantations. The character of the roots leads one to believe that they would do well in a rocky soil, or in the crevasses of a ledge, and one season's trial in such a situation has indicated that they are of value under these conditions.

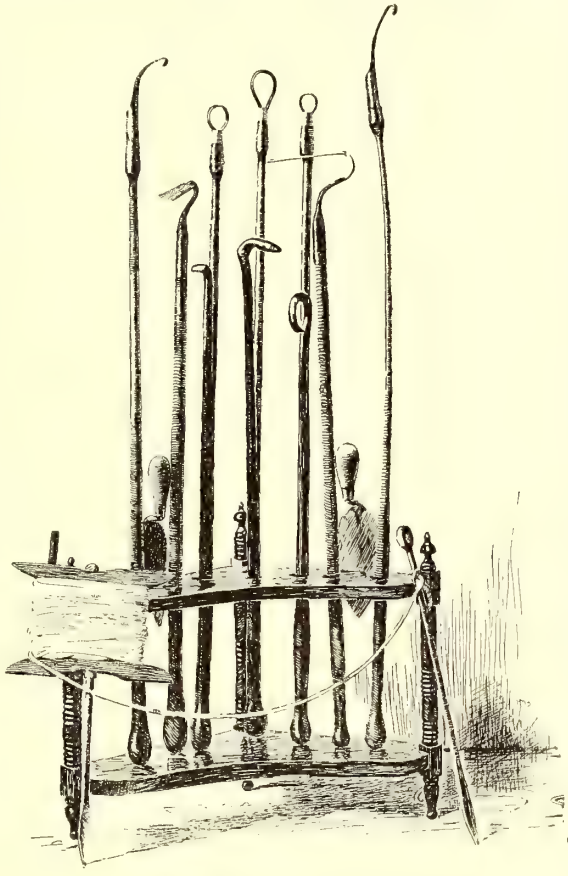
*Lespedeza bicolor* is a shrub with slender, light brown branches, pinnate leaves with rounded leaflets and abundant flowers produced at the same season; and in other ways very like those of *Desmodiun penduliflorum*.

The shrub has a grace and lightness about it that is quite charming, and it appears to be quite hardy. The leaves turn a uniform and very bright yellow. This shrub is worthy of considerable attention, and promises to be a valuable addition to the few autumn flowering kinds.—WARREN H. MANNING, *Mass.*

**Tigridias.**—There are few flowers more quaintly pretty, really beautiful, or more deserving of general cultivation than the varieties of the genus tigridia, popularly called the tiger flower, from its peculiar markings, or again, shell-flower, from its odd shape. They are Mexican bulbs, and like others of that class are rather tender. They should not be planted out until the weather is warm and settled. In the fall, they should be carefully lifted, and stored over through the winter in a warm dry cellar or closet, where frost cannot touch them. A box filled with dry sand or sawdust is excel-

lent in which to keep the bulbs over, but care must be had that the mice cannot have access to them. These bulbs require about the same specific treatment as that given to gladiolus. Planted out from the middle of May to the first of June, in good garden soil moderately enriched, they will commence to bloom in July, and will produce their lovely showy flowers in great abundance until October. This is one of the easiest of bulbs to cultivate, it being always sure to flower well in almost any situation, and attracts a good deal of attention. During the last few years, these, like nearly all of our fine flowers, have been greatly improved, and the most beautiful of all is the *Tigridia grandiflora, alba*, or the white-flowered tigridia. This variety has very large petals, of a pure pearly white. At the base of each division it is marked with large spots of a reddish-brown color, which makes a striking contrast against the white ground of the petals.

*Tigridia conchiflora* is a very showy, handsome variety, the petals being of a lovely shade of yellow, with large spots of a crimson shade. While *Tigridia grandiflora* is like the first named except in color (which is of a very bright crimson color, spotted at the base with yellow, reversing the coloring of that of conchiflora), these bulbs are so excellent in their general habits and give such fine results for so little care, labor and expense, that every one who can do so, should not let another summer pass by without trying at least a few of them.—GRETA BEVERLY.



MRS. TARRYER'S TOOLS.

**Mrs. Tarryer's Tools.**—Mr. Tarryer sends us, in great haste, a photograph of Mrs. T's. weeding thimbles, et cetera, for immediate publication, as Mrs. T. means to push things. Our readers have followed Mrs. Tarryer's experiments so closely that we do not need to explain the uses of these implements.

**Deep Planting for the Gladiolus.**—To advise about the cultivation of such a "stand by" as the gladiolus may seem unnecessary, but as its varieties are now numbered by hundreds, and it has come to be a popular specialty which can be effectively grown in a separate bed, a suggestion on the subject may not be unwelcome.

The first planting of gladiolus should be done as soon as the frost is out of the ground, thus furnishing employment for those delusive early spring days when one feels full of enthusiasm about gardening. The earth should be rich and mellowed to a good depth. In a trench twelve inches deep, measured roughly by the length of an ordinary garden trowel, place a row of bulbs about three inches apart. Plant a parallel row once in two weeks until July. This will give a succession and provide for fall blooming. Bulbs planted at this depth always come up and the experience of several years has proved that the plants are stronger, the blossoms finer and on longer spikes, and the new bulbs which form are much larger than by the method of shallow three-inch planting. This may be accounted for by the fact that the lower soil is moist, except in a long drought. The plant, bulb and all, was liable in the old way to be uprooted by the wind unless staked, but deep planting avoids the necessity for staking, except temporarily for very aspiring blossom stems. This saves much labor. To keep the bed free from weeds is the only attention needful, as there are no insect enemies to contend with, owing probably to the tough, fibrous nature of the leaves. But if the plant cannot be eaten it often serves as a safe harbor for spiders and ants; not that they are ever very numerous, but one often shakes out from the flower cup a fat white spider or a few garden ants. The black and yellow garden spider, a large species of argiope, likes to spin its web between the stiff stalks. Its bite is not poisonous, as commonly supposed, and it is rather an interesting insect to watch, especially if one can catch it in the act of weaving the great brown silk ball which covers the eggs. When the bulbs are dug, this is sometimes found hanging below the web.

Dig the bulbs in dry weather before the ground freezes and, cutting off the tops, spread them to dry. In two weeks they will be ready to store in paper bags and hang in the cellar. Bulbs which have been left in the ground under twelve inches of earth have come up the next season but never made a very thrifty growth. The plant is a native of southern Africa.—AMY WIGHTMAN, *Conn.*

**Leucothœ Catesbæi.**—"Leaves ovate-lanceolate,

acuminate, spinulose-serrulate throughout, on conspicuous petioles; racemes densely flowered; calyx-lobes ovate-oblong; anther cells not horned; banks of streams along the mountains of Georgia and North Carolina; March and April; stem 2–4° high." This very desirable evergreen hardy shrub, native to the southern states, belongs to the heath family, and deserves a place in every collection of hardy plants. Long before the foliage of other trees and shrubs is developing in the early spring, a ramble along our water courses will reveal this beautiful plant in full flower. The habit of growth is very graceful—long slender switches, with a cluster of drooping, pure white fragrant flowers, a cluster to every leaf, pure, waxy, bell-shaped; the leaves opposite, thick and leathery, and a shining, deep, rich green; growing close on the water's edge. These slender branches often hang over and often dip into the waters. Last spring I adorned my parlors with these, which were much admired and commented on, many being surprised to know that it was a wilding of our woods. One nearly always finds in the neighborhood our native climbing hydrangea (*Decumaria barbarra*), which is in every respect far superior to the Japanese plant (*Schizophragma hydrangeoides*), which, when introduced about ten years ago, readily sold for $3 per plant.—Mrs. J. S. R. Thomson, *Spartanburg, S. C.*

**Notes on Some Central American Orchids.**—*Trichopilia suavis* blooms in the east and the interior in April; on the Pacific side in October; the seasons are about the same, but the Pacific side is much drier than the interior and the east. It seems that it cannot bloom in the dry season in the west (December till April or May). This orchid nearly always grows on the clean bark, not on moss or fern roots. One species of trichopilia is a plant like a small *T. suavis;* flower exactly like *T. suavis, alba*, but exceedingly small. Have seen *Odontoglossum Krameri* with snow white flowers. One dwarf, sobralia-like plant, (Evelyna?) makes a round head of small flowers like a good double dahlia, bright pink.

*Cattleya Skinneri, alba* does not exist in a wild state; a few plants are found in gardens, and it is dearer here than in the north.

*C. Doveana* has disappeared from the mountains from where it used to be got. *C. Doveana* is a very good bloomer here; even small, weak plants bloom well; in the greenhouses it is not so. Here plants have plenty sun, little food, and when in bloom, or in general, during the dry season, are nearly always wilted. There is one beautiful epidendrum here; 80 good sized flowers, of the shape of *Vanda suavis*, in a beautiful panicle, pure light, bright lilac, spotted like a vanda, with reddish violet brown; lip violet, with yellow crests; superb species, but very scarce; caulescent, but not very long.

Of dwarf orchids, there are some very beautiful species here; one masdevallia-like plant, very small, with the two lateral sepals grown into one, which is very long, narrow, and has the two points at some distance from the end; exceedingly singular; color red brown, the three points yellow. An exceedingly dwarf oncidium, with narrow, thin grass-like leaves 2½ to 3 inches long, has comparatively very large solitary flowers of a beautiful pure yellow; petals and sepals with red brown spots; two or three such nice flower scapes at the same time from one bulb; blooms the whole year.—Carlos Werckle, *Costa Rica.*

**Galls on Orchids.**—I notice in "Gardener's Chronicle" for November 1st, 1890, Vol. 3, p. 585, a short note on the "Root-gall of Orchids" in which the statement is made, in substance, that it is still a matter of doubt among entomologists whether the *Isosoma orchidearum* of Westwood is the author of the injury to the cattleyas, or whether this mischief is caused by a midge (cocidomyia) which latter is the host of the Isosoma, as held by Mr. McLachlan.

That the latter supposition is an error, and that Westwood is undoubtedly correct, I have shown in a note published in *Insect Life*, Vol. I, p. 121. As stated in this note, the phytophagic nature of this Isosoma was proved beyond a peradventure by a study of specimens submitted to me by Dr. Felix Honneguy while I was in Paris in October, 1887, which afforded an opportunity to study the larva in all stages, and to rear both sexes. I repeatdely saw the larvæ feeding on the orchid substance, and the cavity made was, in the early larval stage, only just large enough to contain the larva and its vegetal frass.—*C. V. Riley.*

**Caladiums.**—For conservatories, window boxes or shady beds, the fancy-leaved caladiums are particularly fine as exhibition plants for summer and fall. Get dry bulbs, fill a shallow box with sphagnum moss, and place the bulbs in it, keeping them well covered. The box must be kept in a warm place until the roots are well started; then fill large pots with soil composed of peat, sand and a little charcoal; add some old, well-rotted manure, and thoroughly mix it with the soil. Place the bulbs in deep enough so that they may be covered with an inch of soil. Several bulbs should be used in pots of from twelve to fifteen inch size, as the bulbs planted singly will not make good specimens. One can buy a dozen good varieties for three dollars, and they are grand plants to have when well grown. There are about a dozen different varieties to choose from. Some of the leaves will measure as much as half a yard long, and often very much longer. *Caladium esculentum* is said to have leaves nearly four feet long and two feet wide, if it is grown in soil that is very rich. Caladiums may be planted out on the lawn by themselves, or they are especially fine for placing in the center of a round bed or in urns.—Greta.

**The Rainbow Rose,** a novelty from California, is calculated to produce a sensation from its unique character. Seeing an account of this remarkable rose in a Pacific paper, I interviewed the originator, John H. Sievers, of San Francisco, for particulars. He very kindly responded, and sent me also a fine picture of the rose in colors. It is very beautiful, and unlike anything we have among teas. The color is a deep Mermet pink

striped and splashed with the rich crimson of Papa Gontier, of which it is a "sport." The base of the petals is of a rich amber. It possesses the general character of Gontier, but has larger and more substantial flowers, a more vigorous growth and greater productiveness. It is very aptly named the "Rainbow." We now have two elegant striped roses added to a genus of which the old York and Lancaster was the sole representative, I believe, Vick's Caprice, a hardy hybrid, and the Rainbow. —Mrs. M. D. Wellcome.

**Amelanchier alnifolia,** a beautiful native shrub, is now in full bloom. Its appearance is most attractive. With leaves one-fifth to one-third grown, great masses of *pure* white flowers arranged in rosette-like, compact racemes, and a pleasing, graceful habit, is it any wonder that it calls forth highest praise? Not only is it attractive now, but all through the summer its simple, soft, light green and half-velvety foliage makes it one of our wildwood favorites. It is equally admired on the lawn, where it is occasionally seen. It grows from 6 to 12 feet high, bears transplanting and readily yields to man's treatment in the nursery, garden or on the lawn. Some very pretty examples of training to single trunk are to be found, but its native beauty is only seen when grown in its native habit—a free, open shrub with many ascending stems.—E. R. Lake, *Oregon.*

**Hardy Roses** on their own roots are nearly always best, as the grafted ones are much more tender, and therefore more easily winter killed, the old stock remaining and the grafted part dying off. Many people prefer to commence with small roses in the cheap collections. I grant the cheapness and the small plants to be all right where one intends to have many roses, and has a sufficient stock of patience to wait two or three years for satisfactory results. But it is poor policy, and expensive as well, to allow florists to make the selection, for they usually send any variety of which they have an abundance. One should choose one's roses (if of the hybrid perpetuals) as one would choose one's friends for life—carefully. It is really more satisfactory to pay from two to five cents more on each rose, and get what is really fine and desired, than to let some one else send anything that may suit his taste or of which he may have an abundance, and after caring for them perhaps for a year or two, find that they are not of your favorite style or color, and are rather common. For those who can afford it, and it always is the best way, and who may wish only for a few hardy roses, it is well to buy dormant plants two or three years old, and set them out before the sap begins to flow and the least bit of growth begins; or, to buy potted roses on their own roots, from one to two years old, which have been grown especially for spring trade in a cool greenhouse, and not been forced into bloom. I have tried all ways and sizes, and the latter with me has been more satisfactory. Then, again, I always prefer, in ordering roses, to have them sent by express, as the ball of earth around the roots need not then be greatly disturbed, and the plants do not receive the check in growth which they otherwise would. The expense of the express charges is usually well made up by the extra size of plants sent, and the extra plants which are presented to defray extra cost to the recipient—GretaBeverly.

**The Horticultural Building at the World's Fair.** —The *Prairie Farmer* gives the following description of it: "The building faces east on the broad surrounding water-way. The structure will be 1,000 feet long with an extreme width of 386 feet. The plan is a central pavilion with two end pavilions, connected with the central pavilion by front and rear "curtains," forming two interior courts each 88x270 feet. The center pavilion is roofed by a glass dome 187 feet in diameter and 113 feet high. Its crystal dome and roofs of glass being designed to admit and yet properly soften the light and heat of the sun, aided by the best possible system of ventilation." This great structure will deserve the finest exhibition possible.

**Insect Pests.**—The careful orange grower is just now engaged in a contest with the red spider and other pests of the insect family affecting the orange trees. Spraying the tops is growing in favor, and is generally accepted as the most effective method of getting rid of the pests. Opinions are divided as to the best preparato to use. Kerosene emulsion was the favorite until within a year or two. Since then the Bean insecticide and similar preparations put on the market by others are growing in favor. Rev. Lyman Phelps, who has given as much intelligent research as any other man in the state to this subject, uses bisulphate of soda, ten pounds to fifty gallons of water, and finds this a safe and efficacious remedy. Care should be taken, however, not to increase the proportion of the soda, as a stronger solution might result in injury to the foliage. He expresses the opinion that the insect pests will prove a friend to the careful cultivator, as the careful and industrious man will adopt vigorous and effective treatment, and thus keep his grove in a healthy condition, while his indolent neighbor will neglect his trees, until the damage is so great as to take him out of the race

Let no man think that successful orange growing can be attained without constant labor and eternal vigilance. The business requires the most thorough attention to details and will not thrive on negligence. On the other hand, it will reward industry and intelligent application as no other branch of agriculture or horticulture can do. Insect pests are common to all warm latitudes. The little fellows work while mankind sleeps. Rain or shine, they are active in their ravages and prolific in reproducing their kind.—*Fla. Agriculturist.*

**Trouble in the Fern Case.**—Last fall we dug out of old stumps the soil ferns like, and I baked every bit of it, hoping to destroy my old enemies—the snails—that have bothered me every year since the case was started. I routed the snails, only to fall a victim to a more disgusting pest. With horns and hoofs, it would have been a perfect little devil. Late in the fall, when my case was just lovely, I found some beautiful moss in the woods. This was carefully taken up and placed

around the growing ferns, and it was the richest looking carpet for my case that could be imagined. I enjoyed it all winter, but the first warm days of spring brought out an astonishing development—quantities of disgusting worms hatched out from germs that probably were in the moss. They were an inch long, with a horny covering, and with numberless legs all down their sides. Nor was this all; the fronds were bitten just as they appeared, and the large leaves of my beautiful begonia Rex served for breakfast, dinner and tea, and lunches between. It would have made an angel weep to see the ruin in my once lovely case. I pulled up the moss, full of wriggling, many-legged worms, and thrust it into the midst of a glowing furnace, and grinned to see the things squirm. Since then I have been fighting the last reserves of the enemy, taking out a dozen or two every day, cutting off the tops of the ferns, and shedding tears over the leaves of my stately Rex. The roots are all right, and in time, with care, will grow again, but it probably will be a hospital in a fern case until next fall. All plant raisers have to live through and make the best of such reverses, and learn the lesson. Mine is, not to take moss out of the woods, however beautiful, and carpet my fern case with it.—SISTER GRACIOUS.

**Horticulture in Southern Illinois.**—Southern Illinois is in latitude 37° to 39°—the same as Petersburg, Va. The elevation ranges from 300 feet above the Gulf of Mexico, at Cairo, to 800 feet in the region of Cobden. Average annual rain fall is 45 inches, while the average temperature at Cairo is 58° and at St. Louis 55°. A "gulf stream" of warm air flows up the valley of the Mississippi, rendering the climate so mild that southern cane grows spontaneously on the north bank of the Ohio river, attaining to a height of twenty feet or more; and the *Magnolia grandiflora* and crape myrtle flourish without winter protection.

To demonstrate the horticultural possibilities of this section, take as an illustration the region adjacent to the Illinois Central railroad—not that it is in any respect superior to any other, but simply because it has been developed. This road when constructed (1852) passed through but one town south of Vandalia and Effingham until it reached Cairo. Now there are forty busy, prosperous towns and cities. Soon after the completion of the road, N. C. Meeker and a few other enthusiastic horticulturists settled in Union county and began fruit growing. From that small beginning the industry has grown until the shipment of fruit and vegetables for 1890, from stations between Mounds and Centralia, a distance of 105 miles, was 32,900,600 pounds and 142,538 barrels of apples. From Centralia alone, the same year 137 cars with 72,000 cases of strawberries were shipped. From Cobden the same year were shipped 682 carloads of fruit and vegetables. From Villa Ridge 200 carloads, 90 of these being grapes, and a proportionate number at other points. This was over the Illinois Central railroad. Other roads did much freighting of these products.

The Filson apple orchard of Clay county, twenty years old, has cleared the owner more than $1,000 per acre. John Pritchitt, of the same county, cleared over $300 per acre from his orchard last year. W. S. Morris, Marion county, netted $6 per tree from a five year old Kieffer pear orchard in 1889. From my own orchard, in Massac county, I sold 125 barrels per acre from Wine Sap trees that had been set eleven years. The land had been in cultivation over seventy years, no fertilizer having ever been used.—*D. H. Freeman, before Illinois Horticultural Society,*

**A Serious Pear Pest.**—Dr. J. A. Lintner, State Entomologist of New York, gives an account of the pear midge (*Diplosis pyrivora*) which has been discovered along the Hudson. Dr. Lintner regards it as the most serious pear insect known. It attacks the fruit. "The infested fruit can be recognized by its upper three-fourths being enlarged and irregularly swollen, and of a somewhat different color from its base. Upon cutting it open, it discloses perhaps from ten to twenty pale yellowish footless larvæ, of about one-tenth of an inch in length, pointed at the ends, and much resembling the larvæ of the wheat midge, to which it is very nearly allied.

"Hitherto, as far as I know, it has only been reported from a single locality in the United States—at Meriden, Conn. It was probably introduced there about the year 1880 in some pear stock imported by Coe Brothers, from France. A few years thereafter, it almost entirely destroyed their crop of Lawrence pears, while several other varieties were infested in a less degree. Effort was made to exterminate it before it should spread, by picking off the entire crop in an 'off year,' and destroying it. It was believed that they had succeeded in bringing it under control, for since the notice of its presence at Meriden, given in Professor Riley's report to the department of agriculture for 1884 and 1885, nothing more had been heard of it. Last week F. A. Cole, of Catskill, sent me some pears, showing an insect attack which had been troubling him for five or six years past, and had recently caused almost the entire loss of his crop of Lawrence pears. I recognized it at once, as that of the dreaded pear-midge. Visiting and inspecting his orchard the following day, I found the attack a very severe one.

"I recommended to the owners of the infested orchards at Catskill to follow the method pursued at Meriden, and at once to pick off and burn all the infested fruit. This would be practicable, to a great extent, where the trees are not large, but Mr. Cole deems it too laborious and expensive in trees that have attained the size of his. In a letter received from him to-day, in lieu of cutting down and burning the older infested ones as he at first proposed, he will allow the Lawrence to stand as lures, and when the eggs have all been deposited, then by some application to blight the blossoms and thoroughly destroy the contained insect by depriving it of food, This seems quite plausible. I propose to make experiments to see whether the larvæ after entering the ground may not be destroyed by some such applications as kerosene emulsion, lime, or ashes."

**Gardening in the Ninth Century.**—The list of vegetables in Charlemagne's garden, in the May issue (page

310), has many errors of identification. A cursory examination suggests the following corrections; but it must be remembered that where there is no information given beyond the vernacular name, we can only reason from probability gained from the known use of like names in preceding and following centuries:

PEPONES.—Probably seeding cucumbers. "A fruit which, when ripe, is soft and without solidity—flaccid and tender."—Kyber's Lexicon, 1553. See also Pliny, "A cucumber of excessive size." Altrenæus and Pollux, "seeding cucumbers."

FASEOLUM.—Probably a dolichos, possibly *D. unguiculatus*. In 1542, Fuchsius used Faselen for the bean, and as an alternative name, *Welch bonen*, foreign bean. Albertus Magnus, 13th century, describes the faseoli as a bean with a black spot at the hilum (*D. unguiculatus*). Roszlin, 1550, and Tragus, 1552 (Bock, 1546) use Faselen for the pea.

DRAGONTEA.—Is this tragacanth? The dragantium of Vegetius is so considered, but the dragonteia of the Italians was *Arum dracunculus*, L. See Dodon Pemp. 330.

SOLSEQUIUM.—Not the sunflower, for this is an American plant. Crescentius, 13th century, calls the chicory "*Sponsa solis*, cichorea, incuba and solsequium." Solsequium was also applied to *Calendula officinalis* in the 16th century.

AMEUM.—Probably *Ammi magus*, L. The seed formerly imported from Egypt, and also grown in Germany and Belgium for mixing with bread and foods.

NASTURTIUM.—Not nasturtium (*Tropæolum majgus* or *minus*), but the cress, *Lepidium sativum*, L.

BARDANA.—If constant use of this name affords a clue, this is the burdock, and not monk's rhubarb.

OLISATUM.—Alexandus, *Smyrnium olusatrum*, L.

APIUM.—Smallage. Celery is not recorded until much later, say the 16th century.

VULGIGINA.—Is this *Asarum Europæum*, L., called by Macer *Asarum vulgaginem?*

, PASTINACA.—Used oftener for the carrot than the parsnip.

BLITUM.—Propably not spinage, but *Amarantus blitum*, L., the bletos of France, supposed to be the blitum of Galen.

CEPAS.—Not chives, but believed to be onions. "Cepa was formerly called unio, whence the French oignon," says Kyber.

CARDONES.—Probably the Cardoon, rather than the artichoke.

In Charlemagne's time simples were grown universally, and were more valued than at present; and hence, herbs used more in medicine than for food appear in his list, as well as the strictly food plants. To interpret the list requires much more critical judgment than I am at present willing to exert, but it is easier to throw doubt on the interpretations of others.—E. LEWIS STURTEVANT.

**Horticulture in Schools.**—The idea of introducing the study of horticultural principles into the public schools will, no doubt, be subjected to great ridicule. Yet, why not? The writer once asked a rich London commission merchant why he sat shivering in his overcoat in the inner office. He had a grate there, and his clerk in the outer room enjoyed a good fire. "Ah," was the reply, with a glance at the empty grate, "I don't know; I never did have a fire." And at my next visit, he pointed with triumph to the blazing coals. "There, you see I have taken up with your Yankee idea." This sort of answer is the only consistent one in regard to the neglect of popular education in the principles of farming and gardening. They do these things better in France. A decree was issued in January requiring a certificate of aptitude to teach agriculture from masters of the superior grade of rural primary schools. The ministers of public instruction and of agriculture are pulling heartily together in this educational reform, for reform it certainly is.

Of course, it is not expected to turn out full-fledged farmers from this or any other grade of public schools, even were the teachers amply qualified, which, in most cases, perhaps, they are not. But it is a great gain if the pupils can be made to comprehend in their formative years the dignity and the scientific character of the occupations of farming and gardening. When this is done, we shall see less disposition on the part of farmer's boys to drift to the towns with the aspiration to sell tape for a living. If he did but appreciate the fact, the agriculturist and horticulturist occupy the most independent of positions among the world's workers. They, of all others, need not become the prey of politicians, or play a despised part in social and intellectual movements. It is an encouraging omen for the future of the French republic that its rulers are aware of this fact. The American republic will do well to imitate its European sister.

The one defect in the French decree is that its operation is limited to male schools, but doubtless the girls will get their proper dues in time. "Let us make rural life fashionable," says a French writer, "and the battle is won."—KHAM.

**Labels.**—It is said of Peter Henderson that he would excuse almost any fault, blunder or mischance in his workmen, but was down with a sharp stick on any of them who did not label the plants he was setting out or potting. For two years I did not label my seeds on planting, and the confusion, bothers and mistakes that have arisen, have prompted me to turn over a new leaf. For instance, there is a soft, sunny spot in my garden, just right for seeds before transplanting. One day I planted my *Petunia hybrida, grandiflora superbissima* that I paid 25 cents for, and the few seeds in the precious packet might have been put on the top of a lead pencil. I was anticipating great things from my hybrida, etc., but the spot was not marked in any way. In the meantime, someone had sent Uncle Jacob some Bull Nose peppers, and down the seed went among my petunias; he, in blissful ignorance of my prior claim, intending to transplant them afterwards to his vegetable bed. My little niece popped into the nice, soft bit of ground some morning glory seeds, and after a while they all came up a mixed mass, that took hours to disentangle, and much grumbling, if not stronger words, by Uncle Jacob followed. But one rainy day this spring I took some thin pine shingles and cut them up in long narrow strips, sharpening one end. When I planted, it hardly took a minute to write the name with a lead pencil and put in the ground by each kind, and I knew where to look for anything I wanted, and there was less danger of pulling up the small seedlings for weeds. A garden depends for success on attention to these little details. Stake the dahlias, hollyhocks and gladiolus, or you will find the poor things laid low and injured beyond repair by the first hard blow.—SISTER GRACIOUS.

# FOREIGN NOTES.

Turnip Tops have been selling for $250 per acre in England. Green food and vegetables are exceedingly scarce.

The Best Apples, it is said, now imported to England come from New Zealand. Those from Nova Scotia are inferior.

At the next Meeting of the international court of arbitration an effort will be made to change the phylloxera laws of Europe.

A Botanical Directory is about to be published at Leipzig. It will contain the names of all living botanists, and also a list of all botanical societies and journals.

Late Chrysanthemums.—The best varieties of late chrysanthemums are Golden Gem, golden yellow; La Favorite, Boule-de-Neige, white; Soliel d'Or, bright yellow; Etoile de Lyon, pale yellow; Madame Hoste; Meyerbeer, violet rose. These varieties will flower as late as the early part of February.—*Revue Horticole.*

Frozen Apples may be used for cider by allowing them to thaw gradually. Submit them to pressure as soon as all the frost is out. The cider will be less rich in sugar, and consequently in alcohol, but it contains more acid than normal cider. Often even after the addition of sugar, the quality of the liquid is so poor that it is better to use it for making brandy.—*Le Jardin.*

A Trap for Night-Flying Insects can be made as follows: Remove the top and bottom from a barrel, and then smear it well with tar. Across one end nail a strip of wood, and to this fasten a cord, so that the barrel may be hung where desired. It should hang from two to three feet from the ground, and a large pan or tub should be placed beneath. In the evening, suspend a lighted lantern from the strip, lowering it about to the center of the barrel. By using thirty of these traps, the injurious insects were almost exterminated in a large orchard and garden.—*V., in Der Prakt. Ratgeber.*

The Opuntia in South Africa.—Some of the species of opuntia, or prickly pear, have obtained a foothold in South Africa, and threaten to become a very serious pest, especially to sheep growers. Neither cutting the plants down nor uprooting them has had any other effect than to propagate them more rapidly. A very effective method of destroying the plants is to uproot them, chop them into short lengths and pile them up in heaps, with stones on top to keep them down. This causes fermentation and destruction. Another method is to pass the stems through a machine, such as is used to chop up turnips.—*The Gardening World.*

Begonia semperflorens, var. atropurpurea, or *B. Vernon* is, without doubt, one of the most beautiful acquisitions which horticulture has received in several years. All parts of this plant are highly decorative; its growth is upright, and each stem has many short branches, resembling in this respect the pink variety from which it was obtained. The flowers are dark red, and this color is heightened by the glossy bronze tints of the leaves. The culture of *B. Vernon* is the same as that required by the pink and the white varieties, but it will be found superior to these for decorative purposes. —*Revue Horticole.*

Obituary.—Achille Ramé, a well-known French horticulturist and entomologist, died April 15.

Dr. A. Schenk, professor of botany in the University of Leipzig, died March 30.

John Wilson, a prominent horticulturist of northern England, died May 1.

William McCorquodale died April 17. aged 81 years. He was forester to the Earl of Mansfield, and was well known and highly respected, not only in England, but throughout Europe. His knowledge of forestry was broad and thorough, but his experiments with the coniferæ first brought him into prominence.

Two New Roses.—*Souv. de Mad. Sablayrolles* (*Thea Devoniensis* / *Souvenir d'Eliza Vardon*). This is a vigorous variety, and is distinguished from other tea roses by its upright growth and dark green foliage. The flowers are usually solitary, and are borne upon a firm stem. They are spherical in form, large, and very full. The color is rose-apricot, tinged with yellow; the borders of the petals have a carmine shade, which passes into white.

*Elise Fugier.* This variety resembles Niphetos. The buds are long, and the flowers are very double. The color is white, but the center has a shade of yellow; the outer petals are large and shaded with rose. The foliage is beautiful, and the plant is hardier and more vigorous than Niphetos.—*Garten und Blumenzeitung.*

New Vegetables—*Arezzo Celery.*—This is an Italian variety, which is very extensively grown in Tuscany. It is considered to be one of the most delicate and productive varieties, and grows to be quite large. When bleached it is pale yellow in color.

*Celeriac*, with variegated leaves (Vilmorin). The root is round and regular, and of excellent quality. The leaves are yellow and green, with rose-colored margins.

*Cabbage, Amager Extra Late.* This cabbage was not injured by the severest cold of France, and it may well rank as the most hardy of late cabbages. It originated in Denmark. The stalk is quite long; the leaves are smooth, rounded and silvery gray; the head is round and firm, and weighs between four and five pounds.

*Broccoli, Extra Early White* (Vilmorin). The leaves are short and less wavy than those of the Early White. The head is quite large, firm, and very white and fine. It is the earliest variety.—*L'Illustration Horticole.*

A Semi-Tropical Garden in New Orleans.

# The American Garden.

*Vol. XII.* *AUGUST, 1891.* *No. 8.*

## THE GREATEST PROSPERITY:

GREATER THAN MILLIONS OF MONEY; GREATER THAN GLORY OF CONQUEST; GREATER THAN POLITICAL POWER.

WHAT HAVE green grass, trees, flowers and fruits—what has gardening to do with all those economic phrases? Just this. The palmy days of Roman power and glory were founded on a prosperous agriculture, promoted and encouraged by the Cæsars as the basis of all prosperity. Frederick the Great was a mighty warrior, but he was a greater statesman, and his most enduring monument is the splendid agriculture—the finest in the world—which he did so much to promote, still evidenced by the great drainage canals of the Saxon plains and the magnificent Sans Souci gardens. France surprised the world by her speedy recovery after the Franco-Prussian war—a result impossible, save for her innumerable little garden farms that for generations have made her, comparatively, the most productive country of Europe.

Love of home and land—of the homestead where one is born and reared—is nowhere stronger than in old England; nowhere are the charms of social life more varied and delightful; in no other land is there a stronger and better manhood and womanhood. All of this, we believe, is largely due to the love of rural life, as exhibited in her myriad suburban homes, *always* surrounded by the refining and healthful influence of beautiful gardens; in the thousands of lordly manors, *always* in the midst of parks and gardens, where the children of luxury are reared amid the wholesome atmosphere of true Mother Nature; in the countless well-kept tenant farms, the homes of English yeomen; in the almost daily exhibitions of garden products for the education and entertainment of the poorer classes. In short, the garden homes of England, her agriculture, which is largely horticulture in its principle of intensive culture, her beautiful country of "shady lanes and green fields," are the chief glory of her civilization. In America we have a proverbial saying that the blood of the country is the life of the city. The majority of our leading men were farm-bred boys, and their characters have been developed under the benign influence of rugged hills and smiling valleys, quiet woods and sunlit meadows, mingled with the sturdy vigor and Spartan rigor of American farm life. But there has been so much of the Spartan quality in it that all too many of the brightest and best of the boys have been allured by the brightness and color of city life to forsake the safe rural pursuits for the fate of the moth in the candle. Gardening in its broad sense: making home beautiful and healthful, with room enough out-doors for fresh air and sunshine, trees and flowers, fruits and vegetables—has been sadly neglected in village and farm. Happily, the tide has turned. Agriculture begins to recognize horticulture as her mistress. The 25-foot "lots" in self-respecting communities are widening into respectable "grounds." The farm house and village unkept "yard" gradually becomes a "lawn," with grassy sod, blooming shrubs, vines and flowery borders. The country seats of the millionaires are the example, object lesson and pride of the regions round about. Thus, our rural homes are rapidly improving and increasing their influence for good over the boys and girls, young men and young women. Thus, American horticulture may do much in the moulding of our national life, by promoting the sentiment for garden homes, and thereby instilling into our manhood somewhat of the goodness of nature.

VIEW IN THE GROUNDS OF GEORGE H. NORMAN, NEWPORT, R. I.

# THE GARDENS OF NEWPORT—III.

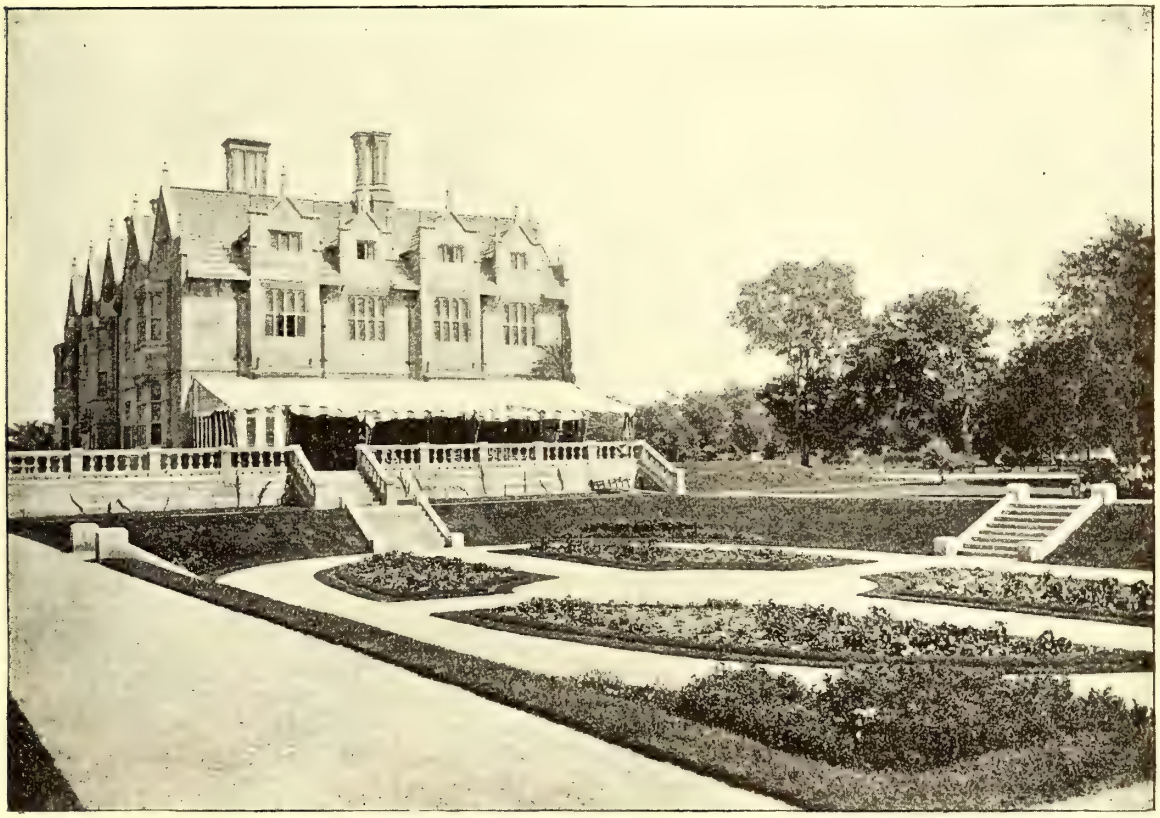
A TREELESS WASTE MADE BEAUTIFUL—A STUDY OF THE BEECHES.

AT THE close of the Revolutionary war, according to "the authorities," there was not a tree in Newport. During the struggle for independence the town had been captured by the British, in whose possession it remained for a long time. Though not able to enter and repossess the city, the American army hovered near, and both the garrison and the people were shut up in close confinement and without access to the ordinary source of supplies. The records show that among other things there was a great scarcity of fuel, and that one by one the trees were cut down to meet the demand. Even the orchards and the smaller fruit trees and shrubs were brought into requisition, and these not fully meeting the wants of citizens and soldiers, the timbers in the wharves were torn from their places and burned. It has sometimes been charged that this destruction was wanton, but it is not to be credited that the captors should go so far as to denude the town, then one of the chief seaports of America, for purposes of punishment and revenge. An old diary, kept by a loyal citizen of those trying days, refers several times to the scarcity of fuel, and once or twice to the joy of the people when a sloop or other sailing vessel from the Narragansett country entered the harbor laden with fire wood. But it contains no hint that the scarcity was the result of other causes than those arising from the necessity growing out of the stern conflicts of the time.

It is almost impossible to think of Newport, which is now little less than a great park, as thus wretchedly barren and forlorn, and it is little wonder that the spirit of the people was broken and that many of her most enterprising sons and daughters removed to more inviting localities, for a country without trees has few charms. The very mention of a treeless mountain or a treeless plain suggests visions of ugliness and discomfort difficult to chase away. It matters little what treasures of architecture a town may possess, or what historic associations may cluster about its name, if in the absence of trees there is no just proportion of sunshine and shadow

in its landscape stretches and thus no true attractiveness.

An old English writer says: "It is no exaggerated praise to call a tree the grandest and most beautiful of all the productions of the earth." And so men everywhere grow trees for profit and adornment. Some of the finest villas in Newport are much more dependent upon them for their attractions than upon shrubs and flowers, though in no case are the smaller plants wholly neglected. One of these is the fine estate of George H. Norman, on old Beach road, who, though a native of the city, now hails from Boston, spending only his summers here. The estate, though not extensive in acres, is large enough for the growth of many specimens of fine proportions.



A Sunken Garden on J. J. Van Alen's place, Newport, R. I.

The illustration on page 452 shows the entrance to Mr. Norman's summer home, a stately pile of granite facing west, with a closely shaven lawn sloping southward. Here the vacant spaces are just sufficient to open the residence to the full sunlight and afford relief from any sense of being crowded or shut in by the forest growth which appears on every side. In the illustration the doorway is partially concealed by the foliage, and only a glimpse of the carriage drive is seen. This drive curves gracefully to the street, and is bordered throughout with stately forms, though the planting is not in regular lines after the manner of shrubs in a hedge row. Directly in front of the main entrance to the house are three fine beeches, the two on the outside being of the well known purple variety, while the lower and central form, but slightly exposed and showing a soft feathery foliage, is a fine fern leaf, *Fagus heterophylla*, which has been recently pronounced by a distinguished visiting horticulturist to be the characteristic and pet tree of the Newport gardens. However this may be, it is certain that few more beautiful arboricultural effects meet the eye than these specimens afford with their striking combinations of form and color.

The beech is one of the common sorts among trees, and though almost everyone knows it at sight, few comprehend its full adaptation for ornamental planting. We observe in our forests but one species, but the botanists tell us there are in all no less than fifteen, with

perhaps as many more varieties worthy of notice. The common beech of Europe, *Fagus sylvatica*, is largely planted in Newport, though it is doubtful if the species is superior to our own. The American white beech, *F. ferruginea*, has a larger leaf, sharper pointed and more distinctly toothed, while in most other characteristics the two are substantially alike; and for planting, one may be regarded as good as the other. No trees on the lawn are more cleanly in their habits, and the smooth, almost glossy trunks, that rise like solid columns, carry well-formed and graceful heads almost without exception. Each of the highly ornamental varieties here shown are of foreign origin, the points giving them distinction being found almost wholly in the foliage, inasmuch as for hardiness, form and general characteristics of growth, little or no difference is observable. The record runs that many years ago a beech was found in a German forest with dark colored leaves. It was what the gardeners call "a sport," and from it have been propagated all the purple beeches of the world. As is well known, such a sport cannot be depended upon to reproduce itself from seed, and so budding and grafting have been resorted to, a process now in more general use among nurserymen than ever before. But, as according to the well known law of heredity which applies to tree and plant growth as well as to animals and men, new forms, however produced, tend to transmit something of their peculiarities to their offspring, and so by planting seed from purple beeches, making selections always from the darkest and best specimens, this feature has been cultivated and strengthened until seedlings of much value are now offered in the market. But there are certain "strains" or sub-varieties of deeper color than that of most of the seedlings, and these are perpetuated in their integrity by the old processes of budding and grafting through which alone their peculiarities can be maintained. The various kinds known as Copper, Blood, Bronze and Red beeches differ only in shades of color on the part of the several specimens or groups to which these titles are applied. Many regret the failure of this tree to maintain its rich color through the entire season. It is glorious in early spring, but by midsummer the dark shade fades away and the foliage becomes much the same as that of the common beech. Some persons speak of this as a serious defect, and in one sense it is so; but I am not quite sure that the transformation fails in its compensations and that it is not an advantage rather than a loss. It certainly changes the aspect so that a landscape or border containing these beeches does not tire the spectator, as it might otherwise do, by a summer of dead uniformity.

The fern-leaved beech, of which the specimen partially shown in the illustration is one of the largest and best to be found in the private grounds of Newport, is another sport that has been perpetuated in cultivation. There are various forms of cut-leaved foliage among the beeches that are sometimes included under this name, and it would be difficult to describe the differences between them; but what is here known as the fern leaf has long narrow leaves, deeply lobed, thin and pointed. They are not all alike, even on the same tree, but are always beautiful. The editor of *Gardeners' Monthly* wrote a quarter of a century ago: "If we could have but six ornamental trees, the fern-leaved beech would be among the first we should choose," and nothing has since appeared which would justify a reversal of this estimate of its value.

The weeping beech, *F. pendula*, is also highly prized and given a prominent place in many of these Newport gardens. It is a variety concerning which opinions may well differ. In many cases its apparent contortions are far from elegant, for it conforms to no recognized lines of beauty. But even then it seldom fails to be an object of interest wherever seen. But the weeping beech is capable of becoming one of the grandest of trees. There is a specimen standing on the estate of Mrs. Bruen, near Bellevue avenue, though hidden from the street, about sixty feet in height, every line of which is full of grace. The pendulous branches fall on all sides of the trunk and almost parallel with it, giving the tree much the form of a tall, columnar shaft. The compact foliage conceals the stem and branches so effectually that one thinks only of a pillar of foliage as he stands in its presence. There is another in the same grounds, less beautiful only because of its somewhat inferior dimensions. Another remarkable specimen appears on the estate of Mrs. Edward King. This is of, perhaps, equal height with that already described, but the branches are maintained at a distance from the stem, so that in falling to the ground they constitute an outer wall for a rustic circular apartment of ample proportions. A meeting of the Newport Nature Club was held under this tree some time since, at which about thirty persons were provided with seating accommodations within the enclosure, leaving ample room for as many more without crowding. The branches of this tree are supported in the position which they are desired to occupy by a light and inconspicuous framework, which accounts in part for their outward extension in this peculiar formation. These weepers appear in nearly all the grounds, and in almost every conceivable shape.

There are other beautiful forms of the beech but little known, though worthy the attention of all who are especially interested in parks and gardens. There is what is known as the broad-leaved beech, *F. macrophylla*, which has much larger foliage than the type; the *F. aurea variegata*, with leaves striped with yellow bands, beautiful but rare; the *F. cristata*, having leaves deeply cut, curled and crisp; the *F. castanæfolia*, with foliage somewhat resembling that of the chestnut, and the *F. argentea variegata*, the leaves of which are touched with silvery white. These less known forms need but to be seen to be appreciated, but it is difficult at present to obtain them, as the supply is not equal to the demand. The *F. antarctica* is a native of Terra del Fuego, and described as a species of medium size with stiff tortuous branches, as if stunted by the severe cold and fierce winds of its, to us, distant home. The evergreen beech

is also a native of Terra del Fuego as well as of southern Patagonia. It is known as *F. betuloides*, as its leaves resemble those of the birch in form. They are hard and thick, quite glossy and permanent in spite of their inhospitable surroundings. Both of these antarctic species have been carried to Europe and cultivated, but except as botanical curiosities, they prove of little value.

There are a few beech hedges in Newport, with the promise of many more. These are made by planting nursery grown specimens about six feet high and cutting them back to four or five feet, and if a low hedge is desired, keeping them there. Such treatment forces an abundance of side branches and produces a good show of foliage. In other cases where a screen is wanted, the plants are trimmed so as to grow up to ten or fifteen feet. I have never seen a hedge of purple or fern-leaved beeches, but can think of nothing in this line that would be more strikingly beautiful. They might be planted singly or in combination, introducing all the forms described, but the plants should be carefully grown in the nursery with reference to this purpose in order to produce the best results.

ENTRANCE TO THE GROUNDS OF J. J. VAN ALEN, NEWPORT, R. I.

Among the large trees in Mr. Norman's grounds are some fine specimens of the European linden, the sycamore and other maples, horse chestnuts, elms, black walnuts, tulips, oaks, poplars, birches and others in common use. Smaller specimens scattered about in otherwise vacant spaces, include a score of fern-leaved and purple beeches and almost as many magnolias. There are very few shrubs, but some fine larches, firs and spruces, though the conifers do not occupy a very prominent position in the collection. No better cared for trees of large size are to be found in Newport, though even here the thinning out process can be carried still further to advantage. There is always danger, in such cases, of leaving trees that have long been watched and tended with almost parental care, to injure each other before the axe or the saw is applied, and whoever plants should keep the fact in mind that while there may be none too many for his grounds while the trees are young, they can easily become crowded and ruinous to each other in their maturity. It requires courage to remove a beautiful tree, even under such circumstances, but it must be done in time or the damage to those that remain becomes irreparable. A great many trees in Newport have been injured in this way, and though the work has been accomplished at last, much of the mischief done cannot be atoned for. Most men are slow to learn that it is as essential to thin and prune wisely as to plant and cultivate well. There is, in fact, no excuse for an ill-shaped tree in any garden or on any lawn, for few things are more subject to guidance and control during the for-

mative period than a shrub or a tree. A badly shaped tree is always a standing reproof to somebody's carelessness or neglect.

One of the newer villas in Newport that can never fail to attract attention is that of J. J. Van Alen, situated at Ochre Point, but not bordering directly on the sea. It is said that the house and estate generally are modelled after an old English mansion, and that its peculiarities are chiefly foreign rather than American. The house, built of granite, appears more like a castle than an ordinary dwelling, and the whole estate is surrounded by a massive granite wall so high that no one can look within, and so strong, that in time of war it might be capable of withstanding quite a siege, were an enemy to attempt its capture. About the only glimpse which is to be obtained from the street, of the well laid out and extensive grounds, is through the beautiful iron gate shown in the illustration. And this is one of the most charming pictures of the Newport gardens. Near this gateway on either side, within, there is a rich collection of rare shrubs and flowers, including a fine show of Japanese maples, the foreign species and varieties predominating throughout. The villa is too new, dating back to 1884, to have these yet in their highest perfection, though the tall trees scattered through the grounds, some removed to their present situations when quite large, go far to take away the impression that it has been fitted up within a half dozen years. The great wall is as yet mostly uncovered, but it is evidently contemplated to make it bright with color. Already there have been planted considerable numbers of the Japan ivy, *Ampelopsis Veitchii*, and other vines, which will soon become effective.

Mr. Van Alen has in his grounds a feature that does not appear anywhere else in Newport, in what is known as a sunken garden, the general features of which are shown in the illustration. The space occupied has been excavated five or six feet and the bottom supplied with rich fresh soil suitable for planting. In visiting it, one looks down upon the tops of the beds of flowers instead of viewing them at the usual angle. These are mostly annuals and, as might be expected, are always of the best class. The garden is reached by stairways, as shown in the illustration. While interesting as an experiment, this sunken garden has not been thus far an especial success in producing fine effects; greater experience will doubtless insure satisfactory results.

L. D. Davis.

# THE FARMS MUST BECOME GARDENS.

A MANUFACTURING company, wishing to find a place for their factory, examined a number of sites in a small town, but finding the town taxes rather high, decided to go into the country just beyond the town limits. Here they were only subject to the state and county taxes. They thought themselves very smart to thus be near town and its advantages, and yet to escape their share of the town expenses. The factory built, they prepared to sell their goods, when a new and perpetual tax was laid on every pound of material that came to the factory, and on every single manufactured article sent to market. This was the cost of transportation. The cost of teaming to and from the factory and the railroad in town was four times the amount of the town taxes.

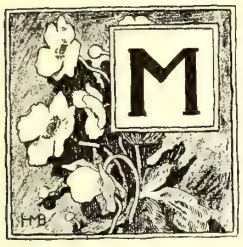
This is precisely the position of many a small farm to-day. It is too far away from its market. The market is the nearest town where the fruit and vegetables are sold. It costs too much to team the stuff. The farm is also too big. There is too much useless land, rocky hillside, bog or woodland. It is cheap. Of course it is cheap, because it is too far away. Such farms can't pay, because of the cost of hauling over bad roads with narrow-tired wheels, that cut deep in the mud and add hundreds of pounds to the load, besides wearing out the wagon and the horses.

The raising of crops is precisely like this factory. It is a manufacture of perishable goods. Like any business, it must be conducted on business principles. It is far better to have two or three acres of good land close to a town than a forty-acre farm six miles out. Better pay town taxes and be close to town stables for manure, and close to a town full of consumers, than to be on a big and cheap place with low taxes, miles away over bad roads. Better one acre, and half of it under glass, ten minutes from the town stores, than a farm one hour out of town. Town taxes and the interest on the land can be calculated exactly. The cost of teaming is an unknown quantity—a perpetual tax that may far exceed the increased cost of near-by land and town taxes.

For this same reason it seems plain that to succeed, our small farms should be turned into gardens. A farm carries too much land that pays nothing, and it is too far from the consumer of perishable products. Gardening is the coming business that will supersede farming in many of our eastern states. The farms will be planted to forests, and the gardens will become manufactories of food products. Gardens will become more and more like shops, conducted on business principles and located close to their markets.

# A RIOTOUS FANTASY AMONG THE "FLORISTS' FLOWERS."

NOTES FROM ST. FEREAL DE PNOSONBY.



OUNTBRIAND is an enthusiast; recent revelations he has confided to me strongly confirm this view. He is the captive of the catalogues, and when poring over the fascinating pages, their strange hypnotic influence transports him into an occult floral world, and the startling catchy titles of these later days suggest to him situations as weirdly grotesque as those encountered by Alice in Wonderland, and they are accepted with child-like faith and tranquil nonchalance.

The shadows of the night have not yet been lifted from his garden, when he saunters forth to commune with nature in her moments of mysterious silence and repose. At length the faint roseate light that breaks in the east, by almost imperceptible gradations of fulness, announces that the reign of night is past, and he beholds the Day-break lily dispense the lingering gloom of morning. Then the stately Sun-flowers slowly rise, and fitly crown the Morning Glory. Warmed by their ardent beams the Vegetable Caterpillars shake off their slumberous torpor and, evidently on food intent, move in the direction of the lettuce bed. The striped Japanese corn, clad (as usual) in uniform green, bends its capacious ears to catch the familiar twitterings of the Canary Bird Flowers, while bevies of gaudy Butterfly orchids, lulled by the musical blare of the Trumpet Flowers, float in languorous grace on the broad expanse of ambient air, scornfully repelling the timid advances of their plebeian rivals, the Butterfly pansies, to enter within their charmed circle.

Here and there, clumps of fern with Venus Looking Glass in hand, are busily engaged arranging their lustrous Maiden Hair in bewitching bangs, while that gay deceiver, Sweet William, languidly watches their graceful movements as he tranquilly smokes a Dutchman's Pipe. Marigold has unfortunately lost her Bachelor's Button, and is pinning Jacob's Coat with a Flowering Thorn, for which friendly service, he presents her with a pair of Ladies Slippers, elaborately embroidered in gold thread. By a most fortuitous circumstance the Ice King poppy, meets the Mourning Bride in the Virgin's Bower. Her lovely cheeks, at sight of him, are mantled with a Maiden's Blush, but she moans incessantly: "Alas, alas, my Love Lies Bleeding." Her royal lover attempts to console her, by offering a Crown Imperial, and a gorgeous Golden Rod, and this lavish munificence so wins her favor, that Jack-in-the-Pulpit marries them on the spot, first donning a Monk's Hood for the solemn ceremony, and they immediately ascend a Balloon Vine, to spend the honeymoon in chasing Comet Asters. Just as they are about to disappear in the Air plants, Jack frantically shrieks, "Forget-me-not," upon which they derisively fling him a Shepherd's Purse with very little Moneywort in it; which niggardly fee so incenses him that he spitefully omits to wish the Travellers Joy.

At this juncture, Bouncing Bet rushes on the scene to announce that the Cow-slipped and spilled all the Milk Weed, so we sha'n't have a thing for breakfast but Butter and Eggs. This unexpected disaster causes the willow to weep bitterly, while Job's Tears are positively heart-rending. (The Russian mulberry tries at first to weep in a hypocritical sort of way, but cannot succeed until a severe glance from Mr. Teas, who is peeping over the fence, quickly causes it to outdo the willow.)

While everybody's attention is engaged, the old Hen and Chickens, from a motive of professional jealousy, slyly take advantage of the opportunity to scratch up all the Egg Plants, but their malicious design is soon detected by the vigilant eye of an Early Rose potato, that promptly sends a lot of Scarlet Runners, accompanied by their fierce Horehounds to rout them out. He had previously requested Rosemary to do it, but she pleaded that she hadn't any Thyme, as she was busy preparing a low necked evening dress for the coming Snow Ball, to be given by the fashionable Hercules Club and she wouldn't miss it for the world, because the beautiful Lucretia Dewberry, a young lady of real old Virginia stock, was to make her debut on the occasion, and Strauss' lovely waltzes were to be played by the famous String Bean's band (of Boston), an organization which couldn't be Beet for dance music, Hops and other Capers.

All at once an appalling commotion arises, in which nothing is heard but fierce battle cries, and the ringing metallic clang of sword and lance. The traditional feud between the Lancifolium and the Sword lilies had broken out afresh; and but for the thymely intervention of the ancient Sage, whose Honesty couldn't be questioned, there might have been Bleeding Hearts, on both sides, especially had he not, with remarkable presence of mind, pronounced those potent words "let there be Peas between you." As the Lances had rather worsted the Swords, the impartial old gentleman permitted the latter, as a slight compensation for their bruises, the privilege of choosing the variety of peas to be planted between the rival factions. They, with commendable prudence selected the Telephone, alleging that that var-

iety would enable them to communicate in future with their bellicose rival, without the disagreeable necessity of coming to close quarters.

The feverish excitement of this martial episode had scarcely subsided when a fresh danger appeared on the horizon. Sweet Basil came rushing in, pale as ghost, to give warning that the Thunder Cloud pansies had assumed a threatening aspect; their silver lining was no longer visible, at least not to the naked eye. This ominous feature invariably announced the speedy arrival of the dread Storm King, who a moment latter, impelled by his satellites, the Wind Flowers, burst forth in all his fury (and Montbriand recalls with an aching pang that he has neglected to renew his hail insurance). The scene that follows baffles description, for mingled with the blinding rush and deafening turmoil of the elements, were the terrific roarings of the Mammoth Improved dandelions, the blood-curdling shrieks of the Leopard Spotted chrysanthemums, the neighing and frantic plunging of the frenzied Horse radishes, the dismal howling of the Wolf-banes, the shrill yelping of the Foxgloves, the harrowing squeals of the Pig weeds, the strident blare of the Trumpet honeysuckles, the rasping croaks of the Crocuses, the reedy, oboe-like squawks of the Hawk Weed and the Hollyhocks, the mournful clanging of the Canterbury Bells, the clicking snaps of the Snap dragons, the hoarse warning cries of the Peacock pansies, the plaintive chirps of the Chicken weeds, to all of which were added new elements of terror in the hideous contortions of the affrighted Snake cucumbers, the twisted agony of the Lion-tailed leonotus, the terror-stricken grimaces of the Turk's Head squashes, all heightened by the lurid light of belching volleys of Indian Shot, and broadcast, chaotic destruction, caused by the tempestuous whirling antics of the unfettered Cyclotoma, the booming Cyclone plant, fresh from its lair in the dreary Black Hills. The scene, in all its weird, supernatural, ramifications, was indescribable; it was a horticultural pandemonium.

Happily, at this critical juncture the great Weather plant intervened, and boldly accosting Storm King, said, with gruff and threatening energy: "Look here, Frau Emma Topfer, I've a great mind to artichoke you and if you don't clear out by Four O'clock sharp, I'll put you in the Stocks, sure as you're a sinner." His impressive appearance and dignity of language had instant effect, for the moment he uttered the name "Frau Emma Topfer," Storm King, realizing that the game was up, with a crestfallen air, disappeared like a flash, borne on the wings of the Wind flower. The great Weather plant, now that the coast was clear, immediately began to bring order out of chaos, by first establishing on a sound basis, a clear and equable temperature. The preliminary step being to unceremoniously pitch all the barometers and thermometers over the fence, accompanied by all the bulletins from the weather bureau.

Then, as if by the wave of a magic wand, the beauteous Rainbow Plant cast its glowing iridescent arch of promise athwart the peaceful garden, which a little later on was glorified and transfigured by the gorgeous multicolored beams of the incomparable Sunset Plant, whose last lingering rays had scarce withdrawn, when the misty twilight came slowly creeping on, and then the soft silvery radiance of the chaste Moonflowers illuminated the enchanting scene with floods of mellow light; and in the clear azure blue of the firmament, there appeared silently, in the order of their magnitude, the glorious Star of Bethlehem, the brilliant Stars of Quedlinburg, the Star of India, the Blazing Star, and myriads of star collections, one could scarcely—but ah, great Ceasar! hark!—hush! Is it the music of the spheres? Oh what thrilling, heavenly harmony! How clear the throbbing liquid notes; they rise and fall in billowy waves of ravishing, melting melody, then soar triumphant in quivering cadences of soulful sound; ah yes, tis the sweet Nightingale flower, that floral cantatrice, chanting her vesper hymn to the snowy Moonflowers. As the last quivering notes faintly die away, Montbriand perceives that the evening has become chilly, which he ascribes to the prevalence of great quantities of Snow on the Mountains, and instinctively draws up to the celebrated Mexican Fire Plant, which, strictly on account of its persistent dull green foliage, throws out a ruddy glow of generous heat, which imparts a sense of comfort to the cosy garden corner.

It suddenly occurred to Montbriand that it would be a capital idea to sit out in the garden and read till bedtime. He quickly lighted a contiguous clump of Candle cactus. The effect was so cheerful and Christmas-like, that he lighted clumps here and there all over the garden. It was like fairyland. He then comfortably seated himself on the edge of a mammoth English mushroom, and placing his feet in front of the Fire Plant, drew out a pocket edition of Lamb's essay. The gentle Elia was a favorite of his, and he opened his volume at the memorable paper on "roast pig." As with most pocket editions, the print was exceedingly fine. He was consequently much surprised to discover that the clear brilliant light of the cactus enabled him to read with much greater ease than he had ever experienced at mid-day. While thus agreeably engaged, he looked up from time to time, struck with the analogy between the appearance of his garden, and that which the country in China must have presented when the primeval mode of roasting pigs, so graphically described by the author, was in vogue.

Montbriand was suddenly aroused from these pleasant reveries, by the warning clang of the fire-alarm, and the immediate arrival of a dozen firemen with hose and reel, and a bodyguard of seventy-five real boys of all sizes, but equally destructive. The hose played with vigorous impartiality, first on the burning cactus, then on its bewildered proprietor, while the boys with tireless energy pranced all over the choicest beds in his garden, leaving it a perfect wreck. Drenched and disheartened he entered the house and prepared to retire. First carefully adjusting a stylish night-cap, deftly fashioned from the celebrated Dish Cloth Plant, and then

pulling over his eyes a handful of wool gathered from his Mountain Fleece, he quickly fell into peaceful slumber, and dreamed a delicious dream, which he promises to relate on a future occasion.

At the close of his interesting recital, I said, "My dear Montbriand, the higher interests of horticulture imperatively demand that your singular psychological experiences should be given to the world. Have I your permission to forward a faithful account of them, to the leading and brightest exponent of horticulture of the present day?" Lest the serious import of his reply might be attenuated or obscured by a hazardous translation, I give it in the original: "Cause toujours, mon vieux, dans l' American Garden, ca ne fait point de mal, mais si tu pense d'emmener des reforms tu te trompe, je crois énormèment." I place this pessimist view on record, but do not share it, for I do hope for the reform he has no faith in. F. LANCE.

[The editor ventures to translate: "My old friend, it will do no harm always to talk in THE AMERICAN GARDEN. But if you think of bringing about great reforms, I think you are very much mistaken."]

# THE ECONOMIC PLANTS OF JAPAN—VII.*

PERSIMMONS. (*Continued from June issue.*)

NITARI.—The fruit is of medium size, oblate, rather flat, square in outline, somewhat folded at apex; color orange-red, or deep red with few or no markings; flesh reddish-brown, thickly set with small, purple dots. It resembles the Yemon both in appearance and quality, but is rather more dark, both in skin and flesh.

HIGAKI.—This is a small, early variety, dark red or purple in color, oblong in shape; flesh purple, very sweet.

OKAMÉ.—The fruit is large to very large, round, oblate, the base projecting in a peculiar manner about the stem. Color bright red, with few or no markings; flesh dark yellow, spotted with purple, rather firm, with a little astringency, which is ameliorated by soaking for a short time in hot lye.

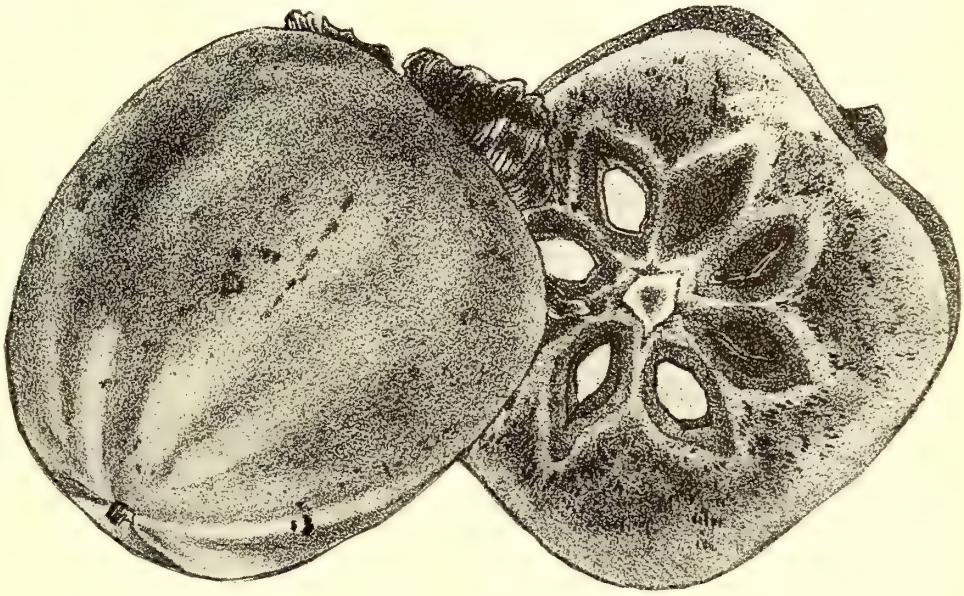


FIG. 12. JAPANESE PERSIMMON, HAKU-GAKI.

SHIMO-SHIRADZU (Fig. 15, p. 461).—Fruit large, oblong, apex slightly depressed and folded; color reddish-yellow; flesh yellow, moderately firm; a little astringent, and like the preceding, is improved by soaking in lye.

HAKU-GAKI (Fig. 12).—The name means "Box-kaki," and has reference to its square outline. Fruit medium to large, oblong; color yellowish-red, with few or no markings. Flesh yellowish-brown, spotted, firm, sweet, with many plump seeds.

SHIMO-MARU (Fig. 18, p. 462).—Fruit almost globular, medium in size; color reddish-yellow; flesh yellow, with many small dots, firm, and many plump seeds.

YAMA-TSURU-NO-KO.—Fruit small to medium, long and pointed; color light red; flesh dark, soft, rather astringent, sweet. Seeds many and large.

SHIBU-TSUNO-MAGARI (Fig. 17, p. 461).—Fruit medium, oblong, pointed; color light yellow; flesh yellow, astringent, is soaked in lye, and then generally dried.

DENJI-MARU.—Fruit small to medium, round; color dark red; flesh firm, brown, spotted, sweet; resembles the Zenji-maru in quality.

KABUTO-GAKI (Fig. 14, p. 461).—Fruit small, round, bright red; flesh firm, yellowish-brown, spotted; ripens early, and resembles the preceding.

JOYAMA-GAKI (Fig. 16, p. 461).—Fruit medium to small,

round; color bright red, mottled and striped with darker lines; flesh firm, very dark, sweet; seeds large.

In general, the Japanese divide their kaki into two classes—Ama-kaki (sweet kaki) and Shibu-kaki (astringent kaki). The former are edible as soon as they begin to ripen, and lose flavor after they become fully ripe and begin to soften. The astringent ones, on the other hand, must be fully ripe and soft before they are edible. This is the class that is dried, and to ameliorate them, they are often soaked in lye or even smoked before they are good.

The dried kaki have met with so great favor abroad, several good judges pronouncing them equal to the dried figs of commerce, that a brief description of the method of drying may here be of interest.

For this purpose, the Hachiya, Tane-nashi and similar varieties which are too soft to handle when ripe, are used. They are gathered when about half ripe, and stored in baskets or tubs for a week, in which time they lose much of their astringency, but still remain firm. They are then pared by hand, and the largest and finest of them are tied together, two and two, by their stems, and hung over bamboo sticks to dry under a shed with a southern exposure. The small and inferior fruits, after being pared, are simply speared on thin bamboo sticks and hung up to dry. Here they remain for several weeks, the length of time depending somewhat on the weather. Care is taken that they do not get damp when it rains. As winter approaches, the process is often finished by spreading them on straw mats in the sun during the day, and putting them under shelter at night. They have now become dark brown in color, have lost their astringency, and are styled *Ama-boshi-kaki* (sweet dried kaki).

They are next packed in little shallow boxes, holding from thirty to fifty fruits, a layer of rice straw being usually placed in the bottom. Here they soon become covered with a white frosting of sugar exuding from the fruit, from which fact they are called *Shimo-furi-kaki* (frosted kaki). Thus prepared, they appear in the markets from December till spring. It is only by special precaution that they can be kept through the following summer. The place most noted for the production of dried kaki is in the province of Mino, in Gifu prefecture, in central Japan, whence all the best fruit is obtained. American growers of the kaki will doubtless find some more expeditious method of drying the fruit. Those varieties which have but little or no astringency can probably be dried in the fruit-drier, but this method may fail in the case of the astringent sorts, since the quality of the article depends on the gradual elimination of the tannin during the process of drying.

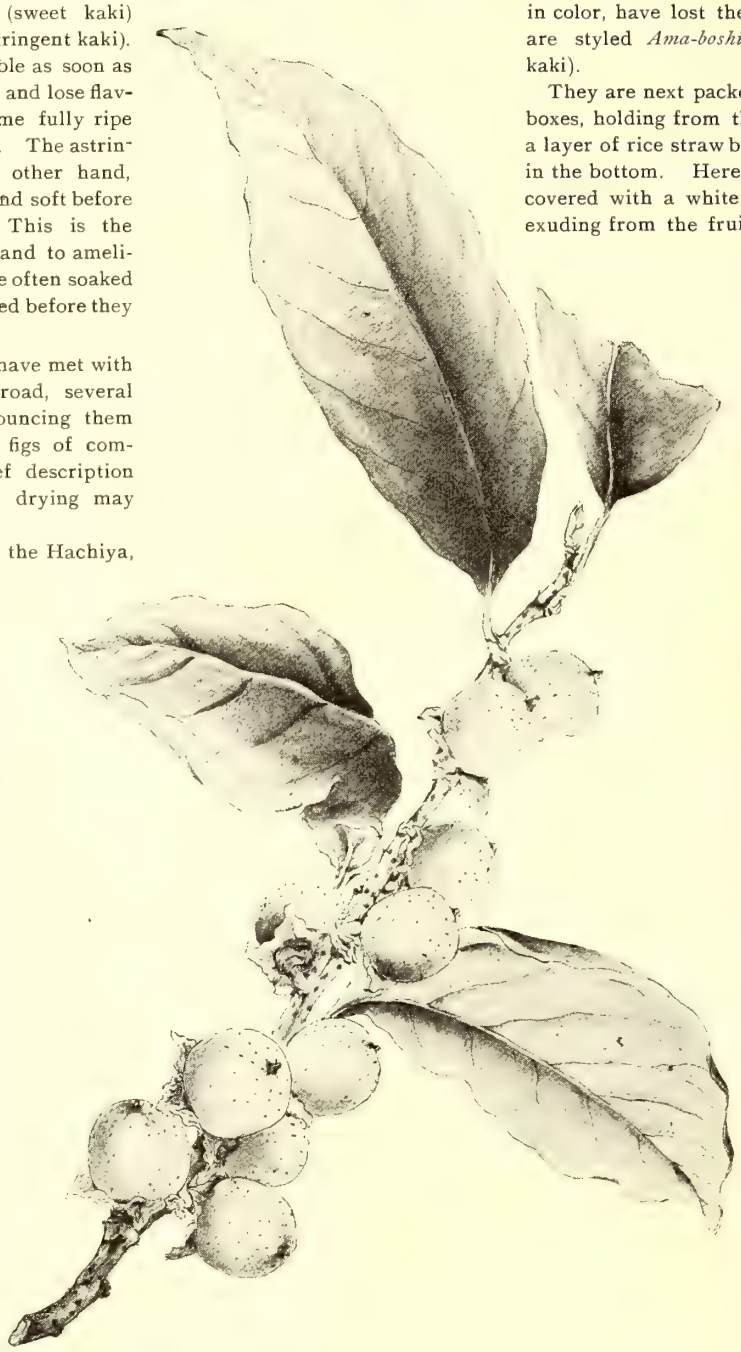


FIG. 13. MAME-GAKI. (*Diospyros Lotus.*) See page 462.

The kaki is put into another very important use by the Japanese. They express the juice of certain astringent varieties, and use it as a varnish for the protection of all kinds of wood

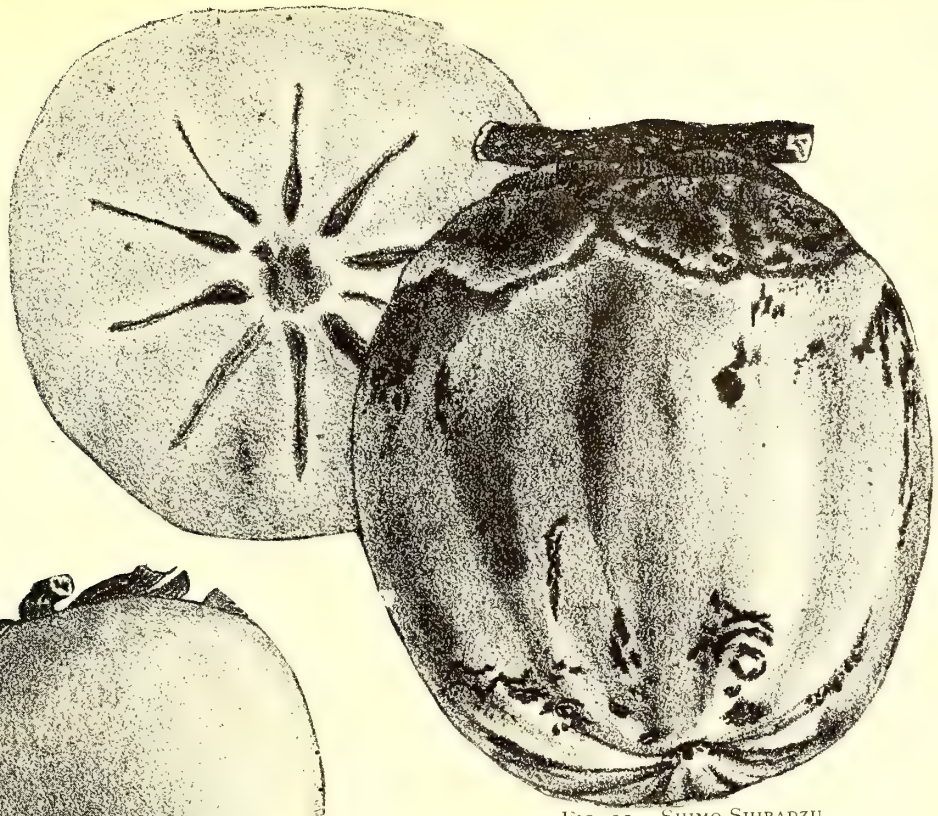


FIG. 15. SHIMO-SHIRADZU.

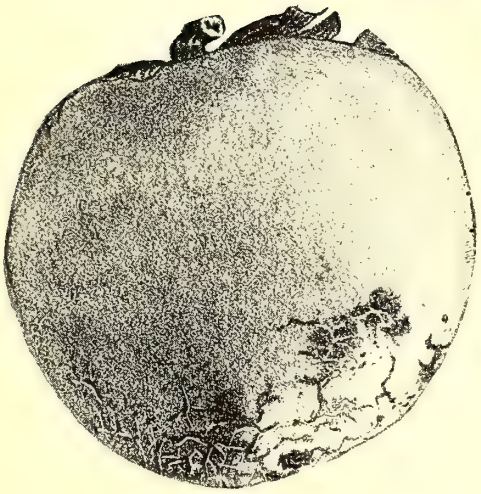


FIG. 14. KABUTO-GAKI.

FIG. 16. JOYAMA-GAKI.

FIG. 17. SHIBU-TSUNO-MAGARI.

SOME JAPANESE PERSIMMONS. (See page 459.)

work, fishing nets and many articles made of paper. This varnish is called *Shibu*. It is really an excellent preservative, and is used very extensively throughout the country. It is used as a paint for new houses, and stains the woodwork to a dark brown color, very pleasing to the eye, two or three coats being as good, or even a better protection, than so many coats of paint. In fact, the houses are never painted with anything else. It is estimated that nearly 10,000 gallons of shibu are used annually in Tokio alone.

For this purpose they use only the astringent and otherwise inferior varieties. Especially is DIOSPYROS LOTUS, L. (*D. Kaki*, Thunb.; *D. Japonica*, Sieb. and Zucc.) Jap., *Mame-gaki*, *Shinano-gaki*, a favorite for this purpose. It is found wild somewhat abundantly in central Japan, and particularly in Shinano, hence the name *Shinano-gaki*. Fig. 13, p. 260, shows a twig with fruit and leaf natural size. The fruit, as will be seen, is very small, but exceedingly abundant and very puckery. They are not edible at all, even after frost, but they yield shibu of the best quality. Usually, the fruit is gathered for this purpose when it is three-quarters grown, or at least before it begins to show signs of ripening. It is then placed in a huge wooden mortar and crushed, the pulp put in coarse bags, and the juice pressed by leverage of some sort. A good American cider press would answer the purpose admirably, but as yet the old methods are followed. If the juice thus obtained equals twenty per cent. of the volume of the fruit used, it is called a good yield.

The pure shibu as it runs from the press is somewhat milky in appearance, but on exposure to the air it turns dark. Of the solid matter it contains, more than thirty per cent. is tannic acid. The pomace is treated with water, and a second quality of shibu is obtained, which is used for rough painting. It has a very pungent and singularly disagreeable odor, which will adhere to the varnished articles for some time. It would seem likely that our native persimmon could furnish a similar article of varnish; our ordinary varnishes are now made from foreign gums.

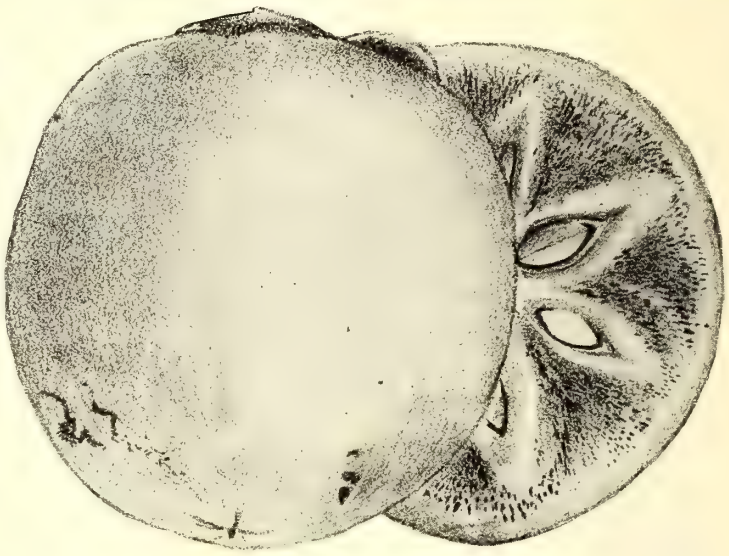


FIG. 18. SHIMO-MARU. (See page 459.)

*Kansas Agricultural College.* C. C. GEORGESON.

# ROADSIDE GARDENS.

GOOD ROADS AS TRACKS FOR THE WHEELS: THEN TREES, SHRUBS AND VINES IN PROPER ORDER ALONG THE ROADSIDES—THUS WE WILL HAVE INDEED THE FINEST ROADS IN THE WORLD.

WHILE discussing the improvement of our country roads we must not overlook the fact that the construction of solid roadbeds for hauling and driving is not the only end in view; for our highways also furnish a magnificent opportunity for æsthetic culture. The six rod road is not needed for teams beyond a strip of about thirty feet; that is, about two rods. One rod more will more than cover the ditches and walks. We have, then, three rods for lawn, shrubs and flowers. Why not make this use of it? Imagine the miles of beauty stretching from village to village and intercepting all towns; that might as well exist as the avenues of weeds and brush and the general appearance of neglect. The enforcement of stock laws over the greater part of the Union has prepared the way for this next innovation. There is no reason why our public land should not constitute a continuous park from the Atlantic to the Pacific.

I would not be satisfied with getting rid of mire and dust, and the building of rock roads to save wear of horses and wagons; that is a practical matter, wholly economical and wise, but not beautiful. Whatever comes short of beauty fails of the highest end. I want to see

the barns and houses that now skirt a foul highway pushed back into less publicity. They are private affairs. Why should they be close up to the street, shutting out our view of the distant landscapes and even of the nearby meadows? If set a little back, the cheapest cottage or even a decent hut looks picturesque; but when brought up, pig-sty and all, to the roadside, they become disagreeable. There are few drives in which the houses do not detract from the charm of the excursion. Fine houses are little better or more attractive. Who cares to ride about to see what monstrous notions of architecture thrive? What we care for is to see the world as it was made, not to look at our neighbors and smell their dinners.

I know a few bits of county road that are as beautiful as can be. These are where, for exceptional reasons, a few neighbors have coöperated in planting down to the roadside. One of these runs near my own home; but even here, where there is hardly a resident for half a mile except college professors or lodges of college clubs, the houses are not private. They are staring at the street, and are too near the highway; still there is great gain when shrubs and evergreens are allowed to grow naturally down to the ditches. The planting of grounds simply takes in the street, except the drive. But best of all is it, when all the possible outlooks are secured and those who travel on the street can see whatever fine things valley or hill can present. Along the hillside to which I refer, on one side, the valley is open to view, no trees being allowed to grow as obstructions. Here is a superb feast for the eye. Of course I do not expect roads to be led over steep knobs in order to furnish outlooks and broad landscape views, but when a road does climb a hill of necessity, why not understand that it can minister to the eye and mind? I know roads that, with a bit of taste in planting, would surpass the finest park in the world. But what havoc is made! what ugly cuts! The banks are spoiled! The kingly trees are cut down! The vines of bitter-sweet, ivy and clematis are made horrible with brush. Is there anything in the world more ugly than a roadside ditch? But there are hundreds of places where beautiful brooks might tumble along fraught with music and beauty. Here might be sweet water and perhaps miniature falls made of sand, pebbles or rocks. Rustic bridges might take the place of carpenters' planks, and in shady places might grow ferns and wild flowers. It would take so very little work, I often think, to make a strip of roadside an ideal of loveliness.

Indeed, I would make a distinct choice, and prefer to ornament the street rather than the lawn or yard; and I would do this in the interest of a true social life. Let our commonalty be where we meet in the most cheerful and refined manner. It has been our habit to hold our common property as a place for refuse, weeds, ashes, stones, and whatever else was too noxious to be retained on our private land. I am compelled, within five miles of Utica, to drive through patches of Canada thistles and burdocks, while piles of tin cans, broken chamberware, brush trimmed from neighboring orchards, and every imaginable sort of refuse fill up the street sides. I have heard landscape gardeners urge that our flower lawns should be far back from the road and somewhat secreted. This may be good policy if we must have the present road system, with its dust showers. If we can secure such driveways as England possesses, then there is no reason why our most beautiful lawns should not be for the public eye, and while near the road, include also the roadside. We are social beings, and the tone of society is largely determined by the surroundings of social gatherings. While insisting on delicious retreats, where I can commune with nature alone, I would have just as delicious resorts where we may commune with men. Think of the powerful influence on the intellectual and social tone of the people, which flower-bordered, clean and handsome roadways would have! The æsthetic element has been kept too much in abeyance in American character. With the departure of hideous roadsides would go hovels and pig-styes from adjacent property; people would feel that the common road was, above all, to be freed from association with the unsightly. I can foresee the time when our highway system will thus become a great educator of the people. Why, indeed, should it not become the continuous garden of America, where roses and lilies smile under lilacs and cherry trees, and greet us with wholesome odors as we drive for pleasure or profit; and the laborer would be surrounded by our best thoughts as he hauled our crops to market over good stone roadbeds.

Have we passed the era when such a proposition as I have urged will be scorned as impractical? Who is going to waste money on the roadside? As a matter of fact, you cannot invest your money in a better way. It is no more wasted on the roadside than in your garden. A handsome street is the best advertisement of your town or your property. If you desire to sell, nothing will bring a purchaser so quickly as a fine frontage. We should also remember that population has so re-adjusted itself that we no longer own our country property for ourselves alone. We are obliged to feed the cities; and, more and more of late, we are obliged to consider the country as the temporary resort of the urban dwellers. Crowded together for ten months, for two months they flow over in our valleys to save themselves from degeneration. The country is full of tourists, and destined to be so more extensively. These people seek the pleasantest villages and finest drives. It is a matter of pecuniary policy to adorn our roadways. I am not sure that it will not be our best policy to make the roads a continuous garden, and leave our private land wholly to production.

*Oneida County, N. Y.* E. P. POWELL.

[*The Editor begs leave to suggest that a regular and continuous warfare on fences is perhaps the most effective means of bringing about the establishment of Roadside Gardens.*]

# JEFFERSON AS A HORTICULTURIST.

T IS WORTHY of note that the two men who had most deeply and permanently influenced the constitution and institutions of this country, Washington and Jefferson, were both farmers, while the latter was even more than a farmer, being a skillful and enthusiastic horticulturist. From early boyhood he appears to have a strong inclinaation for agricultural and horticultural pursuits, and celebrated his coming of age in 1804 by planting two rows of plane trees, forming an avenue to his birth place, at Shadwell, Albemarle county, Virginia. Early in life he wrote:

"Those who labor in the earth are the chosen people of God, if ever He had a chosen people, whose breasts He has made a peculiar deposit for substantial and genuine virtue. It is the focus in which He keeps alive the sacred fire which otherwise might escape from the face of the earth." Again, he wrote that the people would "remain virtuous as long as agriculture is our principal object, which will be the case while there remain vacant lands in America. When we get piled upon one another in large cities, as in Europe, we shall become corrupt as in Europe." Is the era of public corruption here predicted close at hand? The public domain is certainly nearly all taken up, and are not our cities too, becoming congested, like those in Europe?

Later, in the midst of fierce political turmoil, when his name was known as a statesman and diplomatist in all parts of the world, and he was the recognized leader of the republicans in bitter conflict with the federalists under Hamilton, he wrote to his political rival, Adams: "I have an interest and affection for every bud that opens." At a comparatively early age he was a member of the board of agriculture of London, the agricultural society of Paris, and that of South Carolina—the latter claimed to have been the first established in the United States.

For 58 years of his life, as we are told by the Honorable James P. Applegate, he kept a garden book, and his table of the average earliest and latest vegetables in the Washington market is a model in its line. The diagrams of his gardens at his celebrated home, Monticello, are as neat as engravings. The numbered rows, dates of planting, sprouting, blooming, ripening and harvesting, as well as the quality of the products, are as accurately recorded by him as they could be by the director of an experiment station. Nor did he forget to record the annual rotation of crops as well as meteorological observations. While the Declaration of Indepence was pending before congress in Philadelphia, in 1776, he wrote, with the same pen that had formulated that famous document, about sweet peas and various flowering plants in the Quaker city. And so it was through his eventful life, whether contending against the aristocrats in Virginia or the federalists in congress; whether acting as American Minister at Paris, or as President of the United States at Washington, he always found time to indulge his deep interest in horticulture. Thus we find in his garden book; "grafted five French chestnuts into two stocks of common." And again in April 1773; "set out strawberries." And again; "planted 50 vines of the various kinds from the woods; planted 50 Alpine and 22 May strawberries, 44 raspberries and several hundred seeds of various kinds of native and European fruit trees." In his notes on the state of Virginia he gives a complete list of the trees, plants, and fruits as well as of the vegetable growth of all kinds, spontaneous and cultivated, in the state. When in 1781 Tarleton's troopers ravaged his estates, what he regretted most keenly was the destruction of a highly prized tree sent to him from Europe.

While Minister to France, from 1785 to 1789, his services to American agriculture and horticulture were hardly less valuable than those to American diplomacy. Already master of European horicultural literature, except that of Germany, his scientific acquirements, habits of observation and close study enabled him to collect a store of knowledge of European agriculture. Wherever he went—to the south of France, to England, to Amsterdam—he made accurate observations of the various soils, plants and climates with a view to determining the conditions best adapted to the greatest success with each form of vegetation, and to the selection of the most valuable that would be likely to thrive when transported to this country. Among a large number of plants and seeds of his introduction there was a superior variety of rice which added thousands of bushels to the product of southern planters. His notes on viticultnre would be of value to the vineyardists of to-day. In all his travels, nothing gave him more delight than the beauties of Nature and the abundance of culture. To his friend Lafayette he wrote: "From the first olive fields of Pierrelatte to the orangeries of Hieres has been continued rapture to me." Again he writes: "In the great cities I go to see what travelers think alone worthy of being seen, but I make a job of it and generally gulp it down in a day. On the other hand, I am never satiated with rambling through the field and farms, examining the culture and cultivators with a degree of curiosity which makes some take me to be a fool, and others to be much wiser than I am."

As pointed out by Mr. Applegate, the modern experiment station is suggested by Jefferson in a letter to W. Dayton: He writes: "In an infant country, as ours is, experiments are important. To find out these (the kinds of plants, etc., that could be successfully grown) will require abundance of unsuccessful experiments. But if in a multitude of these, we make one useful acquisition, it repays our trouble. Perhaps it is the peculiar duty of associated bodies to undertake these experiments."

During his eight years as President from March 4 1801 to March 4 1809, Jefferson took advantage of every opportunity to advance the cause of horticulture and agriculture. American Ministers and Consuls in other parts of the world were instructed to note all advances in these vocations and to send "specimens of seeds, plants, etc.," for experimentation in the varied soils and climates of this country. Explorers were given minute directions to seek "unknown forms in woods, fields and mountain tops; to give written descriptions and drawings, and where possible, specimens of everything new and strange."

After the close of his second presidential term, Jefferson returned with ardor to Monticello to re-engage, he hoped permanently in his favorite rural pursuits. To Adams he wrote, "I return to farming with an ardor I scarcely knew in my youth, and which has got the better entirely of my love of study." Writing to David Williams he speaks of agriculture as "a science of the very first order, counting among its handmaids the most respectable sciences, chemistry, botany, etc. * * * Young men closing their academical education with this as the crown of all other sciences, fascinated with its solid charms, would return to the farms of their fathers and replenish and invigorate the noble calling."

In 1811, at the age of 61, he wrote to Mr. Peale: "I have often thought that if heaven had given me the choice of my position and calling, it should have been on a rich spot of earth, well watered, and near a good market for the productions of the garden. No occupation is so delightful to me as the culture of the earth, and no culture comparable to that of the garden. Such a variety of subjects, some one always coming to perfection, the failure of one thing repaired by the success of another, and instead of one harvest a continuous one through the year. But though an old man, I am a young gardener."

The character of Jefferson as an agriculturist is excellently epitomized by Morse. "Jefferson was always an enthusiast in agriculture," he writes. "All his busy official life at home and abroad, he appeared ceaselessly to have one eye on the soil and one ear open to its cultivators; he is always comparing, varying methods result, and sending new seeds hither and thither, making suggestions, trying experiments."

Rich in fame for scholarship, diplomacy and statesmanship, a patriot sure of a lasting place in the esteem and hearts of his countrymen, who had twice raised him to the loftiest honors within their gift, Jefferson had tested all sources of pleasure, yet he had declared, and his family has corroborated him, that his "chiefest delights were in his garden, his flowers, his fields and among his trees." Are not the same sources of delights open to every reader of THE AMERICAN GARDEN?

## A SEMI-TROPIC GARDEN.

WANT to tell of a garden, not one of those which are filled with costly plants such as only a millionaire can possess, but a sweet little home garden that any man who labors for his daily bread may have, if he owns a home. A bit of grassy lawn is edged with calla lilies, and the path that divides it is bordered with bright pink daisies. In the center of one side of the lawn is a palm with its foreign-looking, fan-shaped leaves, and on each side a Mermet and a Bon Silene "blush and bloom"; on the other side it is shaded by a magnolia tree, and in a retired corner some English violets lift their fragrant little heads.

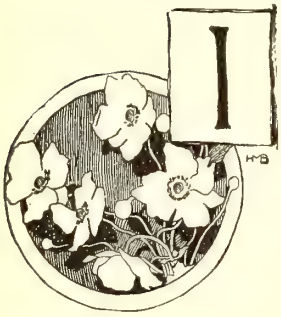
The house, standing well back from the street, is built with an airy grace that bespeaks no fears of the twisting cyclone or the penetrating blizzard, and though but a humble cottage, it is adorned with nature's own workmanship. Around the porch are twined the brilliant Marie Henriette, and the fragrant La Marque, the white and the red lovingly rustling side by side against the green wall of their leaves. The Beauty of Glazenwood, with its variegated flowers, makes a bright lattice for a window, while clambering up the corners and drooping from the eaves, are the honeysuckle and jessamine; and an English ivy forms a green screen for a south porch, where the house cat lies in drowsy contentment all the long summer days, enjoying its grateful shade. Within the garden a La Superba rose has been pruned until it has grown into a tree, so tall that its topmost buds can not be reached from the ground. Near by, a La France is dropping its pink petals on every side. A trellis supports a Maréchal Niel, whose half opened buds reveal their hearts of gold. The Pearl of the Garden has caught a faint blush by its close proximity to the Black Prince, while the Duchess of Brabant half conceals her beautiful tints with a modest grace not often found in titled dames. Some orange trees are scattered here and there, and would drive an artist to despair; for, though his fruitful brush might reproduce their glossy leaves and wax-like blossoms, yet who could paint their rich perfume? Geraniums of every variety and color are

running riot, and only the constant use of the pruning shears can keep them within bounds. California seems to be the natural home of the geranium, as well as of the calla lily; and if the slips could be planted that are thrown away here every year, there would be enough to furnish plants for every home in the country.

Heliotrope, with its fragrance so intoxicating, and the starry marguerites, are so full of bloom that one can hardly help believing that they are conscious of their beauty, and are trying to show off a little. A wire trellis is completely hidden by the vigorous growth of a passion vine, with its grand mystic flowers. In a shadowy angle of the house is a fuchsia, with whose beauty one never becomes too familiar, for it always impresses one with a sense of strangeness, as though it might have strayed from Paradise; and at its feet some dear little pansies raise their soft eyes in silent adoration. Two abutilons, one red and one white, shake their graceful bells in each passing breeze. A lemon tree or a hedge of limes is both useful and beautiful. A bush or two of guavas or a loquat tree are also useful adjuncts to a garden, and can easily be raised; or a strawberry bed in one corner of the lot will furnish fruit for the table throughout the year. The soil and climate seem adapted to almost all kinds of fruit and flowers, and the tired man thanks the lucky fate that placed him in such a delightful land, where, while the wintry winds are howling and the snow flakes are falling on his less favored brothers, he can rest his weary feet amid scenes of Eden-like beauty, or wander hand in hand with his modern Eve "in the cool of the day."

*Los Angeles Co., California.* E. A. LAWRENCE.

# MY EXPERIENCE IN BUILDING A GARDEN HOME.



I AM a Methodist traveling preacher, who, my lungs being affected, am trying to fit up a home for my remaining years. This means the building of a dwelling with all its appurtenances, grounds, garden and orchard, with the exception of twenty-nine very fine large apple trees, one crab apple and one peach tree. It is just three years since I commenced this home building, and six months since I gave up a charge.

From boyhood I have been passionately fond of flowers, and have always had the parsonage yards as full as possible of them. Besides, ornithology has been a favorite pursuit, and now in the country (three miles from a town), I am indulging my bent to the utmost. In the first place I resolved to have every ornamental shrub and tree that I found to be hardy in central Iowa. Nor did I purpose to take anybody's dictum as to what I should plant. I have known only one winter in this section when the the thermometer did not go to 20° below zero. Last winter was no exception. Three years would therefore settle the hardiness of a plant. Those I shall mention I believe to be as hardy as a clump of hazel.

Six kinds of spiræa have grown from the tip ends. If there is a prettier plant for the lawn, during its season, than the Van Houttei, I have never seen it. The horse-chestnut in two varieties, red and white, is now making a pleasant show of foliage, and so is the white fringe. The purple fringe does not seem so hardy.

One deutzia only, of half a dozen tried, commends itself; it will soon be full of white flower spikes. It is a crenata. This, the first week in June, is giving us about a dozen varieties of pæonies, while the platycodon and a fraxinella, growing in good-sized clumps, are regarded by everybody as beautiful, as they are rare in this county. Mine are the only ones in these parts, I believe. The white and pink astilbes will soon be in flower; the pink is excellent beyond description.

By the stump of a cottonwood tree is a lot of thrifty perennial peas that seem bent, with a little assistance, to cover it over. There are quite a large number of roses—hybrid perpetuals—just on the point of opening. The June-bug is hard on roses, and I found, this morning a long (2 inches) green worm feeding on the flower-buds. Eternal vigilance is the price of flowers. I intend —God willing—to have roses if I have to kill every bug and worm in the garden. There are also six varieties of lilies I know to be hardy. They are all exhibiting their buds for blowing; viz, auratum, candidum, a white longiflorum, a reddish one whose flowers stand straight up, single and double tiger lilies, and a spotted variety, very handsome and exceptionally hardy. Early in the spring there was a beautiful show of tulips, hyacinths, narcissus, snowdrops and crocuses, all of which multiply wonderfully.

There are three varieties of lilac and two of syringa, and the omnipresent snowball. The calycanthus and *Hydrangea grandiflora* grow luxuriantly, and the latter flowers to perfection. The pride of the matron, however, in early spring, is a delightful looking African tamarix. It is a wonder to everybody who sees it. The weigelias, two varieties, are regarded as ornaments by the passers-by, who, in their time of flowering, declare them to be the "finest things in the door-yard." The *Yucca filamentosa* is almost a native. There is an interesting variety of it near the pond in the edge of the grove. Two varieties of shrub honeysuckle are close to the front fence, together with a bunch of privet. I am training two sorts of climbing honeysuckles now in

bloom, one of which is an evergreen. I saved its foliage last winter by laying it down on the ground and covering it over with slough-grass. Talking of grass, a bunch of erianthus grew eight feet tall last season in the front yard. I shall try the eulalias next year, if able.

Of clematis we have six or eight varieties, all very thrifty. They seemed impatient to come through the ground this spring. This vine is unsurpassable every way in this country.

Five sorts of climbing roses seem to withstand any amount of freezing; and so does an everblooming one—the Dinsmore. The latter is one of the finest out-door roses I have ever seen. The Madame Champney will be a sight in a few days.

There are two evergreens on the edge of the yard—a Colorado blue spruce and a Siberian arborvitæ. The former is very beautiful. An oleaster also looks well, and behind it are some broad-leaved dutchman's pipe vines.

Of irises there are five varieties, and eight or ten sorts each of perennial delphinium and columbine. I always loved a perennial phlox, so I have quite a number, no two of a kind.

To improve or build a new home renews one's youth. Not only is the work wholesome, but it is a lesson to the community. Already I perceive many efforts at ornamentation in the front yards of the homesteads near me. Flowery lawns will make people ashamed of having pigs, pig-pens and stables prominent in the foreground. A good house in the neighborhood is likely to prevent the building of hovels on farms whose owners are able to build better.

Thus, he who plants trees and flowers preaches a culture that lifts men up towards the plane of the good and the beautiful.

I am satisfied, from my success thus far, that the list of hardy shrubs and flowers in this section can be increased much beyond my most sanguine expectations when I commenced. I think it can be extended amazingly by laying the plants down against the winter. My one peach tree I laid down; it was loaded last year, and is now. Three more will add to our store of peaches this fall. Although the chances were that they would have borne this season uncovered, yet it will not do to risk it. So with shrubs regarded as tender; lay them down, and thus double the number of your satisfactions. The trouble and labor are but small, while to us the delight in our garden home has been illimitable.

EDWARD B. HEATON.

*Six Gables, Ringgold Co., Iowa.*

# CAUSES OF DEPRECIATION IN GRAPES.

A LEADING horticulturist recently remarked of what was once a noted grape, that 30 cents, the price asked in the market for a ten pound box, would be too much to pay for a wagon load! This grape is the Niagara, a white grape (so-called) which, when it was first introduced to notice by the owners about a dozen years ago, was pronounced by experts "very good," "equal to the Concord," "the best white grape," and "a decided acquisition." Why, then, should this grape which was excellent twelve years ago, now become of less value than the dirt under one's feet? The explanation is simple enough. No other grape was so carefully controlled by the first owners. A close corporation was formed for its propagation and sale. Every precaution to establish a monoply was taken. A private trade mark was attached to each plant when sold, and every purchaser was bound under penalties to sell the prunings of the vines to the company which controlled the business.

A big boom was gotten up, and by all the arts known to the trade an extensive sale and distribution of the vines were effected. Millions of them were sold at exorbitant prices on such terms as encumbered the vineyards so planted for years, but no cash was demanded at the sale. The payments were to be made from sales of the fruits, after vines had come into bearing. Not a single vine could be procured for love or money in any other way. Every purchaser was made an agent for selling the vines and thus the Niagara grape was spread and planted in all kinds of soils, in all localities, and by inexperienced and careless cultivators, as well as by those who were better informed. The result could be as easily prognosticated as that now existing, and a good grape has been ruined to a large extent, by the most effective means possible of *not* growing grapes.

The grape is one of the most exacting plants in regard to soil, locality, culture and climate. When all these convene, the fruit attains the highest excellence, but where one is absent, every good quality is lost. This has been the universal experience in the history of viticulture and of wine making from the earliest times. The proper choice of location has been exemplified in the common expression of the poets, "the vine-clad hills," which has come down to us from the earliest ages. Much may be learned in this regard from the most ancient writers, of whom the poet Virgil is perhaps the most diffuse. In his second book of the Georgics, one of his most exquisite poems, he relates the whole art of planting and cultivating vineyards, and the selection of soil and locality is dwelt upon with reiterated particularity."

"Come on, oh farmers!" he says, "and learn ap-

propriate cultivation for each kind; how this place delights and produces the vine and that the olive; otherwise the fruits degenerate and the vine produces base clusters, fit only for plunder for the birds. The same vintage does not hang from the trees on all soils; there are vines adapted to more fertile lands and others more congenial to lighter soils; this for wine and that for luscious fruit; nor can all lands produce all kinds of fruits. The vine loves the open hills, gladdened by the sun; the place controls the dispositions of the fields, and to what their nature may be best suited for producing fruits. This produces the sweet clusters, and that the wine which is poured from goblets of gold; this farms corn and the other wine. If the soil is defective the evident taste will give the proof, and bitterness will torture the sad faces of tasters. Never let your vineyards incline to the setting sun. Sprinkle the plants with rich manure, bury around them spongy stone or rough shells and press them from above with the weight of stones or great potsherds; thus the plants become strong, protected by the showers, the waters gliding into these, and they are guarded against the heat when the dog-star rages and cleaves the gaping fields with thirst. Never is there enough of painstaking, for the soil is to be cut up thrice and four times yearly; for the soil opened supplies moisture for the vines and the heavy fruits which follow the plowshare."

And it is not to be doubted that the bitterness or sourness which tortured the sad face of the popular horticulturist above referred to when he tasted the ill grown grapes, was due to neglect of the principles of culture for the vines laid down by this ancient poet and then practiced in the Italian vineyards. The grape is the first of fruits, its qualities are the very highest; it is not only delicious to the palate but exceedingly nutritious; it lasts longer than any other, rivalling the apple in its keeping properties. And no other plant is more generous in its produce. But certainly no other is cultivated with less judgment or intelligence, or knowledge of its requirements. Its fruit is the offspring of the sun. The genial heat distils its juice from the sap, enriched in the leaves by the bright sunlight and drawn from a congenial soil, which must be bathed in the sun's rays. Shade and coolness retard those chemical changes which produce the sugar from the acid, a process which no artifice of the chemist has yet been able to imitate, while the solar heat and light hasten and perfect them. In the most noted vineyards, every care is exercised to expose the roots to the bright sunshine, and only a few acres, out of hundreds, in the famed French vineyards of Chateaux Latour and Lafitte are able to produce those fine qualities called *premiere crus*, or the finest growths. No analysis of the soil has been able to detect any cause for this difference; it is simply the greater heat of the sun absorbed by the white quartz gravel in which the soil abounds, and the moisture gathered by the stones from the dews which condense abundantly during the nights after the hottest days, while the soil about the roots retains the heat.

The American grape grower has much to learn from the more experienced European vineyardist. In Europe the locations have been chosen during several centuries past. All the noted vineyards were first planted by the old monks, and the same hill-sides, terraced and banked with stones facing the noonday sun, and the same gentler slopes of the hills, are still clad with vines. The fruit takes so little from the soil that only moderate fertilizing is required; in this respect tillage is manure.

To gain all possible advantage from the sun's heat, reflected from the ground, the vines are trained low, and a method of training on low, horizontal frames, upon which clusters hang not more than two feet from the surface, is commonly practiced. No clusters are permitted to grow so high that they cannot enjoy this necessary heat, and the methods of pruning and training are followed closely after the manner existing for many centuries. In the Italian vineyards the methods now followed are the same as those described by Virgil, Columella, and other Roman writers, and the present vine growers enjoy the experience which has been gathered up for so many years.

Here we have no experience; we are beginners in the art, mostly working in the dark, groping for knowledge which comes through innumerable failures, and in most cases groping in an inextricable maze of which we have no plan. Few understand the principles upon which the culture must be based, and without a study of these and patient adherence to them, our common erratic habit leads us to be always trying new ways which are necessarily failures, because opposed to the natural peculiarities of the vine, upon which its successful culture must depend.

Moreover, viticulture here is subject to many serious obstacles in the parasitic diseases which attack the vine. These have rapidly increased in number and severity of late, and no doubt this is due to the extension of the culture under unfavorable conditions. Unsuitable locations, selected without reference to climate, soil, and the nature of the ground, imperfect preparation of the soil, and inefficient culture, must necessarily tend to make weak plants which soon become a prey to the ever waiting fungus germs whose office in nature is to destroy the weaklings; or to insect parasites which increase rapidly as their supply of food becomes more abundant. And all these unwholesome conditions must affect the fruit, for a sickly vine cannot produce good fruit, and thus comes the "bitterness which tortures the sad faces of the tasters" who cannot become eaters, because the ill taste at once condemns the fruit. And thus, too, come the failures of our best varieties which are spoiled in the growing for want of good culture, and the disappointment which ensues when new kinds, at first promising excellences which should easily make them popular, and which really exist under the skillful culture of the originators, are widely distributed and grown under the most unfavorable conditions, by persons who are wholly inexperienced in the art.

*North Carolina.* HENRY STEWART.

# NOTES FROM A GARDEN HERBARIUM—VI.

## THE SOULARD CRAB AND ITS KIN.

THE Soulard crab has been much talked about, and yet there appears to be little definite information concerning it, particularly in reference to its botanical characters. The fruit was named for Hon. James G. Soulard, of Galena, Illinois, who introduced it. The following account of its origin was given before the Horticultural Society of Northern Illinois by Mr. Soulard in 1869:*

"At the request of the Horticultural Society of Jo Daviess County, Ill., I proceed to give a statement of this remarkable hybrid. It originated on a farm about twelve miles from St. Louis, Mo., where stood an American crab thicket not enclosed, near the farm house, about 25 years since. The thicket was cut down and the ground cultivated some two or three years; culture being discontinued, another crab thicket sprang up, and when bearing, one tree (the identical kind now called Soulard crab) was discovered. The fruit astonished me by its remarkably large size, being sent to me by a friend whose widowed mother, Mrs. Freeman Delauriere, occupied the farm. I immediately propagated by grafting upon crab stock and upon our common seedlings. Upon both stocks producing the same fruit and thriving admirably, I disseminated it among my friends as a very desirable fruit, having nothing of the Siberian type. It is to me conclusive that this crab is the offspring of an accidental hybridization of the wild crab by our common apple. The tree, its foliage, habit, increased size of fruit and tree, and decreased acerbity, convince me it is a hybrid, and as far as I know, the first instance of such cross.

"I consider it the most desirable of all crabs that I have seen. Adding sweetness, it is delicious baked. It makes most excellent preserves, being large enough to be quartered, and unsurpassed by any crab for jams, jellies, etc., imparting its delicate taste and rich crab aroma. The largest have measured over seven inches around. In form, color and smell it is like the common crab, and it hangs on the tree until destroyed by frost. It will keep two years, with common care, in a cellar, and will stand repeated freezing and thawing in a dark place. It is agreeable to many palates in the spring.

"The tree is an immense grower in the nursery, coming early into fruit and making but little growth afterwards, and is an immense and regular bearer. I have made some cider as clear as wine, with sugar or a quarter part of sweet apples. It will make delicious strong cider. Tree perfectly hardy, having stood the severest winters here and at St. Paul, Minn., for 25 years. I have none for sale, and never expect to dispose of any; I am too old. But I believe that there is money in it for younger ones."

Downing, in his first Appendix, says that the Soulard crab originated with Antoine Lessieur, Portage des Sioux, a few miles above St. Louis, Mo. Confusion appears to have arisen from the fact that a seedling apple raised at Galena by Mr. Soulard has been distributed as the Soulard *apple*. And some writers have said that the Soulard *apple* came from St. Louis, and the Soulard *crab* from Galena. It probably all turns upon whether the St. Louis fruit should be called a crab or an apple. I am inclined to think that Downing was confused on these fruits, as the description in the Appendix does not appear to be meant for the same fruit as that in the original volume, although he records them both as of St. Louis origin. Professor Budd, writing in a recent issue of *Rural Life* in answer to a question from myself, says that the St. Louis fruit is the apple, and the Galena seedling the crab:

"The Soulard crab originated with J. G. Soulard, of Galena, Ill. The original tree came up as a seedling in his garden. As cultivated apples were near, he supposed it might be a cross with the native apple. When it came into bearing, the fruit proved to be larger than

FIG. 1. PYRUS CORONARIA; FROM MICHIGAN.

any of the native wild crabs in that section, and yellow in color. This confirmed him in the belief that it was a hybrid. Standing beside the original tree, I directed attention to the similarity of the leaves, buds and wood

*The same facts are also given by Mr. Soulard in *Gardeners' Monthly*, x. 199 (July, 1868).

to those of the wild crab, and also to the fact that the flesh, seeds and core surroundings of the Soulard were identical with the wild varieties. Mr. Soulard insisted that the color was changed, that the size of fruit was larger, that the flesh was less acrid, and that the tree attained much larger size than the native specimens. Hence he concluded that it was what the French call a deflexion, if not a real hybrid. But recent observation has shown that at Davenport and other points are found native crabs with larger and better fruit, and fully equal in size of tree. Downing's mistake as to its origin came from the fact that Mr. Soulard brought with him from his old home in St. Louis a very excellent summer apple, which was named in its new home at the north, Soulard."

The statement that "Mr. Soulard brought with him from his old home in St. Louis a very excellent *summer apple*," is directly contrary to Mr. Soulard's statements above, that the St. Louis fruit is a crab and "will keep for two years." The discussions of many years have apparently mixed the records, and I therefore accept Mr. Soulard's statement that his crab is the seedling of a native crab apple from near St. Louis. The Soulard *apple*, a summer fruit, I know nothing about.

FIG 2. PYRUS CORONARIA; FROM NEW YORK.

There is a great difference of opinion concerning the value of the Soulard crab, due in large part to a misconception of its merits. It must be remembered that it is a crab apple, and is not to be compared with eating apples. As a crab, it appears to possess some advantages, particularly as a possible parent of a new race of fruits for the west. Professor Budd speaks of it as follows, in *Rural Life:* "The only value of the Soulard crab known to the writer is for mixing sparingly with good cooking apples for sauce, to which it imparts a marked quince flavor, which most persons like. It is also said to make a jelly superior to that of the Siberian crabs."

D. B. Wier, for many years a fruit grower in Illinois, writes me as follows concerning it: "It is simply a variety of the common wild crab of the northern United States. Its fruit is quite large for the type, smooth, round, somewhat elongated, and of a clear, bright golden yellow when ripe; and it keeps with little loss, with care, until spring, when it becomes, we may say, nearly eatable. The fruit, like the type generally, is very fragrant, and cooked with plenty of sugar it makes a most delicious preserve or sweet-meat, highly prized by the pioneer housewife. The tree is a fine pyramidal grower, rather ornamental in form, leaf and flower. It is propagated by root-grafting on seedlings of the common apple. With me in Illinois it was not fully hardy, our severe test winters reducing its vitality plainly. I could not recommend the Soulard crab as being a fruit of much value. With me it was for many years a scanty bearer. It is a rather fine ornamental tree, and did not have the suckering habit, which would make most of the varieties of the species nuisances in the garden."

J. S. Harris, of La Crescent, Minn., gives me these notes of it: "The Soulard crab was introduced here about 24 years since, as being a cross between *Pyrus coronaria* and the common apple; as hardy, fruitful and a good substitute for the quince, which it is supposed will not grow here. At one time it was planted quite freely with the view of making cider from the fruit, but I think it has never proved satisfactory. The fruit is used to some extent in our western cities as a substitute for the quince for preserves, and mixing with better fruit, to which it imparts its aroma; but it has never had a "boom," and hence the demand for the fruit is limited and its commercial value not great. It is no better than the wild crab as a stock upon which to work the apple. There is no reliable evidence that it is a hybrid, and I believe it to be a natural variation."

The *Farmer's Union*, of Minneapolis, published the following statement in 1873, in reply to a remark made

in the *Gardeners' Monthly:* "The Soulard grows at Pembina, more than 300 miles north of St. Paul. The Soulard of all other crabs is the most valuable. It can

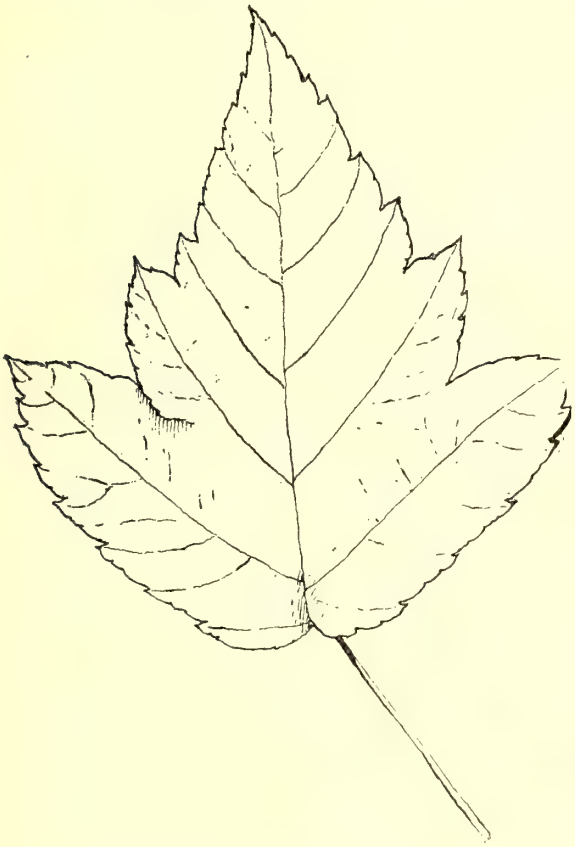


FIG. 3. LEAF OF PYRUS CORONARIA.

not be used as an eating apple. It is bitter, worse than a quince, but for preserves it is quite equal if not superior to the quince. We consider it to-day the most valuable fruit grown in the northwest."

Fig. 4 shows a rather small fruit of the Soulard crab, five-eighths natural size. Downing's description suits the variety well, although the fruit appears to be variable in size and shape: "Fruit medium, oblate, clear smooth greenish yellow, with many minute, suffused dark green dots. Stalk short for a crab; slender, narrow cavity. Calyx small, closed; basin medium, slightly corrugated."

So far as I know, the Soulard crab has always been regarded as *Pyrus coronaria*, or as a hybrid between it and the common apple. I have long doubted both these suppositions, and for the last year I have collected much material, both in specimens and in correspondence, relating to our wild crabs. Any one familiar with *Pyrus coronaria* as it grows in the eastern states will at once observe that the leaves and short petioles and peduncle of the Soulard crab in Fig. 4 belong to some other species. Botanists are aware that *Pyrus coronaria* has been regarded as an exceedingly variable species, but the differences between it and the Soulard are of such a character, it seems to me, as to separate the latter at once as a distinct species. My first impression was that it might be a hybrid, but closer study has convinced me that it is not, and this later conclusion is fortified by the fact that the plant occurs in a wild state from Minnesota, apparently, to Texas. But the difficulties do not stop with the Soulard crab, for there appear to be two well-marked species, and perhaps even three, growing in the Mississippi Valley west of the Great Lakes, and all of them are apparently distinct from *Pyrus coronaria* of the east. These statements may be somewhat startling, but I can come to no other conclusion after much study for many months. But whatever value my conclusions may ultimately be found to possess, I hope that the arrangement now proposed will serve to elucidate the confused knowledge of our wild crab apples.

Figs. 1, 2 and 3 are good illustrations of *Pyrus coronaria*, as understood by Linnæus and the earlier botanists. The particular characters of this species to which I wish to call attention are the triangular-ovate, thin and smooth very sharply toothed leaves, and long, thin and smooth petioles and pedicels. The leaves are variable in size and shape, but the broad base is always apparent, the teeth are straight and sharp, and the texture is firm. Old leaves, especially upon vigorous shoots, are often prominently lobed, as in Fig. 3. A southern species, *Pyrus angustifolia*, growing from

FIG. 4. SOULARD CRAB (*Pyrus Soulardi*). 5/8 NATURAL SIZE.

southern Pennsylvania southwards, is more easily confused with *P. coronaria* than are the western forms.

The best character of distinction between *P. angustifolia* and *P. coronaria*, it seems to me, is the thick, half-evergreen, shining leaves of the former—a character which appears to have been omitted in the later books. I presume that it was this character of leaves which led Desfontaine to call the species *Malus sempervirens*, "evergreen crab apple." *Pyrus angustifolia* is thus characterized by Torrey and Gray in 1848, and the description is excellent: "Leaves lanceolate-oblong, often acute at base, dentate-serrate or almost entire, glabrous, shining above."

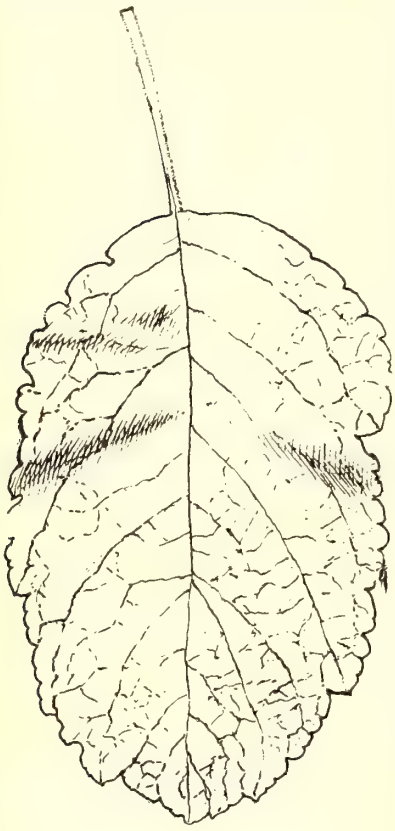


FIG. 5. MATURE LEAF OF PYRUS SOULARDI.

It is said that the styles in *Pyrus angustifolia* are distinct, while they are united in *P. coronaria*, but this character does not hold. The coherence of the styles in all these wild crabs, as in the apple itself, is very variable, and it seems to me to be entirely unreliable as a distinguishing mark.

The disposition which I have made of the wild crabs is not devoid of difficulties. The species are peculiarly difficult to study because of the scanty and unsatisfactory material in the herbaria,* and no one appears to have given them any protracted attention. But if the following arrangement does not remove all difficulties, it certainly lessens them.

*Pyrus coronaria* and *P. angustifolia* are essentially smooth species, and the young wood is dense and hard. The young leaves and shoots are sometimes thinly hairy, but they soon become smooth. The two western species which I have described are essentially pubescent species, and the young growth is thicker and softer. The pubescence is floccose or woolly, and persists upon the under surface of the leaves throughout the season. Our native crabs east of the Rocky Mountains may be characterized for the present as follows:

PYRUS CORONARIA, *Linnæus.* (Figs. 1, 2, 3.) Leaves short-ovate to triangular-ovate, sharply cut-serrate and often 3-lobed, thin and hard, smooth, on long and slender but stiff and hard smooth petioles; flowers large (over an inch across), on long (1½ to 2 inches) and slender stiff smooth or very nearly smooth pedicels, the calyx smooth, or very nearly so, on the outside. A small, slow-growing and spreading thorny tree, growing in glades from New York to Michigan and southwards, probably to Georgia. It is in cultivation as an ornamental plant ("*Pyrus coronaria odorata*"), but it appears never to have been grown for its fruit.

PYRUS ANGUSTIFOLIA, *Aiton.* Leaves lanceolate-oblong to elliptic, small, varying from almost entire in the inflorescence to bluntly and mostly sparsely dentate-serrate, obtuse or bluntish (only rarely half-acute), stiff and firm and polished above as if half-evergeen, on short (usually an inch or less) and hard, smooth or nearly smooth petioles; flowers habitually smaller than in the last, on very slender but shorter, smooth pedicels, the calyx smooth, or essentially so, on the outside. A small, hard-wooded tree, growing from Pennsylvania to Tennessee (and southern Illinois?) and Florida. Dr. Gattinger, of Nashville, Tenn., writes me that the species is "confined to the siliceous subcarboniferous formation, and I have never seen it on the silurian limestones around Nashville."

PYRUS SOULARDI, *new species.* (Figs. 4, 5, 6.) Leaves round-ovate to elliptic-ovate, either rounded or tapering at the base, large, bluntly and closely serrate or dentate-serrate when young, irregularly crenate-dentate at maturity,

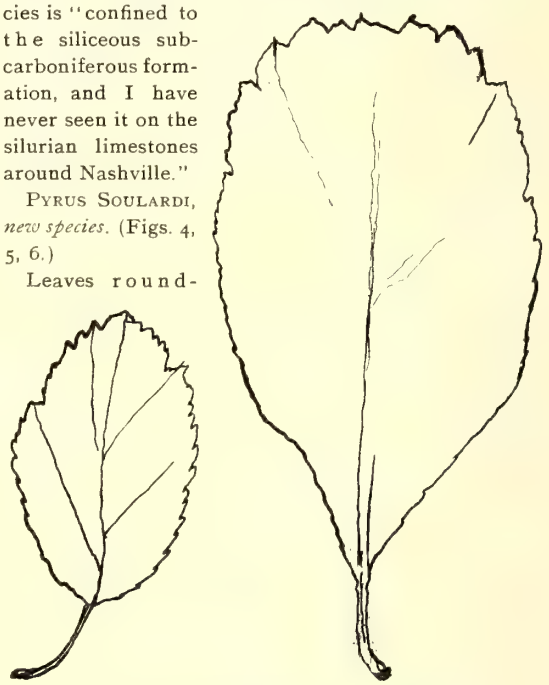


FIG. 6. LEAVES OF PYRUS SOULARDI.

* In this study, besides a good suite of specimens in my own collection, I have had for examination the collections from the Gray Herbarium, Cambridge; Torrey Herbarium, Columbia College and Department of Agriculture Herbarium.

with a tendency to become lobed, obtuse or even truncate at the top, on short (1 inch or less) and thick pubescent petioles, very thick and conspicuously rugose and clothed below with a dense tomentum like the ordinary apple leaf, which it much resembles in color and texture; flowers smaller than in *P. coronaria*, crowded in close clusters like those of the common apple, and borne on short (½ to ¾ in. long), densely white-woolly pedicels. A rather upright and stout-growing tree, occurring from Minnesota (Lake Calhoun, *Hb. H. Mann.*) to Texas (Gillespie Co., *G. Jermy*). Judging from the few specimens in herbaria, this must be an uncommon species. In fact, I have seen but three wild specimens, as follows: Lake Calhoun, Minn., Hb. Mann. (Cornell University), St. Louis, Mo., Hb. Torrey., and Texas, Hb. Dept. Agr. I have the cultivated plant from several sources. Fig. 5 shows a typical mature leaf of the Soulard crab. In Fig. 6, the one on the left comes from the inflorescence.

It is a pleasure to dedicate this species to Mr. Soulard, not only in recognition of his services in introducing it to cultivation, but also because he introduced the Miner plum, the first native plum to be cultivated under a name.

Pyrus Ioensis, *new species*. (*Pyrus coronaria*, var. *Ioensis*, Wood, Cl. Bk. Botany, 333—1860. Figs. 7, 8.)

Leaves rather large, firm in texture and white-pubescent beneath, on stout and rather thick pubescent petioles (1 to 1½ in. long), various in shape: those in the inflorescence are oblong and blunt and marked above the middle by notches, as shown in Fig. 7, while the mature leaves range from elliptic-oblong to ovate-oblong, and are irregularly and mostly bluntly toothed, and bearing a few notches or right-angled lobes or teeth; flowers nearly or quite as large as in *P. coronaria*, on rather slender but white-pubescent pedicels an inch or so long. A small tree, growing in Wisconsin, Illinois (Kentucky?), Iowa and Kansas. This is the common crab apple of the states mentioned, and it is probably common in adjoining states west of the Great Lakes, wholly taking the place of *P. coronaria*. Fig. 8 shows typical forms of leaves. The cluster to the left is from the inflorescence. The others are mature leaves, the middle one being from a vigorous shoot. The only description of this tree as distinct from the eastern crab, which I have ever found, is Wood's characterization of it as *P. coronaria*, var. *Ioensis*, as follows: "Lvs. (when young), pedicels and calyx densely tomentous. Lvs. ovate and oblong, distinctly lobed; (fr. not seen). Sent from Iowa by Dr. Cousens."

*Pyrus Ioensis* is a variable species. The leaves upon young and strong shoots are sometimes triangular-ovate, but the blunt teeth, thick petioles and white tomentum distinguish them from *P. coronaria*, the leaves of which upon similar shoots are very sharp-toothed. The inflorescence and accompanying foliage, barring the white pubescence, is often much like *P. angustifolia*. It is not improbable that it may be found to simulate *P. coronaria* upon its eastern limits.

There is another crab in Iowa which appears to be distinct from any of the foregoing. I know it only from specimens sent me by B. A. Mathews, of Knoxville, Ia., who is cultivating it; and from a cluster of leaves in the Gray Herbarium. It has very large apple-like, smooth leaves. Mr. Mathews writes that a variety of this which he has in cultivation gave fruit last fall which "sold at one dollar per bushel, while good fruit of Grimes' Golden, Roman Stem and others was selling for fifty to seventy-five cents."

There is certainly much to be expected from the wild crabs of the west. The fruit is variable and often of great size and attractive color and flavor. Unfortunately, we do not know which of the species possess the most merit. Some extracts from my correspondence, concerning the native crabs, will indicate something of their possibilities:

B. A. Mathews, Iowa: "I saw specimens of another

Fig. 7. Pyrus Ioensis.

wild crab last fall which reminded me of small Grimes, Golden. It was the nicest one I have seen."

J. S. Harris, Minnesota: "I saw a sample of native crab last fall that was larger than the Soulard, and quite distinct from it."

D. B. Wier, formerly of Illinois: "Along the streams in northern Illinois I have seen many wild crabs the superior of the Soulard in every characteristic, yet none with qualities such as would give them much value for cultivation, though many might be useful as culinary fruits. If the quince is a valuable culinary fruit, the better varieties of the wild American crab are worthy a place in the garden and orchard for the same purposes. The crab is much the hardier, handsomer tree, and subject to much fewer ills than the quince, and is usually

enormously productive of its peculiar austere fruit. The wild crab ripens its fruit from early autumn until the following summer. The old practice in pioneer times was to bury the hard fruit in the soil late in autumn and so leave it until spring, when it would open out a fine golden yellow.

"In its wild state, this crab is a variable fruit in size, color, flavor, shape and time of ripening. I have seen trees of it growing wild, with fruits averaging fully two inches in diameter. The fruit of the Soulard runs from one and a-half to two inches. The fruit of it is generally round, somewhat flattened, averaging about an inch in diameter, though often larger or smaller. It is rarely oblong, sometimes pyriform, and I have seen it (or one of the same type) in one instance with the fruit pyriform, and with a bright red cheek, growing in the woods miles away from domesticated apples; and I have heard of two other like instances. The better varieties of our wild crab should be a fruit of value in the far north, above the line where the common apple can be safely grown. And there is no doubt, from its natural variability, that a fruit of considerable value could be produced from it for culinary purposes. The pioneers had little use for it, simply because sugar in those days cost money, and money at times was not to be had."

The fruits of these American crab apples should be systematically studied, and I hope that all readers of THE AMERICAN GARDEN who have access to them will send me specimens this fall. A half-dozen fruits can be sent by mail in a strong box, and they should always be accompanied by a few leaves from the same tree. L. H. BAILEY.

*Ithaca, N. Y.*

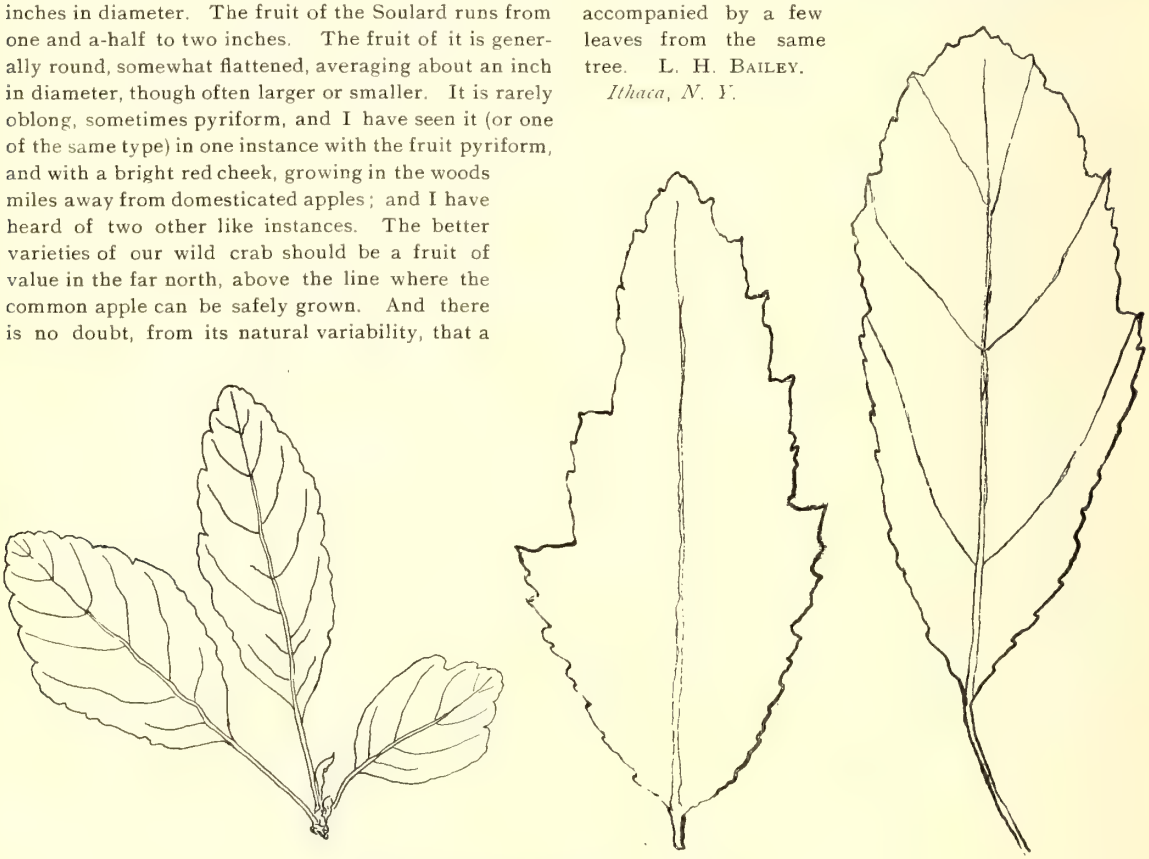


FIG. 8. LEAVES OF PYRUS IOENSIS.

## A FEW HINTS ON BULBS FOR EARLY BLOOMING.

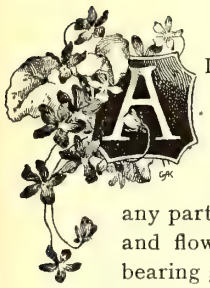
IN ORDER to have flowering bulbs at Christmas, now is the time to commence preparations; at least to plan for the display. Many people have tried to get the Dutch hyacinths to flower at Christmas, but succeeded in producing either a stunted flower stem, or perhaps oftener no flowers at all. This proves that the Dutch hyacinths are not suitable for early forcing. Of late years we have had the great advantage of securing the Roman hyacinths, which are thoroughly suited for Christmas bloom. This class has been thoroughly developed only in one color—pure white. Within the last three or four years red and blue sorts have been added, but in my experience they are not so perfect as the white, or so early. Probably in course of time the other colors will be better fixed in type, when we may enjoy the three graces at Christmas time. In September start the Roman hyacinth in sandy loam. Take a quart pot; in it put four good bulbs, press the earth firmly around them, and cover about half an inch. They may then be placed in the cellar, either in a dark corner or in a box, so that all light

may be excluded. They must be watered about once a week. After treating in this manner for six or seven weeks they may be brought to the light, and an application of liquid manure now and again will greatly increase the size of their blooms. About ten weeks after they have been taken from the dark recess they will commence to flower, and not only one spike of flowers, but three or four will come continuously.

Crocus bulbs may be treated in a similar manner, but the flowers will not last so long. The Bermuda or Easter lily should also be planted in September, but it will not bloom until Easter. Many people start these later, with poor success; to get a strong stem with a large number of blooms, they must be started early. They should be treated like Roman hyacinths, but not quite so much water should be used. It is necessary, also, to get bulbs which have ripened early.

*Ontario, Canada.* HERMANN SIMMERS.

# ORCHIDS AT HOME.



A LOW, one-story, heavy-walled, tiled roofed house on the brow of a hill overlooking the Amazon, some ten miles above the city of Obidos. The river here more narrow than at any part of its course of thousands of miles, and flowing with a current like a mill race, bearing great islands of floating grass, often acres in extent, torn away from shallow bays above by the flood of water (for now is the season of the annual rise) toward the ocean 400 miles away; around the house palms of many species—the graceful assie (*Euterpe edulis*), tucumas (*Astrocarpum*) of several kinds, full of great spikes of yellow fruit; bacabas (*Œnocarpus bacaba*) and the plumy cocoa nut (*Cocos nucifera*), which would be beautiful if it ever would grow straight, but which generally looks like a palm in agony. Far to the rear the dark masses of the cocoa (*Theobroma*) plantation, the dark foliage lighted by the young leaves, which are pink and red, the trunks and larger branches heavy with the bright, orange colored pods; oranges of various kinds with fruit ripe and unripe, and lemons, or rather limes, for the lemon is seldom grown in the Amazonian region, bowed to the ground by the fruit. A garden with ixoras, gardenias, hibiscus, oleanders; not puny pot plants, but great bushes growing and blooming with the freedom of lilacs, not for a few weeks only, but every day in the year. Far below, near the bank of the river, but almost lost in the wilderness of foliage, a large olaria or pottery, of which only the red tiled roofs of the large drying sheds appear. Near by, our boatmen, with the servants of the house, are busy preparing for supper a huge Amazonian turtle, which the Brazilians say can be cooked in 40 different ways, and which we had brought as our contribution to the larder of our friend, who had invited us to make him as long a visit as we pleased, promising also to make an excursion with us to a charming waterfall, lying miles behind his house, far in the direction of the borders of Guiana.

Such was the scene around us as we swung in our hammock, hung between two mighty trees in front of the house, watching the setting sun and the rising moon which, flooding all with silver light, made, if possible, the landscape more beautiful than by daylight. A turtle supper supplemented by fish of several kinds, we all sitting on palm mats in the bright moonlight, which was far pleasanter than supping in doors; then coffee and cigarettes, such as one can only get on the Amazon, while we swung in our hammocks with no fear of malaria, for it is unknown, until our host admonished us that if we wished to sleep at all, we must stop our talking, as we had to make an early start in the morning. It seemed as if we had hardly closed our eyes when we were awakened, long before dawn, and we sprung from our hammocks to make ready for our waterfall excursion. Fortifying ourselves with long draughts of rich black coffee, in the gray morn we took canoes on the lake in the rear of the house and paddled rapidly to the far, further shore. Darkness all around us, but no chill, as in less favored climes; only a warm balmy air. Before we had made half the passage of the lake, up burst the sun with scarce any premonition of his coming and in an instant from silence and darkness the world awoke to life and light. O, how glorious is the sunrise of the tropics!

Pushing our canoes through a dense fringe of white water lilies, (*Nymphæa ampla*) now just closing for the day, but still filling the air with a rich, vanilla like fragrance, we landed on the further shore and camped for breakfast, which, as we had a long march before us, was speedily despatched. Then leaving all heavy articles, the Indians carrying only a few hammocks in case we were obliged to spend the night in the woods, as was probable—for the country is uninhabited, except on the river banks—also a supply of food and water, and each armed with a long, sharp wood knife, we entered the pathless forest. Single file we marched, two sturdy Indians in front plying their knives so that the branches and vines fell in a cloud, we scarce keeping up with

them, tramping over the fallen limbs and with our knives widening the path.

As we entered the deeper woods it became almost dark, for the light of morning scarcely penetrated, and the undergrowth was less dense; the air was surcharged with moisture and from every leaf hung drops of water. Soon we were as wet as water could make us, but, as there is no chill in the air of the middle Amazon, we feared no ill effects from our wetting. A tramp of some five miles brought us to rising ground, and we scrambled up a series of rocky ledges clothed with sparse vegetation, the bushes of the thicker part covered with a climbing, wiry grass (the edges of its blades sharp as a razor, inflicting a cut which heals with difficulty), from which we had some trouble to guard our faces. Soon, however, we reached some rocky bluffs and turned to look in the direction we had come. We were above the forest, which stretched as far as we could see, a vast plain of green, only broken here and there by great masses of color, blue, yellow, white or rose showing where some enormous tree was covered with such a profusion of bloom, that the young foliage was wholly hidden, all bright in the light of the cloudless sky. Large as is the lake we had crossed, and broad as is the channel of the mighty Amazon, we saw no sign of either lake or river, so vast is the mighty forest plain of green stretching southward without visible break to the far pampas of La Plata. We now entered on a plateau with arid, sandy soil, supporting only a thin vegetation of grass and low trees.

Here we found the first orchids—for though there may have been plenty in the tops of the trees of the forest we had crossed, we, on account of their great height, had seen none—they were a few green flowered epidendrums and a maxillaria with little yellowish flowers. A couple of hours march brought us to the northerly edge of the plateau, and we gazed northward over a seemingly limitless plain of verdure. The descent was greater and more abrupt than on the southerly side and we made our way with difficulty to the bottom and again entered the thick forest. But the whole nature of the vegetation was changed; the forest was more open, the trees were larger and of different species, and the ground was broken and often oozy.

At times we plunged knee deep in miry, decaying vegetation. The trunks of the trees were clothed with moss and covered with aroidaceous plants which bound tree to tree with tough hanging roots, fixing themselves in the moist soil. At times, the network of roots from these and other climbers seemed impenetrable. Here we found good use for our knives, for wherever the forest was more open it was full of the creeping palm (desmonchus) which tripped us at every step, and the spines, catching our clothing, nearly reduced us to a state of Adamic simplicity *minus* the fig leaves. Hours of this weary pushing through the forest, till we began to think that our guide had mistaken the direction and that night would overtake us before we reached the waterfall, or any good camping ground. Yet the Indians never make such mistakes; they push their way unerringly through the trackless forest, so thick they cannot see the sun, and always come to the wished for destination.

Our tramp had given us a good appetite, and soon, finding that we must spend the night in the woods, and as it was now becoming late in the afternoon, mindful of the suddenness of nightfall, we decided to camp at the first suitable place, which proved to be a small plateau, densely wooded. Our Indians soon cleared a camping ground and made a fire. We dined on dried piriracu (*Surdas gigas*), a large fish much resembling salt cod, which forms the chief food of the Amazonian inhabitants; *farinha*, the meal made of the mandioca root, washed down by *caxaca* (native rum), and water, followed by black coffee and the inevitable cigarette. We had hoped for some wild meat, but, though we had seen some monkeys and parrots in the early morn, we had not shot them, and during the afternoon we had seen no game of any kind. While we were dining, the Indians had made a covered camp, a rude frame covered with palm leaves, and as the darkness came down, we swung our hammocks, and, well tired by the day's tramp, fell asleep smoking our cigarettes, scarce minding the *carapanas* (mosquitoes) which, though not very numerous, were very assiduous in their attentions.

So weary were we that we seemed hardly to have slept when the Indians called that it was day, and making our toilet, which consisted of a good shake, eating our breakfast, which was a second edition of the dinner of the night before, we started again on our way. For some hours we held a generally northerly course and about ten o'clock an exclamation from one of the Indians told us that we had at last reached the falls. We also heard in the distance the sound of falling water. We soon came to an abrupt, craggy descent, at the bottom of which flowed a small stream; so steep it was that we tumbled or swung from branches or vines rather than climbed down to the water, and, cutting our path up stream, often walking in the river bed, we neared the fall.

Knowing the general nature of the Amazonian region, we did not expect much of a waterfall. It proved to be a very small one; a little stream falling over a succession of ledges, altogether, perhaps, fifty feet in height. But the beauty of the surroundings was well worth all the labor of our tramp. We emerged from the bed of the stream into a deep valley, almost round and about two hundred feet in diameter; all around, the cliffs rose in ledges to an upland plateau, except at the westerly end, the outlet of the stream, where we had entered, where the slope was more gradual. At the easterly end the water fell into a small basin. The cliffs were thickly wooded with small trees, palms being a prominent feature, and all the trunks were covered with that fragrant little orchis, *Aspasia epidendroides*. Every plant seemed in bloom, and the rich perfume almost intoxicated us. Individually the flowers are not very showy; not very large, green and brown spotted sepals and

petals and white, purple veined lip, but in the profusion in which we saw them the flowers were surpassingly beautiful. The creeping rhizomes ran far up the slender trees, or on the larger trees formed great mats encircling the trunks. To add to the beauty, the ground was carpeted with lycopodium, and ferns nodded from every crag. The sun was high enough to shine down into the valley, and we saw all under the most favorable aspect. Words are tame to give an idea of the beauty. We lingered until long after the sun had left the valley; then, loaded with plants, we returned to spend the night at our camp of the night befere. I remember that I had given an Indian an immense mat, which I had stripped off a tree, to carry, rolling it up with the plant side within, but I was startled to come upon him clothed in aspasia, for he had unrolled it and put it around his body as a more convenient way of carrying it. How I should like a photograph of him as he appeared; a perambulating orchid! Passing a quiet night at our former camp, we, the next day, made an easy march to the house of our friend, the only incident of interest being our securing a couple of pacas, a small rodent, the best wild meat on the Amazon, which made us a royal supper. No further excursions for a few days, for to have seen *Aspasia epidendroides* by the tens of thousands and to live on turtle and paca was happiness enough without further exertion.

*Para, Brazil, 1891.* EDWARD S RAND, JR.

# SOME GOOD FLOWERS IN MY GARDEN.

MY OPINION OF THEM AND WHAT I DO WITH THEM.

THE MAGAZINE has not space enough to describe them all, but if the editor will allow I will tell more about my favorites from time to time. First as to the myrtles.

The *Myrtus communis*, of which there are several varieties, natives of Asia, Europe and South America, are not surpassed in beauty of foliage by any exotic shrub. Some have broad leaves, while others are narrow, and very fragrant. This fragrance comes from an oil secreted in little cells, seen as dots when the leaves are held up against the light. The flowers are lovely and fragrant, of a pure white. These half-hardy shrubs will thrive nicely in ordinary garden soil; they are readily increased by cuttings of the same year's growth when it is commencing to ripen; the cuttings to be rooted in sand and covered with a tumbler. Cuttings taken off at any time, even from old wood, will root if properly cared for. *M. communis* may also be raised from seeds. The common broad-leaved myrtle will live out-doors all winter in the south, and make beautiful hedges. At the north it should be cultivated in pails or tubs, and stored in the cellar over winter.

*Crucianella stylosa* is a hardy perennial from the mountains of Peru, and is a lovely little plant. It grows about a foot high and bears beautiful bright pink flowers in great abundance from June until frost; it thrives in ordinary good garden soil, and is of the easiest culture.

The godetias produce the most brilliant colors when grown in a poor soil, but that makes the plants smaller and weaker, while a rich soil makes them grow more to leaves, with fewer blooms.

*Antigonon leptopus* is a grand climber, a native of Mexico, and is quite hardy with protection. It is bulbous, and the shoots are killed to the ground by frost in the fall, but in spring it soon starts up and grows rapidly, blooming all summer and fall, It bears rose-colored flowers in long racemes, and at a distance the abundance of blooms produces the effect of roses; hence it is called mountain rose, *Rosa de montana*. It is also called queen's wreath.

Blue hydrangeas are greatly admired, and it makes one feel jubilant to think the blooms of hortensia *may* turn from pink to blue. Sometimes they come this color with scarcely any trouble. There are several means used to change the colors, but sometimes they will not produce the desired effect and the flowers will stay pink. Among the many recipes recommended are wood ashes, alum and water, common salt, carbonate of soda, nitre, and water in which tan has been steeped. Each of these has been successful at times, yet no dependence can be placed upon them. However, among the novelties *Hydrangea sapphira* makes its bow, and will undoubtedly be eagerly sought after by lovers of blue hydrangeas.

The gentians have pretty flowers as well as tonic properties; the flowers are of pretty blue shades. They should have an abundance of air and a light rich soil to do their best. The perennial varieties are increased by dividing the roots and the annual ones by seeds; these should be sown as soon as they are ripe in the autumn.

Lemon verbena, *Aloysia citriodora*, is esteemed for the fragrance of its leaves, but the flower has no beauty; this plant requires great care in watering, as if it has not enough water the leaves will curl up and wither, while if it has too much water the leaves will soon drop off.

Worms do harm by rupturing the fibres, particularly of potted plants, and greatly impede the free penetration of water; they are usually discovered by the worm casts which are thrown up on the surface of the soil. When this is the case, the plant with its ball of earth entire should be turned out of the pot and the worms picked out from the roots.

Argemones or prickly poppies are highly ornamental hardy annuals and perennials, natives of Mexico. They

have large flowers like poppies and are of easy culture. They want a good deal of room in which to spread.

Gathering seeds from choice plants is always interesting, as it makes one look forward hopefully to another year, and the wonders which these tiny seeds will bring forth; oftimes to an abundance of some favorite which perhaps could not be afforded this year. Seeds should not be gathered until the seed-pods are full-grown, which may be ascertained by their appearing as if they would soon burst; but at this time close watching is required, in order to prevent the seed-pods suddenly bursting and scattering their seed on the ground. Do not gather them when the pods are at all wet. Lay the seed pods on plates or in papers, and place where they will be exposed to fresh air, but in the shade, and where perfectly dry. When the pods are thoroughly dry the seeds may be taken out and tied up in papers, or better in small envelopes, each carefully labelled.

The Cosmos are Mexican plants, usually treated as annuals; they have tuberous roots like the dahlia and may have about the same culture. They have showy flowers, and the plants thrive in any common soil, growing four and five feet high.

Crassula is a native of the Cape of Good Hope. It is succulent and bears heads of red or white flowers. Like all the Cape plants, it should have a season of rest, alternating with a season of growth. The pots should be well drained; the soil a sandy loam with some lime or brick rubbish. When bedded they should have plenty of water, but do not let any water stand around the pots, and the supply of water should be gradually lessened as the flowers commence to fade, until only a little is given about once a week.

*Iberis sempervirens plena* is an introduction from Europe, and is like ordinary hardy candytuft, except that it ranks ahead of that in having larger and perfectly double white flowers, and is fine for cuttings. Planted this fall it will bloom profusely next spring. Among the fine hardy plants for fall planting, we must certainly have the Wahlenbergias; there are two varieties, *Wahlenbergia alba* bearing lovely white flowers, and *Wahlenbergia cærulea* which has blue flowers. These plants grow from two to three feet high, and bloom abundantly. The flowers are very good for cutting.

*Onondaga Co., N. Y.* G. B.

# PACKING CUT FLOWERS.

AMONG the quantities of cut-flowers sent through the mails every day, but few, comparatively speaking, are received in fair condition. Nearly every one thinks it an easy matter to send a box of flowers to some distant friend by post, and so the flowers are filled into a small paper box, a wet newspaper laid over or around them and this is supposed to finish the process, all except tying the strings and addressing.

Is it any wonder that they reach their destination in a generally collapsed condition and really bring disappointment where only pleasure is intended? Cardboard boxes are apt to be broken badly in the mails, through rough handling, and perhaps a very moistened condition. Instead, procure light wooden boxes from two to five inches deep. Line the box with a sheet of wadding or cotton batting, fitting it well into the corners; then over this place a sheet of tissue paper. Lay the flowers in carefully, not on top of each other, but in rows side by side as closely as they will fit until the bottom of the box is well covered, the blossoms of each row lying on the stems of those adjoining them; for if the flowers are laid one on top of the other they will not endure the transit well. Pack closely, for if this is not done the flowers will become displaced, perhaps badly shaken up and injured. The flowers, before being packed, should be previously prepared by standing in water for several hours, so that the stems may absorb enough moisture to last them for some time and prevent their withering. In sending flowers away during the summer I cut the blossoms late the night before and place in dishes of water in the ice box or in the cellar until wanted next morning. After the flowers have been carefully packed give them a very slight sprinkling with water, if they are to travel far; lay over them a sheet of tissue paper and some more cotton batting before fastening on the cover. Always have the box of a size regulated to the quantity of flowers so that it may be well filled and no space left. When sending roses, it does not pay to take any full-blown ones, as the petals drop so quickly. Flowers should not be heavily sprinkled, as too much moisture where there is no circulation of air is apt to cause mildew. Where ferns, foliage leaves and smilax are added, they should be placed in the bottom of the box and a sheet of tissue paper laid between them and the blooms.

Of course, these hints apply to flowers in general; there are many varieties which require special care peculiar to themselves, in order to carry well. These directions, as given, will perhaps make a little extra trouble, the wooden boxes may cost a little more in postage, but it will be time and money well invested in the surety of having a success. GRETA BEVERLY.

# STRAWBERRY FARMING.

FALL VS. SPRING PLANTING—PROSPECTS OF THE BUSINESS—VARIETIES IN LIGHT OF RECENT EXPERIENCE—METHODS OF CULTURE—ONLY THE BEST CAN WIN.

TRAWBERRIES are the most popular of garden fruits. The following statements of observation and experience from many different sections show plainly that no one system will do for all. In each section and locality, the method of culture best adapted to the present conditions can be determined only by the practical experience of growers in that locality.

WHERE STRAWBERRIES PAY BIG PROFITS.—We have sold strawberries from a single acre in one season enough to return us $1,700. This is the highest sum reached as yet from a single acre, but we expect to do better with the Hilton Gem. Our average is about $1,000 per acre. I grow only four acres each season. Hilton is a small village about three miles from Newark, and when I came here some twenty years ago, no strawberries were grown for market, and I am the first person that ever took a wagon load of large berries to New York. I received for that load from 40 to 75 cents per quart, at wholesale, in June. I am the owner of Seth Boyden Farm. Boyden was the first originator of large berries. He died about 21 years ago, when I bought the place. I found but three rows of plants, nine feet long each, of Boyden No. 30. From that little bed of plants I set one acre and sold the second season $1,180 worth. We do not grow the Boyden No. 30 now, but a far better berry, a cross from it. If Mr. Boyden could only come back here now and see our berries, it would make him smile, I know. We grow berries now that throw his all into the shade. Being so near the city I get manure cheap—about 50 cents per one horse load. I use at least 60 loads per acre each season. I would advise only those who own good land and live near some large town or city to grow strawberries for profit. Being so near New York, we send in each night by wagons about 1,300,000 quarts from Hilton alone. When I bought this farm the boys of the village worked for me at from $1 to $1.25 per day. They soon learned the business, rented land, one to two acres each at first and began to grow berries. Now those same boys are men, and rich men too, own their land and keep their horses and carriages. I own other land now, but the original Boyden place contains but nine acres. I keep an account of the produce sold from it, pears, grapes, strawberries and raspberries, and I have averaged for the past fifteen years from it the interest at six per cent. on $72,000. I have enough now to last me the rest of my days, and only write this that others may do well who wish. I expect that those who come after us here will throw us, as we throw Seth Boyden, into the shade.—HENRY JEROLAMAN, N. J.

FALL PLANTING IS A FAILURE.—With us fall planting is a failure, as the plants are not able to grow enough to fasten themselves to the ground. The consequence is that they are heaved out badly by frosts. Farther south the fall planting will do perhaps, but not in this section. For the growing of strawberries as a business we would say that a man would have to run it as part of a general fruit farm; by growing strawberries alone a man could not support himself. In connection with other fruits we think it a fairly lucrative business, and a fruit farm would not be doing all that it could without this berry on its grounds. The grower should exercise great care in selecting the varieties suited to the soil and climate; Bubach, Haverland, Gandy, Chas. Downing, Wilson and Crescent do the best for us.—JOS. H. BLACK & SON, *N. J.*

SPRING PLANTING FOR KANSAS.—I have a few plants that were planted last fall, that are not near so large and thrifty as those planted the past spring. If one was wise enough to know just what sort of a season he would have from August 20 to October 20, then he could determine whether to plant or not. If it was known to the planter that it would be showery weather for three weeks after planting, then it would pay to plant in the fall or late in August. Climatic influence has much to do with the success in growing all berry crops. Several years ago I planted an acre of strawberries about the middle of October to avoid the dry weather usual in early fall. The plants did well till midwinter, when we had alternately freezing and thawing. This patch was a failure and it had to be replanted in the spring. If one is so situated that he can irrigate, planting strawberries may be done at any time of the year when the ground is not frozen.—B. F. SMITH, *Kansas.*

FALL PLANTING A PREVENTION OF THE GRUB, BUT SPRING PLANTING PREFERRED.—By planting in fall the white grub may be largely avoided, as his ravages affect us in late summer often ruining large plantations. On the contrary, when planted in fall we have for fruit only young plants which cannot bear the fruit that large, strong stools can which have had the runners kept off till they make a hill that a bushel basket would hardly cover. That is where the volume of fruit comes from; again, the early fall is often liable to be dry or in condition to render planting at that season quite precarious, and even if sufficiently moist to start the plants, the covering or mulching is a great item where wheat raising is only a small industry, and strawberry growing a large one. We have had to pay as high as $9 a ton

for straw; and to my knowledge one grower paid over $300 in all in one season for straw for his berries. For this item of cost we want to have a plantation in best trim to put so much cost on. It is true straw does not always cost so much; the price mentioned was in a winter following a failure of the wheat crop from freezing in the winter before. Taking these things into calculation, we deem it best to plant in spring while nature has the ground in fine condition. To give the plants a start then we keep the runners off and get a good strong stool which will afford a large crop of fine fruit, even if we have to fight the grub. The plants started in late fall will yield but little, although that little is apt to be fine. Still, we want the quarts, as there is too much labor connected with the business to run it just for the fun of the thing.—Jas. Edgerton, *Barneville, Ohio.*

Eight Months in the Year.—Both pot-grown and layer plants can be planted with safety any time from July 15 to November 20. By setting the pot-grown plants, one can get some of the largest and finest fruit next season. Set ordinary layer plants in August and September and you may reasonably expect a half a crop next season. Properly speaking, fall planting begins October 1, lasting well into November. This setting of layer plants when set so late, should not fruit the following season. When we consider that we may plant strawberries eight months in the year, we certainly can find time to make a bed of this luscious fruit. If we have any land without strawberries we must charge ourselves with the neglect of duty to our families.

Fall Planting the Only Way where they Grow the "Biggest Berries in the World.—I have been in the strawberry business for the past 20 years and find that fall planting with me does the best. I plant during the last of July and in August. If there is not sufficient rain in July and August, then I set as late as September 25 and the next season I get a *full crop.* If set early in August I allow a few of the strongest runners to set on either side of the row, making a row about 15 inches in width. I set the rows 32 inches apart (I set by line using a ball of cotton grocery twine) plants in the row from 10 to 12 inches. This leaves a path about 15 inches wide, just wide enough to pick in. As soon as the ground freezes hard enough to bear a loaded wagon, we cover the ground, close up to the plants, about three to four inches deep with well rotted barnyard manure, from cows and horses, mixed. It must be well-rotted so as to kill all seeds; if so there will not be any trouble in hoeing and keeping the plants clean. Soon as the paths are covered with manure, we cover the plants about two inches deep with salt hay, just enough so that the plants do not show through the hay. Our only secret in growing fine fruit is rich land and keeping the plants free from weeds and grass. Anyone who owns heavy or damp soil can grow fine crops with the same varieties: Great American, Sharpless, Davis, Hilton Gem. Under like conditions, just as large and as fine fruit can be grown in any state on heavy or low land, not sandy, as we can grow here in Hilton, where at present we grow the best and largest strawberries in the world, all of which can be proven. I have a single berry in alcohol that measures thirteen inches in circumference.—Henry Jerolaman, *N. J.*

In Favor of Fall Planting.—I prepare a cold frame (four single boarded sides and ends, set in the ground) and make shades of lath and cheap white cloth as a cover. I then secure the earliest plants formed on the runners, not being particular as to roots having been made or not, but prefer them just as the root tubercles are an eighth of an inch long. Rich fine soil is prepared and the plants set in two and a-half inch pots, which are then placed in the cold frame, plunged in finely sifted coal ashes, to prevent drying out; water is freely used, and the cloth shades left on during the day but removed at night. In three to four weeks the pots are well filled with roots, and the planting out can be done at any time; I prefer however to keep the plants in the cold frame until the fall rains, as the plants continue to grow, and after being set out soon establish themselves enough to withstand the winter.

The bed should be carefully covered, and here lies the main extra work, which to many seems a great bugbear, but the yield of fruit the first spring after planting nearly if not quite pays for this extra work and expense. On my last fall-planted Bubach, Gandy, Eureka, Cumberland, Mt. Vernon and others, there has been a nice lot of fruit that in every way compared favorably with that on older beds.

In addition to the fruit borne this summer, the plants have made a fine growth, looking a hundred per cent. better than those planted last spring, alongside of the fall set plants, thus affording a good opportunity for comparison. This stronger growth is another compensation for the additional covering required, as the crop of next spring on the fall plants will be far ahead of that on the spring plants, each needing the same degree of care next winter.—E. E. Summey, *Niagara Co., N. Y.*

Fall Planting for Home Gardens.—We recommend planting in the fall, not later than September 1 for amateurs and family use; but for market purposes we prefer early spring setting. Growing as practiced in Monmouth county is not a profitable crop. As proof, those who were largely in the business a few years ago have either abandoned it entirely or are confining their operations to a limited area. The reasons are the great cost of marketing and low average of wholesale prices, with frost and drouth as contingencies.—David Baird, *Monmouth Co., N. J.*

Fall Planting in Missouri.—Success in fall planting depends upon strong plants, properly set, and liberal watering in dry weather. These things secured, a fair crop of fruit may be expected the following season, if set any time before October; and I have succeeded with November planting. It don't pay to send off a distance, get small plants, and set out late; better not plant at

all. In setting, the roots should be spread out naturally, the ground well pressed on them, then watered, and shaded for a few days. When potted plants are used (I don't use them), it is well to disturb the ball of earth so that the roots will separate, or they will cling around the ball, as that soil is usually very rich.—SAMUEL MILLER, *Missouri.*

FROM "UP THE RIVER."—High prices obtained this season convince us more fully than ever before, that with good soil, the best early, intermediate and late varieties in the matted row system of fruiting (which should never be more than two feet wide), and thorough cultivation in spring, there is more profit in the strawberry than any fruit we can grow. Our early fruit sold for 30 cents a quart for eight days, the price then falling to 20 and 15 cents, while none sold for less than ten cents; our entire crops averaged 15 cents. The prospects for profit in growing strawberries for market was never more promising than now. There are many reasons for this; the demand for *good* fruit is increasing largely each year. We believe that fully fifty per cent. more of this "king of the small fruits" was used fresh on the table this year in New York state, than five years ago. People who then scarcely "knew strawberries" have them now at nearly every meal. A second reason for the increased demand is cheap sugar, and many a provident housekeeper now boasts double the usual quantity of cans stored away for winter use. We have furnished ten times as much for this purpose as in other years.

Warfield was the first by three days to ripen with us this season, both in our trial bed and in the main plantations, the fruit bringing 30 cents per quart. The plants are feeble growers, but very productive. Fruit small and firm, of good color and fair in flavor.

Monmouth is early, a poor grower; prolific of small, sour, firm fruit.

Jessie is large, handsome, sweet, firm, moderately productive; desirable in the private garden as an early sweet berry.

Cumberland Triumph ripened June 1, and we picked the last on June 30. It is a good fertilizer to Bubach Haverland, etc., and very productive of large, fine, uniform berries.

Haverland has come to stay, and is pronounced one of the best. It is a rampant grower and was loaded with fine fruit, ripening even all over, and running large during its season of fifteen days.

Bubach resembles Sharpless in size, shape and color. Very productive.

Crescent has had its day; the fruit is small and poor in color and flavor. The plants are frail growers but productive.

Wilson and Captain Jack ripened on June 2, and were very productive of small sour, but very firm fruit.

Charles Downing ripened June 8, and was up to its usual standard. A good berry for home use.

Miner's Prolific, June 8, did unusually well in this section. It resembles Sharpless somewhat in shape, but it is of better flavor; on rich land it can be relied on to give good results; fruit large, of rich color and fine flavor.

Gold is a new late sort of good flavor, but unproductive.

Sharpless, June 12, is the same large sweet firm berry as of old, but not near so productive as other large berries.

Lennig's White or the Ladies' berry, June 8, is a beautiful pink variety, small and sweet. Fairly productive. For the private garden.

Gandy is one of the three we are picking at this writing, June 30. It did not ripen a berry before June 29. Large, firm, with fine colored fruit, its lateness and fine flavor make it valuable to the private garden, and as it always commands a high price, it is especially desirable to the market gardener.

Kirkwood is late, productive. On a small bed, 125x8 feet, we gathered on June 18, 15 quarts, June 20, 43 quarts, June 22, 71 quarts, June 25, 40 quarts, June 29, 30 quarts, and I calculate on two more pickings of 20 quarts each; about 239 quarts in all, or at the rate of about 43,000 quarts per acre.

Parker Earle was fairly well loaded with medium sized uniform fruit of splendid color and good flavor.

Lovett's Early we are favorably impressed with as a profitable early berry. It is more valuable than many early kinds, for it has perfect flowers; the fruit is larger, of good color and flavor, and firm. A vigorous grower.

E. P. Roe, new, distinct, not yet on the market, originated in the beautiful little garden of Wm. B. Brown at Newburgh. We saw the plants late in May and were impressed with the fine foliage and heavy bloom. On June 8, we saw it again at Mr. Brown's place and at the fruit farm of Nathaniel Barnes, of Middlehope, a large and successful fruit grower. None of the fruits were then ripe, but the vines were heavily laden with green berries and blossoms. The first ripe berries were picked on June 19, and sold in Newburgh and pronounced by all who bought them, to be the finest late berry they had ever seen. I saw the fruit again on June 22 and 29. I am satisfied it will take a place as yet unfilled by any strawberry in cultivation. At this writing, June 30, it is at its best; perfect flowering, averages one-third larger than Downing, and is like Downing in shape but with a short neck like Seth Boyden.—T. J. DWYER, *Orange Co., N. Y.*

THE OUTLOOK IN THE WEST.—This has been a most unfavorable season for strawberries in Kansas. I began picking May 20, and finished shipping June 25. It rained daily, except five days, during our long berry season; hence the fruit was mostly picked when too wet, and unfit for shipping to our best markets in Colorado and New Mexico. Owing to the large product and the rainy season, berries sold for less than cost. In my fields at least 1,000 crates (24,000 quarts) were left on the vines for birds and bees. The large crop was due to the rains, and the large acreage planted the past three years. Owing to the low prices of grain and stock pro-

ducts since 1886, many general farmers had gone into berry culture which up to 1886 and 1887 had been a profitable business. Now, since the recent advance in grain and stock products, many of these adventurers who were seeking the golden egg in the culture of berries will return to their good old way. We grow about all the varieties that are profitable, and we try all the novelties. Our best berries for shipping to distant markets are Captain Jack, Downing, Windsor Chief, Warfield, Glendale, Gandy's Pride. The Captain Jack and Windsor Chief are the most profitable on a five years basis, on account of the extremes, very wet or very dry seasons. These do fairly well in drouth, when the foliage of others burns. Our largest are Bubach, Edgar Queen, Jessie, Jumbo, Cumberland and Miner. Our earliest are Michel, Old Iron-Clad and Crescent. The latest are Mt. Vernon, Glendale and Robinson; the last named, of Kansas origin, promises to be a valuable acquisition.

The outlook is somewhat gloomy, for berry culture here is easy, owing to the natural fertility of our soil, and the large acreage of the prolific but poor Crescent that growers still continue to plant. Yet horticultural societies continue to recommend it above other sorts simply on account of its productiveness. Now as we have seen in the past three years that the product is greater than the demand, why not cease planting it so largely? Anybody can grow a field of Crescents. It is as easy to grow as clover or blue grass. The second year after planting, the Crescent will clear a field of weeds, except perhaps blue grass; it requires several years to clear a field of the crescent. If the berry growers of the west would unite in putting down this poor, soft berry, then we would soon get our business out of the ditch that has swamped so many, and berry growing would be a profitable branch of farming to those who make it a life time business.—B. F. Smith, *Kansas.*

Results in Western New York are usually satisfactory to the growers, who, in the main grow berries as a farm crop, with extra manure and cultivation, in an average three-fold rotation, as berries, wheat, corn; or berries, wheat, potatoes. They raise, perhaps an average of seventy-five to a hundred bushels to the acre, shipping or carting them about twenty miles to market. The cost of raising, picking, marketing, etc., is put at about five cents a quart, while the average price is about ten cents.

The Wilson only is grown here by the general farmers, but here it seems to have found a congenial spot, for to-day as fine berries are grown as at any time for twenty years. During this period it has been cultivated on the same soil, the beds being renewed from the same old stock of plants, and yet the plants are healthy, thrifty, show no signs of running out, are troubled with no disease except the spot, which seldom appears early enough to affect the crop seriously.

The beds are picked two years, a new one being planted each spring, the two-years old being turned under right after the second crop is gathered and the land sown, as a rule, to wheat. For all practical purposes, it would seem as though a new race or strain of the Wilson had been evolved, peculiarly adapted to this treatment and soil, no new blood having been introduced for many years.—Elmer E. Summey, *Monroe Co., N. Y.*

Against Matted Rows.—From the standpoint of fruit production I would discard this system as unwise. The maximum yield of a well developed strawberry plant may be placed as high as two quarts, and this cannot be had without space for full development. For spring planting I know of no better plan than to set in rows three feet apart and one and a-half feet in the row, allowing each plant to throw one strong runner on each side, rooting the single plant opposite the intervening spaces. For July planting select strong young plants to set 2 by 1¼ feet apart. These should be set just after a rain, each with a mat of earth adhering. Hoe frequently and keep all the runners nipped off.

When winter comes apply a mulching of coarse hay as soon as the ground is well frozen, and remove it as soon as the ground ceases to freeze in spring. Then a shallow hoeing should be given, and when the fruit begins to color, restore enough mulch to preserve the moisture and keep the fruit clean. Such plants by the last of May should touch each other and yield on the average one quart per plant in June, thus showing a possible average of 412 bushels per acre for the July planting, or 313 bushels for the previous spring planting. In cultivating, all unnecessary tramping of the ground should be avoided, and convenient paths, for travel exclusively, be provided. Many men in hoeing and weeding often do more harm than good by unnecessary stepping. Implements for horse and man should be constructed to do the most work in a single passage in which the mechanical movements should be as slow as possible with strength and efficiency.—P. M. Augur, *Conn.*

Strawberries in Canada.—The climatic conditions of this part of Ontario, lying between Lakes Erie and Ontario, make the planting of strawberries in the fall of doubtful expediency. The rainfall during the summer months is usually very light, indeed we may safely expect a period of six weeks without rain to occur between the first of June and the middle of September. From this cause it is often impossible to procure young plants of sufficient vigor, or else if to be had, the dry spell prevents their growth, when transplanted. Hence it is wiser to plant in the spring in this section.—D. W. Beadle, *Ontario.*

The Plants Approved.—The best results from fall set plants I ever obtained were had this season. Last autumn I had my pea ground prepared for a strawberry bed; the plants were lifted with a ball of earth about the roots, a few at a time, and set in place in August. The weather was extremely favorable, the plants did not know they had been moved; unless they showed their approval, for they kept right on growing till the season closed. This bed contained 600 plants in ten

varieties set fifteen inches by two feet, and not a plant missing. No potted plants I ever set could compare with them. They were kept clean with the hoe and the runners kept off; otherwise the ground would have been a dense mass of plants, disputing for possession. During the winter a load of purchased stable manure was spread over the bed, not half enough; as it was so thin the weed seed of which it was largely composed had a fine opportunity to show its vitality and vigor, and gave a man a job at hand weeding; but the berries were there, "big berries and lots of them," *i. e.* as big, and many, as the varieties would allow.

My summing up of the matter of fall planting is, a saving of time to the negligent, and to those who are overburdened with spring work, or who from other causes have failed to provide this intended and desirable luxury. It keeps the ground occupied and insures at least a partial crop next season, which would not be the case if deferred till spring, and to those as yet unprovided with this delicacy, I advise by all means a fall set bed. It should be attended to soon, the sooner the better. Don't put it off on the plea of economy, that it is cheaper to buy than to raise them. No matter if it is, you won't buy or use as many as you would if you had them for the picking; no man ever did, and you will not be the exception. A city friend always grows his strawberries on fall set plants following his peas, sweet corn or potatoes with them, setting a new bed every season. For small areas, with good plants of your own growth, or easily obtainable, the practice is a good one and with soil, weather and favorable conditions all around, a bed set in July and August and properly cared for can be depended on to produce satisfactory crops; but for large growers, spring planting is to be preferred especially if of any great extent.—E. WILLIAMS, *New Jersey.*

VARIETIES—METHODS—THE FUN OF IT ALL.—Do you remember when the Wilson strawberry was disseminated? It was fifty years ago. Only Hovey of any note preceded Wilson; since then the procession has been continuous. Thirty years ago the leaders were Mr. Hovey, Russell's Prolific, Brooklyn Scarlet, Agriculturist, Downer and a few foreign sorts. After these, Green Prolific was famous, and a good berry. About 1880 the best gardens grew Monarch of the West, President Lincoln, Cumberland Triumph, Sharpless, Charles, Downing, Miner's Prolific, Duchess, Seth Boyden, Triomphe du Grand, Boyden's No. 30, Great American, Kentucky, Jucunda and Crescent. The development of the strawberry was reaching its culmination. Berries were raised twenty to a quart; many quarts with 30 or 40 were sent to market to amaze consumers. Whatever has been done since has been to multiply fine sorts, with, possibly, improvements in shape. Sharpless is as large as any, and in quality on clay soil is nearly the best. Cumberland remains the finest in form, and near the head in size, beauty and flavor. No judicious planter leaves out these two sorts. Kentucky is barely superseded by Manchester and Gandy, for very late. Duchess and Duncan have vacated the earliest place in favor of Crystal City, which is far from being first-class. Charles Downing went out only very lately; and Crescent holds its own. Wilson is the most persistent berry ever grown. There are still thousands of acres of it.

Recent improvements include longer and abundant roots, as in Haverland; healthy and abundant foliage; berries carried well up from the soil, and prolific bearing. No variety surpasses or equals in flavor the old Lennig's White, but it yields little.

For the best five, I select Bubach, Sharpless, Cumberland, Haverland and Gandy; and have confidence in Saunders, Mrs. Cleveland, Eureka, Pearl, Thompson's 51, Crawford and Florence. The earliest are Crystal City and Michel's Early—having a full week the start. Gandy is probably the best late. Manchester is also a fine late. Lida ranks finely in quality and yield, as well as size. Parker Earle is a wonder in quantity, and I expect fine things of Edgar Queen. Haverland should have pretty good culture to show its best.

Plant at any time, but as early as possible. If not in spring, try August. Take the young new plants, move with care, and thoroughly puddle each hill; then brush over some dry dirt. I have always had bad success with beds set as late as middle September. I raise my own plants, mostly. Buy a few dozen of a sort needed for trial, and after rejecting valueless sorts, use the runners for planting. In buying, I prefer those that come by express. The roots are generally in better condition. Puddle well after pressing the roots down very tight. The true plan for watering any plant is to dig a hole about three inches from it, and slowly pour in water till the ground is full. Then you will have no more watering to do for a week. Slight watering does more harm than good, especially when sprinkled on the surface. Raise your own plants, or purchase near by if possible, and so transplant quickly with some dirt on the roots. Always remove most of the leaves and all the flower or fruit stems.

It is unnecessary for a home grower to plant every year, or once in two or three years. On the contrary, set in hills; keep them in hills, and all runners removed. Or fork out each fall the old row, letting runners fill between the rows, so getting new plants each year; then thin the new plants. With judgment, a bed may last five or ten years and bear well.

Feed strawberries highly, and give them a thin covering winters. These two points may be made into one. Cover with horse manure lightly in November and let it settle into the ground in spring. *Always* keep the beds clean and thoroughly hoed. A bed once filled with weeds is done for. I do not shorten roots in planting, but always mulch. After puddling and planting I put a double handful of loose manure about the plant, or sawdust that has served for stable bedding. For market growing the best plan is of course annual plantings.

Only big berries are profitable. The cost of picking

and slow sales at low figures take off all profit from small berries. I sell Bubach at two cents higher than my neighbor gets for Wilson; and no one grumbles. We have large sorts that in all respects displace the small ones. Quick selling is half the gain in gardening. You cannot afford time to hunt a market. Besides if you do, you will soon get disgusted and lose the fun of fruit growing, which is quite as valuable as the cash. A fruit grower should keep happy and full of good cheer.

Diseases vary with location. The best safeguard is to thoroughly drain your soil. The worst enemy is a dry spell. I shall hereafter plant my berries when I can.

A test bed helps one to enjoy fruit-growing. We should get fun out of whatever we do. The trial plot is a bright spot. I have about 50 sorts, and it is a delight to compare and take notes. It is also full of amusement to lead friends through and hear their comments as they try samples. Farm work is hard, because done brutally. It pays to find the bright side. I bring up my children to work; but to be experimenters and investigators. My eight year old has as good judgment about strawberries and all other fruits as I have. A pleasant home is the end; not nasty clothes, foul habits and money!

Use any good garden soil, on a slope, southeast by preference. It must be clean and well drained. To prevent wash, have ditches above to carry off water; wet seasons are often disastrous from berries rotting, especially the Bomba. Good drainage helps; but you must also prevent surface water from standing about or flowing. This year dry weather has been troublesome. Result; a third of a crop, bad sized and bad shaped berries. We ought to irrigate more. Try an experiment from your well or fountain

Curiously, the strawberry market is less often overstocked than thirty years ago; more fruit is eaten. You may plant in confidence if you mean to study the subject and understand it, and then to keep your work up with your understanding.—E. P. Powell, *Oneida Co., N. Y.*

# FRUIT EVAPORATION.

FEW persons realize the growth and importance of the fruit evaporating industry in this country, or the possibilities of its future development; for the work is at present confined to comparatively small areas, the most important of which is in western New York. Large quantities of fruits are, it is true, evaporated in Michigan, Maryland and elsewhere; but in no place does the industry take such hold of the people and become a part of the lives of men, women and children, as it does in that section. "Even the youngest child that can talk," says Mr. L. B. Rice, a former resident of that region, and a man thoroughly familiar with the business, "will tell about 'white apples,' 'chops' and 'jelly stock.'"

This widespread acquaintance with the industry is due, not to the large evaporators in the villages, which use thousands of bushels of apples each year, but to the use of small evaporators by every household throughout the region. Even those who have little or no orchard of their own have small evaporators, and work up fruit on shares for others who have more than they can otherwise utilize, receiving for pay one-half the product. The great advantage of the small evaporator costing from $20 to $30 each is, that it gives the poor man a chance to share in the profits of his richer neighbors. Mr. Rice declares that any honest, sober, industrious man with good judgment and economical habits, who has a good wife and a lot of helpful children, and who can get hold of a cheap evaporator, can, by working up fruit for half the product, in less than fifteen years own the best farm in the vicinity, while his sons will drive in their own carriages, and his daughters have a piano or organ. He knows of many such cases. Even a woman with two or three children can work up on an average 15 to 20 bushels per day, with the waste, or 100 to 140 pounds of white apples and 20 to 25 pounds of jelly stock, which, at the average price of 7½ cents per pound for the former and 2½ cents for the latter, would give her from $400 to $500 for the season of ninety days.

How marvelously rapid has been the evolution of the evaporating industry! Within the memory of middle-aged men, apples and peaches were cut into quarters, which were strung on strings and hung to dry on each side of the fire-place and from the timbers overhead, or wherever else they could be most conveniently and rapidly dried. Then boards, on which the fruit was spread, took the place of strings, and from these the transition was easy to a room set apart for the purpose, containing a stove to dry the fruit. The danger of fire, however, soon led to the building of a small house, called the "dry house," away from other structures. In 1857, a man named Mason, of Marion, N. Y., devised a little portable dry-house with a sheet-iron heater, which revolutionized the business. Thousands were readily sold, and, despite all improvements of later years, thousands of them, Mr. Rice says, are still in use in Wayne county, N. Y., and do just as good work as the large evaporators, while one with a capacity of 10 to 12 bushels per day costs only $20 to $25. Cheap evaporators of whatever kind are of the greatest value to small-fruit growers. If the market drops for a day, the surplus can be dried; or if at any time continued wet weather hinders the pickers until the berries are too soft for market, they can be saved by evaporation. Indeed, the growing of black-cap raspber-

ries for evaporating has become an important industry in New York State, the average profits being about $100 per acre.

The first evaporator on a large scale was the well-known Alden, which has been greatly improved since the issue of the original patent. Steam radiators were used in the first Alden towers, but did not give satisfaction, so hot air from a furnace in the basement, passing up through the fruit, was substituted; but of late steam has again come into favor in that and other evaporators, though used in a different manner, the heat being diffused among the trays by means of a system of steam pipes. Of all the evaporators in the market, it makes little difference which is used, as care, skill and neatness on the part of the operator are the main requisites. The fruit from one evaporator sells for just as much as that from another, any difference in price being due entirely to the manner in which the product has been handled.

What would be the average cost of a large evaporator, the expense of running it and the chances of gain—for example, one with a capacity of 200 bushels and waste per day? Briefly, Mr. Rice figures these items out as follows: Cost, including 100 galvanized wire trays, 1,500 feet of one-inch steam pipe with connections for the boiler, but not the boiler, $600; parers, slicers, choppers, etc., $100; bleacher, $25 to $50—all ready for work, $750. Help for day and night work, 25 persons, nearly all women or children, at a daily cost of $19. There would also be needed 1,500 pounds of soft coal and 20 pounds of lime stone, to say nothing of wear and tear of machinery, etc. Per contra: the daily product would be from 1,200 to 1,400 pounds of white apples and about 500 pounds of waste. The former would be worth, at ordinary prices, 7½ cents per pound, or about $100 in all. If the apples were bought at 20 cents per bushel, careful management could make a daily profit of from $25 to $30, or between $2,000 and $3,000 for the season of 90 days; and with good storage for the fruit, the season could be prolonged another month.

The importance of the industry, however, cannot be estimated by the per cent. of profit that may be realized by a man or company that may come into a neighborhood, erect a factory, buy apples at the lowest figures and then at the end of the season spend the gains elsewhere; but by the incomes from the small evaporators owned by men who raise their own fruit, or do the work on shares for others, and by the work it gives to the whole community and the money it puts in circulation. Mr. Rice tells us of one merchant in the little village of Sodus, N. Y., who, in 1887, bought $315,000 worth of evaporated fruits of different kinds, and there were other dealers in the place also, so that the total amount of sales probably reached $500,000—no small sum to be divided among the community.

At present, the prospects for evaporated fruits are excellent. Last year's output is reported to have been quite inadequate. Indeed, the demand is growing faster than the supply, and the man or company who engages in the business with industry and economy is likely to be well rewarded.

# MISSOURI HORTICULTURE.

AT THE Missouri State Horticultural Society's summer meeting in St. Joseph, the display of apples and strawberries was extentensive, every known (?) variety of the latter being on exhibition. One of the chief objects of the meeting was to make arrangements for a display of Missouri's horticultural products at the Columbian Exposition.

In a paper upon Missouri as a fruit state, N. F. Murray expressed the opinion that, when fully developed, it is destined to lead all other states, and stand unexcelled in the industry by any like area of country on the globe. About 500,000 barrels of apples were produced in the state in 1890, worth $10,000,000, and vineyards, berry plantations, etc., would easily bring the amount to $15,000,000. It is asserted also that the Misssuri fruit crop never fails; that it is just as certain as corn, wheat, oats or any standard crop. The whole state is good for fruit, but some sections excel others in the production of certain species. On the south slope of the Ozark range is a section unexcelled for the production of peaches, where the trees are healthy, free from peach yellows, and produce nine crops in ten years.

Hans Nielson, on the subject of "Florists, and their Growth in Missouri," said the first establishment was founded in 1840. The total number in 1890 was 141; of these, ten were owned by women. The largest had 65,000 square feet of glass, the smallest 500, the total area of glass being 1,240,095 square feet. The amount of capital invested is $1,078,882.65. A total of $870,491.42 in plants and cut flowers was sold during 1890. In regard to the plant trade, there is one thing in particular which hinders a very rapid increase in the sale of plants, and that is the lack of knowledge by the purchaser how to care for them after they are received.

The possibilities of the fruit industry of the state are limited only by the manner and cost of handling by the railroads and express companies. The refrigerator car seems to be a partial solution of the question, and yet not wholly. The railroads should attach these cars to

express trains. Cool air fruit cars are as good as refrigerator cars, if sent through in time.

The advice was given growers to look after the smaller markets, which often pay high prices while the large cities are glutted.

Organization of local societies is one of the best means of collecting and scattering knowledge, and the sooner the fruit men in the different counties take hold of this matter, the better for them and for the state work.

Better varieties of fruits are needed, and the many engaged in work in this direction can only be successful in the end.

A resolution was adopted unanimously, requesting the legislature to enact measures for the prevention of the adulteration of jellies, vinegars, etc.

The proposed exhibit of the state's horticultural products at the Columbian Exposition had careful attention. The Society asks for 20 per cent. of the $150,000 appropriated by the legislature for the World's Fair, in order to make a proper showing.

# SWEET POTATOES IN DELAWARE.

ONLY a few years ago the sweet potato was regarded here merely as a garden luxury, and scarcely any could be found in our markets after Christmas. Now it bids fair to rival our peach and berry crops in proportion, and no one can foresee its possibilities. For about three or four years past a few enterprising men all over the southern portion of the state have been growing this crop in quite large quantities, increasing their acreage each year until during the past season, when, owing to the entire failure of the peach crop, the sweet potato made its debut before the public as a farm crop of proportions not previously thought of, and materially assisted many a man in meeting expenses at the close of the year. Many farms, too, heretofore unfit for the profitable growth of almost any crop, proved to be especially adapted to this, on account of their light, sandy soil, in which the sweet potato delights and does its best.

Formerly, beds were made of any size adapted to the wants of the grower, by digging out the earth for eight or ten inches and then filling in with fresh manure from the horse stable. This was placed at the bottom, and a few bucketfuls of water, sometimes hot and often cold, were thrown on to supply moisture. Then came a covering of about three inches of earth, and the potatoes were placed in a row close to each other, and covered with two inches of soil. Straw or pine shots were put over this, and a shed or covering of boards to protect it from rain completed the bed. In two days or more, if a "good heat" was developed, the plants began to make their appearance, and in five or six weeks from the time of bedding they were large enough to be set out in the field.

This is the plan still followed by many, but the largest growers, who wish to be absolutely certain of getting a supply of plants, have adopted another plan of making the bed, which insures success every time, and produces several times as many plants from the same quantity of potatoes as could be obtained from a manure bed. The bed varies in size from twenty to one hundred feet in length, according to the needs of the grower, and is constructed as follows: It is usually ten feet wide, and a bed fifty feet long by ten wide—the ordinary size—will hold fifty baskets, or twenty-five bushels of potatoes. A brick furnace is built, three feet long, two wide and eighteen inches high, on a level with the ground. From this two brick flues run the entire length of the fifty-foot bed. Logs are placed as sills on both sides and in the middle, and boards are placed across these and covered with earth three inches deep. The potatoes are bedded and covered as previously mentioned, no shots or straw being used, and the bed, which is built like a cold-frame or hot-bed, is then entirely covered with plant-bed cloth or muslin. At the end of each flue is a chimney made of boards, and from six to eight feet high. A fire is started in the furnace, and kept going until the bed is of the right temperature, care being taken not to allow it to become too hot. When the plants begin to come through—which is usually within a week or ten days—the heat is reduced and the bed kept well sprinkled and moist. The furnace should be placed outside the bed at the end, and the flues be well plastered for ten feet, in order to prevent sparks from escaping and setting the bed on fire. After the plants are up and nearly large enough to be set out, the cover is removed entirely, to enable them to get hardened before they are set. So much for the bed; now for the field.

It has been found best here to plow the ground very early, say in February, or sooner if convenient, A coat of rotted manure is spread on it by some; others use the manure in the furrow before planting; and some have adopted the Virginia plan of spreading pine shots on the ground and plowing them under. No matter which of these methods is followed, the ground must be kept clean and well stirred with a disc or other harrow until the plants are set, which is usually from the 10th to 20th of May. Fertilizers are generally used at planting time, either in the furrow or the hill or broadcast, from 300 to 600 pounds per acre. They should be applied at least a week before the plants are set, or the roots that come in contact with them will be killed. Rows or hills may be from thirty inches to three feet apart, as the planter desires, and the plants are set eighteen or more inches apart in the row.

As to fertilizers, we have found several of the commer-

cial sorts good, and also wood ashes. Last season, in an experiment tried here by the Delaware Experiment Station, muriate of potash was found to give by far the best results. Whether or not it will continue to do so in years to come, or on different soils, remains to be seen; but in that one particular instance the results were so plain that we shall this year use it quite largely, having full faith and confidence in it.

If the ground is clean and free from dead grass or trash, a Planet Jr. cultivator with the horse hoes turned so as to make a bed, will make one sufficiently high for the plants. If the cultivator cannot be used, the bed may be made up with a plow. Plants should be kept wet, and if convenient, set right after a rain. If the sun is hot, it is best to set them in the afternoon. One man drops while four or six set out in two rows at a time. The soil must be firmly pressed around the roots. The patch is replanted till a stand is obtained, as worms and mice destroy a good many of the first setting. In a week or so cultivation commences. The land is harrowed, hoed and kept free from grass till the plants begin to run so that they cannot be easily cultivated.

Here the crop is usually dug in September and sold directly to buyers, who ship them largely to the interior cities in New York, Pennsylvania and other states, the price running from 20 to 30 cents a basket, according to quality and other conditions. The yield runs from 100 to 400 baskets per acre, 250 to 300 baskets being considered a good yield. Large quantities are often kept for the winter market in houses built especially for the purpose, and heated all the time; but, as a rule, we find it best to sell the crop as soon as dug.

The varieties usually planted are the Yellow Nansemond or Jersey Chunck, and the Gold Skin. The latter is an immense yielder, though a poor keeper; but it is sought after by buyers, who are often willing to pay an advanced price for it. Numerous other varieties are being tried, among them the Virginia Antichoke or Artichoke, the Extra Early Carolina and the Big Stem Jersey. If the season is favorable, an immense crop may be expected this year, as an unusually large acreage is being planted to "sweets."

CHARLES WRIGHT.

*Sussex Co., Delaware.*

# NOTES FROM A WOMAN'S GARDEN—AUGUST.

An August day: A dreamy haze
Films air, and mingles with the skies:
Sweetly the rich, dark sunshine plays,
Bronzing each object where it lies.
—A. B. STREET.

HAVING heard that sunflowers ward off malaria, and feeling in duty bound to obey every law of health and beauty that we possibly can in our beloved garden, one may look in almost any direction, and the eyes rest on a sunflower. Their stately heads nod here and there above the rows of corn. A splendid specimen stands proud and alone in the middle of the melon patch. Smaller, weaker ones are seen under the trees.

Some top-heavily lean almost across the closely-cut grass path, which forms the main entrance to the garden; in fact, they are everywhere. Although the plants are so huge, the roots are small and we have never found them to do any harm; and we DO NOT HAVE MALARIA.

The row of asters set out close in front of the currant bushes is beginning to bloom; some, alas, to wither, being attacked at the root by the blue aphis; fortunately only a few of the plants fall by this enemy, for whose ravages we have found no sure help.

In August the garden is full and overflowing with all the good things dear to a vegetable lover's heart. There is almost too much ready and waiting to be eaten each day. By the third week in August our lima beans are in perfection. We gather and use them while yet of a bright green color, and not fully grown. Some are dried at this stage, and are delicious stewed in the winter. As the successive plantings of corn are used, the stalks are cut, dried and stacked.

We save a great deal of our own seed, and old Levi is very careful that it is always of the earliest and best of each crop, and in the case of peas and beans, that it is gathered from all over the plants.

He says, for instance, if we should save only the top pods of bush beans that the product of that seed would grow tall the next year, and by-and-by develop into pole beans. This may be true; we do not know, having never dared to try the experiment.

The garden, if previously well cared for, needs comparatively little hoeing at this season; but it is not well to let a single weed go to seed. In spite of what seems to us great care, a weed now and then escapes old Levi's sharp hoe.

We have scolded so much over valuable plants destroyed, that he now religiously saves any plant unknown to him. After a short absence we were horrified and surprised to see some purple thorn-apples (*Datura Tatula*) in full bloom. How did these vile, poisonous weeds get into our cherished garden? We never saw any in town before. Another stranger we gladly made welcome, so pretty and fragrant—the yellow, sweet Melilot clover (*Melilotus officinalis*).

Now is the time to set out strawberry plants; we find this quick, easy work when done with a dibble, provided the beds are well spaded and raked fine. Punch a hole, put in the plant; punch another hole close to the first—this firms the plant nicely; then keep on in the same way. Select a damp, cloudy day with signs of rain, if

possible, for this work. If we have to transplant in dry weather, dipping the roots of each plant in water we find is beneficial. Take care not to cover the crowns of the plants with earth.

So far, we have found the "varmin" which attacks the strawberry leaves of no great consequence. The leaves are often riddled by holes, but most of the work seems to be done after the fruit is gone; at least, no slugs are found on the fruit. We have never tried burning the bed over, or any other of the "cures" we have seen recommended; and the plants show no signs of having suffered by this neglect.

We enjoy working in the garden, and do not consider any time spent there wasted; so we weed the strawberry beds at all seasons, and keep the old beds going for some time, filling in vacant places with young plants, and generally setting out a few new rows each year.

Cut out the old raspberry canes as soon as through bearing; also the blackberry canes, which, if not spoiled by the drought, should still have some delicious fruit. We find nothing better than the old Lawton, so sweet when fully ripe that the bees and wasps dispute with us for possession.

Look well after the tomatoes, gathering all the soft ones each day, even if not fully ripe. They will ripen quickly after being gathered, and if left on the vines soon spoil during the warm, damp weather, and crack if there is a shower. If they touch the ground the shining brown wire-worm will fill all the soft places.

The chrysanthemums which have summered in the vegetable garden should now be potted before the buds show, if one hopes for perfect flowers later.

We are glad to find our Moore's Early grapes ripen this month. They grow finely on the south side of a close, high board fence, thus protected from cold winds, and taking advantage of every bit of sun and warmth. We keep the vines well cut back—not even the tiniest branch hangs over the fence, or rears above it to tempt passers-by to taste forbidden fruit. It is not at all necessary to tempt them, we know to our sorrow, as regards any part of our garden. Gather the early fruit; do not let it lie under the trees and decay—a sad waste of nature's good gifts. Also pick up all the green fruit that falls; it is usually full of grubs, which will enter the ground and be ready to rise (in another form) and infest the trees the next year.

It is the same in gardening as in other occupations; there is a penalty to pay for all carelessness, mistakes, neglect and lack of order.

*Plymouth Co., Mass.* M. E. VIGNERON.

## NAMES OF GARDEN WEEDS.

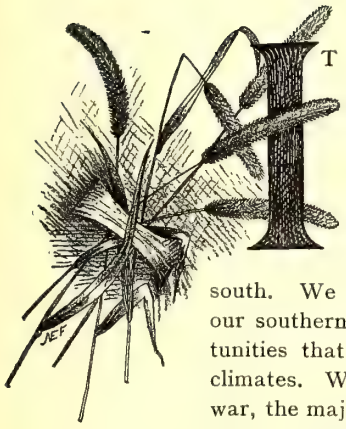
WHETHER weeds are plants out of place, or merely plants whose uses have not yet been recognized, to the practical gardener matters but little. The following is a list of the vile pests, which are the commonest weeds in the gardens of the central Atlantic states. It is they which require the hoeing and digging and pulling, with the use of strong language and the back aches of the small boy and the women of the average rural home. The following list gives their common and scientific names, with the time when they generally begin to flower:

| | | |
|---|---|---|
| Chickweed | *Stellaria media* | March. |
| Dead Nettle | *Lamium Amplexicaule* | April. |
| Ground Ivy | *Nepeta glechoma* | " |
| Wood Sorrel | *Oxalis stricta* | May. |
| Sour Dock | *Rumex crispus* | " |
| Dandelion | *Taraxacum dens-leonis* | " |
| Shepherd's Purse | *Capsella bursa pastoris* | " |
| English Plantain | *Plantaga lanceolata* | June. |
| Bitter Dock | *Rumex obtusifolia* | " |
| Running Mallow | *Malva rotundifolia* | " |
| Goose Foot | *Chenopodium album* | July. |
| Burdock | *Lappa major* | " |
| Wild Cucumber | *Sicyos angulatus* | " |
| Wild Buckwheat | *Polygonum convolvulus* | July. |
| Velvet Leaf | *Abutilon avecennæ* | " |
| Carpet Weed | *Mollugo verticillata* | " |
| Purslane | *Euphorbia maculata* | " |
| | *Portulaca oleracea* | " |
| Caper Spurge | *Euphorbia lathyris* | " |
| Jimpson Weed | *Datura stramonium* | " |
| Nightshade | *Solanum nigrum* | " |
| Plantain | *Plantago major* | " |
| White Pigweed | *Amaranthus hybridus* | August. |
| Thorny Pigweed | *Amaranthus spinosus* | " |
| Hybrid Pigweed | *Amaranthus albus* | " |
| Heath Aster | *Aster ericoides* | " |
| Horse Weed | *Erigeron Canadense* | " |
| Spanish Needles | *Bidens bipinnata* | " |
| Smart Weed | *Polygonum hydropiper* | " |
| Crab Grass | *Panicum sanguinale* | " |
| Cook's-Foot Grass | *Panicum crusgalli* | " |
| Wild Witch Grass | *Panicum cappillare* | " |
| Couch Grass | *Triticum repens* | " |
| Fox-Tail Grass | *Setaria glauca* | " |
| Rag-Weed | *Ambrosia artemisiæfolia* | " |

The above named plants may be held in subjection by using only chemical manures, or stable manure that is at least two years old, and which has been well-rotted; by stirring the ground every few days with a garden rake or with a hoe; by never permitting a weed to go to seed on your own premises. GEORGE G. GROFF.

# SOUTHERN HORTICULTURE—I.

AN ACCOUNT OF AN EDITORIAL JOURNEY.



IT HAS always seemed strange to the writer (southern born and bred, now living north) that so little credence should be given to accounts of opportunities in horticulture in the south. We are apt to forget that our southern neighbors have opportunities that do not exist in colder climates. We forget that before the war, the majority of these southern lands yielded crops unequaled by any other section of our country. The south is not a new or recently discovered country, but rather a re-awakened, strengthened section, fast recovering from the weakness and torpor brought on by the most devastating war known to history.

We are not seeking to "boom" the south, but we do honestly desire that, for the good of horticulture, the many senseless ideas concerning this part of our common country be abolished. On the other hand, it must not be forgotten that in horticultural work in the south there is much to contend with of which people of the north and west have no conception.

The question of labor is a mighty one in the south, for it involves not only the management of the generally incompetent negro, but the gigantic task of keeping him in his proper place, socially, morally and politically. Then there are the difficulties arising from crude methods of labor, due largely to lack of knowledge, but more to the supreme cause of slow development, that is, lack of money.

Western North Carolina is fast gaining a reputation for its possibilities in horticulture, and yet, to the northern mind, these opportunities are not taken advantage of so rapidly and extensively as they perhaps ought to be. While this is true to a great extent, it must be remembered that fruit-growing in the south is a vastly different occupation than in the north, and here again comes in that lack of money. True it is also, that there exists what we might term lack of progressiveness, but this is rather due to an inherent dislike to venture from the beaten paths, rather than to lack of ability or foresight. Asheville, from its prominence as a resort, both winter and summer, offers a market at which a vast deal of produce could be disposed at a fair price; but, so far as I could learn, very little was done in this direction. Small fruits of every description, peaches, grapes and apples can all be grown to perfection, as also can vegetables. The supply from home growers is entirely inadequate to fill the demand even in this comparatively small market.

Large quantities of fruits are grown through western North Carolina, but almost exclusively for distant markets. This industry has increased largely during the past few years, mainly because of the increased facilities in transportation. The managers of the Richmond & Danville system of railroads, which largely covers this section, seem to sensibly realize the necessity for quick time, and they are now sending fruits to the northern markets in the most complete and perfect cars, and running their trains on passenger time.

Growers distant from the line of road have formed combinations, by which all products are carried to a central point at stated periods, and shipped to the best advantage. Here is a point in combination that our northern growers may emulate to their great advantage. By the use of an entire car the rates for transportation are materially lessened to each individual, while his products reach their destination in better time and in much better condition than could be possible if each small shipment was sent by itself to be mixed and handled with other miscellaneous freight.

Western North Carolina must take its place ere long as a famous apple-growing region. Its high altitude, with its semi-tropical climate, admirably fits it for growing apples. The writer was shown a Wilder medal, awarded to a resident of that section for the best display of apples. This is good evidence of what may be done in the section, when it is considered that the displays before the American Pomological Society are large.

Beyond all question, this section of western North Carolina is unusually adapted to the culture of the apple, and it only remains for those who can realize the possibilities in this direction to take hold of the industry and reap the benefits. The native population are, as we have said, averse to doing this, owing to a number of circumstances; but they are gradually coming to see the ultimate profit in the work, and with the assistance of northern growers, who understand the best methods of culture, they will, in the near future, take hold of the work and carry it successfully forward. One fault which will have to be overcome all through this section is the utter indifference to the preparation of products for market. Capt. Long, of Asheville, a stirring member of the Alliance and a farmer and fruit-grower of prominence, told the writer that, in his opinion, the only obstacle to the great success in the region was the ignorance of the people regarding methods. As he humorously remarked, "Ask one of our growers regarding the variety names and the reply is, 'This is a red apple, this a yellow,' and into one package they go, red and yellow alike, and large and small."

Professor Massey, of the North Carolina Experiment Station, Professor Van Deman, Pomologist of the Department of Agriculture, and others interested in the progress of the state, are doing good work among the residents in explaining methods and the necessity for exercising them in connection with the improved varieties.

As an instance of the way in which some of the growers market their fruit, the writer, on April 15, saw wagon loads of apples brought into Asheville and sold for $1.50 to $2.50 a bushel to dealers. There were two kinds, known as Cammack, a rather small greenish yellow, and Royal Twig (probably a local name), red, with light spots. They were dumped carelessly into the bottom of a springless wagon among horse feed and a miscellaneous lot of household utensils, and carted for miles over the rough mountain roads. It is surely logical to think that if these poorly-grown sorts could be kept by a handy process so that they were marketable in April, that better varieties, or even the same sorts, properly grown, properly kept and properly marketed, would bring a price sufficiently large to warrant the extra labor and expense.

The Alliance is of great value to the growers of this section, for it is bringing in men to talk who are successful in fruit-growing in other parts of the country, and who can and do describe the best methods of procedure in all branches of the work. Slowly but surely these different influences are having their effect upon the residents of this wondrously-favored section, and the time cannot be far distant when, with the advent of capital, the improvement of railroad facilities, and a more thorough realization of the possibilities at hand, fruit growing in western North Carolina will rank among the profitable industries of the section. Nature has been liberal, and when man shall see the advisability of co-operation with her, the results will be most satisfying to all concerned.

GEORGE R. KNAPP.

# THE SECOND GROWTH OF IRISH POTATOES.

I SEND some Irish potatoes of the main crop which have commenced a second growth. They are not the worst examples by a long way, as the whole crop is so affected. In many cases it may be observed that strings of small tubers are formed, and from their appearance it would seem that a new tuber commenced to form, and that the stimulating influences were so great that it had not sufficient time to complete its growth, and an endeavor was consequently made to commence another tuber. The root or runner that communicates with the whole number of tubers in the string has often the appearance of being itself only a modified tuber. The tubers first formed have commenced to grow prematurely, for they have never ripened. The tubers of this second growth appear to be produced two, three and sometimes four inches deeper in the ground than the first crop, and they are more abundant. This second growth is owing entirely to the exceedingly dry summer that we have experienced. The spring was very wet, and this caused the planting season to be delayed until nearly the middle of March, which is a month later than the usual planting season. The weather following the planting was very dry, and potatoes and other plants did little more than exist. The first rains after planting that were of any importance did not occur until the middle of June. Everything then received a stimulus, and the Irish potatoes commenced a second growth. This growth was not confined to the tubers only, but the haulm grew more or less vigorously, and here and there it may be noticed affected with signs of the rot. This second growth is very detrimental to the crop, and its effects are to be avoided by every possible means; but, fortunately, it is only occasionally that such an untoward event occurs. By this second growth the crop is much depreciated in market value, and to obtain the highest price the crop will bring, it should be harvested as soon as the second growth is observable. It is most likely that if allowed to remain, a good crop would be produced that would give excellent results if dug in the fall; but to allow the crop to remain is almost, if not quite, impracticable in this latitude; for towards the middle of July the ground would be completely taken up with crab grass, Bermuda, coco and tie-vines, to say nothing of many other

vigorous-growing weeds, if it be left alone. One or two plowings could easily be given without in any way damaging the crop ; but it would probably pay better to harvest and replant, for if a crop of potatoes were allowed to stand as indicated, they would cost considerably in the harvesting. When digging, all tubers that show a second growth should be picked out and laid aside in a damp place, and used for planting a fall crop. By this means, I believe, a full crop of fall potatoes could be secured, and potatoes otherwise useless turned to good account. Heavy rains will soon occur, so that the sooner the spring planted crop is harvested and disposed of, the better. Should the weather turn dry and the crop become fully ripe, this second growth would produce only a large quantity of small, unmarketable potatoes, and that, too, at the expense of the earlier formed tubers.

*Baton Rouge, Louisiana.* H. W. SMITH.

[The specimens are the best examples of second growth in the hill which we have ever seen.—ED. AMERICAN GARDEN.]

# JAPANESE PLUMS AND PERSIMMONS IN THE SOUTH ATLANTIC STATES.

A CALIFORNIA correspondent says: "The Oriental fruits will never succeed here as they will in your southern states, which as to climatic conditions are the very counterpart of the Empires of China and Japan." This evidence from a prominent authority is inducement enough to encourage the trial of these excellent fruits. We have gone far enough with our experiments to know that there is very little risk in planting either oriental plums or persimmons. We have had both fruiting here at Waycross for several years past, and the more we become acquainted with them the more confidence we have in their successful cultivation, not only in this immediate section, but generally over the states of the South Atlantic and Gulf coasts. There is some uncertainty in regard to the varieties of the plums, and the persimmons are badly mixed up.

Among the plums fruited here beside the Japan Kelsey, which is too well known to need description, we would mention the Botan and Chabot. We have four trees of the former, no one of which appears to be exactly like either of the others. The fruit all looks and tastes very nearly the same, but the trees seem to have different habits. However, they are all vigorous growers and prolific bearers, and the differences in their appearance may be caused by some natural characteristic of the stocks upon which they are worked, as we purchased the trees and are not certain that they are all on the same kind of roots.

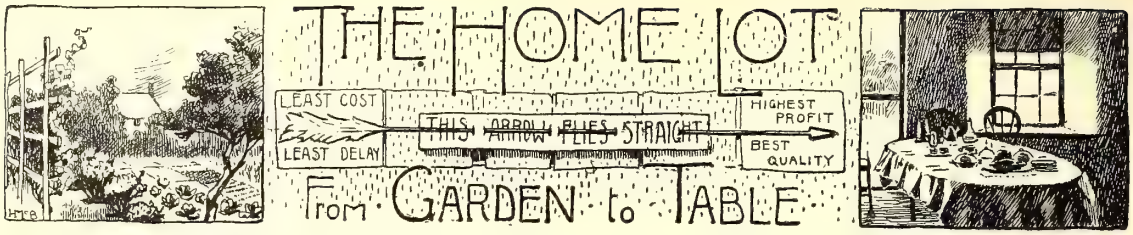
We have only one bearing tree of the Chabot. It is a little better grower than the Botan, but so far has not been quite so prolific. The fruit is almost identical with it in size, shape, color and flavor, but commences ripening just about the time the Botans are nearly through, thus giving a continuous succession of plums from June 10 until the Kelseys come in about July 15. Other varieties are equally as promising. The Satsuma or Blood we have fruited this year for the first time. From present appearance it will doubtless be excellent. The Burbank promises much.

The behavior of all this class is so satisfactory that fruit growers can plant with little risk of investing in a novelty of doubtful value. The Kelsey is an established factor in the horticulture of the south, and though the other sorts are not so thoroughly established, we have learned enough to say they are a decided success.

It is hard to find a fruit that can excel a well-ripened plum or peach, but we have surely found it in the kaki or Japanese persimmon. It is "food fit for gods." The "golden apples of Hesperides" might have been worth risking much for, but we'll venture the assertion that had the ancients been acquainted with our modern kakis the legend would have been differently related so far as the apples are concerned. They are decidedly the best and most luscious fruit we have ever seen. Among the varieties fruited here, we mention Tane Nashi, Hyakume, Hachija, Kuro Kume, Yemon and Dai Dai Maru. They are all fine varieties and are well adapted to our soil and climate. They are all known under perhaps half a dozen different names in Japan, and it will take some time yet to classify them correctly here, as the confusion in nomenclature has unavoidably been imported with them.

There is no doubt about their value to southern horticulture. The same authority quoted above says: "The persimmon is hardy everywhere south of Washington, and is growing in sheltered localities in some parts of Pennsylvania and New Jersey." We have written several letters of inquiry concerning this subject to prominent fruit growers all over the south, and with one exception the replies have been favorable. All things considered, we find that the indications for a new impetus to be given southern fruit growing are favorable, and we would simply say to California, look to your laurels; Florida is already disputing your right to first place in the production of citrus fruits, and Georgia is not long going to remain behind you on other things.

*South East Georgia.* S. L. BISHOP.




DO YOU WANT TO SAVE MONEY? HAVE YOU ANY GROUND ABOUT YOUR HOME? WHICH DO YOU PREFER—TO BE AN INVALID OR TO HAVE GOOD HEALTH AND GOOD SPIRITS? THE AMERICAN GARDEN CAN BE AND WANTS TO BE YOUR FRIEND IN THESE MATTERS.

IN ALL our smaller towns, and even in many cities like Rochester, Kansas City, Springfield, Atlanta and Newark, and in the suburbs of cities like Boston, tens of thousands of families live in separate houses, each home surrounded by a little plot of land. In some manufacturing centers in New England the entire population live in such detached homes. Every farm has a garden plot, too often half-used or wholly neglected. All the good folks in these homes are, with great unanimity, in favor of good dinners. Every one likes plenty of good things to eat. Every one, too, would answer the first of the above questions with a great and mighty "YES."

Once upon a time it was proposed that all the people in the world should at a given instant call out "Hallo" as loud as they could, and then the man in the moon would hear it and perhaps "hallo" back again. When the important instant arrived not a soul said a word, except an old woman in Siberia. The entire world wanted to listen to this great and mighty shout, so there was only a little squeaky "hallo" from Siberia, and the man in the moon never replied at all. In like manner, could all the dwellers in these separate homes reply at once to our question there would be a very tremendous "YES!"

Now there is a close connection between dinners and saving money. Every dinner consists in part of vegetables. Every good dinner also has some fruit. These things cost more in proportion to their nutriment than meat, fish, bread, milk and cheese. At the same time they are just as essential as sugar and salt, and more valuable than tea or coffee. Fruits are nature's preventive medicines done up in palatable packages, perfumed, sweet and luscious just to tempt you to eat them.

Now out of the earth comes everything on your table (or out of the sea, which is really the same thing) and the most costly of the things you eat are the very things that are the most delicate and the most liable to perish in handling or transportation.

Then, too, there is that final question—good health. Do you want it? All right. It is out-of-doors—close to your hand. You have only to go out and get it (supposing, of course, that you were born in good health) and keep it.

Farmers often call the land immediately about the dwelling the "home lot." All these little places are really "home lots."

Now put these things together—your home lot, the desire for good health, the fact that you keep house and want to save money. What is the answer?

### USE YOUR LAND.

Walking through a long street in one of these home-lot towns not long ago the representative of THE AMERICAN GARDEN saw behind every house the little kitchen garden, with its dozen tomato plants, its lettuce bed, its rows of peas and beans, its raspberry patch or currant row. On reaching one of the local stores, the sidewalk was literally covered with boxes of tomato and cabbage plants. Here it was plain the people were seeking an answer to our questions. THEY USED THEIR LAND.

If your buy a head of lettuce for six cents at the stores you have paid a profit to, at least, three men or women—the grower who raised it, the teamster, boat or railroad that brought it to town, and the retailer. You may have also paid that useless creature, the "middleman." The fact is, all the people taxed you for the lettuce, and it was mighty poor lettuce by the time you got it. If you had raised it yourself (at a cost of about one-twentieth of a cent) all the profits—five cents and nineteen-twentieths of a cent would have stayed in your pocket.

The retail prices of all these more perishable vegetables, such as peas, radish, lettuce, rhubarb, beans, tomato and sweet corn are high. It is doubtful if they will ever be any cheaper, and it is probable they will be much higher in the future. The small fruits and cucumbers and melons are also very expensive if bought in the stores.

THE AMERICAN GARDEN sees all these things, and it has been decided that it shall help all the folks

who are fortunate enough to have a patch of ground about the house, by showing every month in the year what to do with the HOME LOT.

In this department, it is proposed to suggest ways and means of making the home lot pay. This HOME LOT department is for plain folks (of course including all the attractive girls), plain folks who want to know what to do and how to do it to help out their table and their pocket-books at the same time.

Learned gardeners, florists, persons of profound knowledge of botany and the fine art of raising fruits that cost more than they sell for, farmers and truck growers, may, of course, skip this department and turn to other pages, where they will find the very thing they want.

TO HELP FOLKS. That is the aim of THE HOME LOT.

NOW.

The first thing to do, to-day, is to go right out-of-doors (synonym for good health) and see just what you have on hand.

In gardening "now" is the important hour. Not next week or next month. To-day! Certain things are done at certain seasons, and that season comes but once a year.

Let us see what you have. These raspberries and blackberries. The fruit has been picked. Then, why leave the fruit canes in the ground? These plants bear fruit on stems that grew this year out of last year's canes. These canes have done their work. They are of no further use to the plants or to you. At once cut them right down with a sharp knife close to the ground. Then, when they are all cleared away, the new canes have a chance to grow. Look about the plants and cut out with the hoe all young plants springing up at a distance from the row, and all small and feeble canes. It is too late for them to make any good growth, and it is best to pull or cut them out and give the better canes a chance.

This is the "now" work among these plants—cut out all the old canes, remove all the small and feeble canes and keep the ground stirred and free from weeds. That is all—simple enough, and certainly very little labor.

It is just possible you want to increase your blackberry and raspberry rows. Then leave some of the smaller shoots that grow at a distance from the old plants, and permit them to grow for new stock. Next month they can be dug up and replanted elsewhere.

Now is the day and hour to look ahead for strawberries. Do you want berries next year? Plant now. Choose a cloudy day, or a late, cool afternoon to set out the plants. Consult a good book to get the literature of the subject in your mind. Then stop a moment and consider just what it is best to do. The home lot is small. It is not a field, and field culture will not do. Home lot culture is "high" and "close." That is, the ground is well prepared, well spaded and well fertilized. If peas or beans are still standing, pull them all up and have the ground spaded up and raked clean of weeds and stones.

When all is ready plant in rows twenty inches apart and put the strawberry plants eight inches apart in the rows. This will give rows of plants with no waste room, and with just space enough to allow a wheel hoe or cultivator to pass between the rows. The plants will touch and cover the ground on the rows and prevent all weeds from coming up between them, while the machine tools will keep the ground clean between the rows. This is the best plan for a home lot. Plant close and cultivate often—the closer you plant, within reason, the less ground you have to keep clean, and the oftener you cultivate the easier it is each time.

In regard to varieties, it is always best to consult the neighbors. Plant those kinds already used in your vicinity, but avoid Wilson's Albany. It is a market berry. You propose to eat and not to sell, and you want a sweet berry, even if it does not bear transportation. Your crop will fly straight, like an arrow, from the garden to the table, and you want the best berry, not the toughest. You can readily see that this close planting means that no runners are to be allowed next year on your plants. They are to stand in close, solid rows next season, and perhaps a second season, and by this system you save labor and economize space, and get all that is possible out of your land.

The old plants that bore this year should have been kept free from runners and weeds, and if this has been done, they may bear another good crop next year. Do not allow a single young plant to grow that is not by this time well started. Runners that root after this are too late and too small for your purposes, and should be treated as weeds and carefully removed. Old and matted strawberry beds should be dug up and abandoned.

By this time all the currants have ripened and there is nothing to be done but to keep the ground free from weeds. The usual plan is to stick a currant bush in a corner of the ground and let it take care of itself. It will bear crops even under total

neglect. Try the other plan. Give it plenty of fertilizer, keep it perfectly free from weeds, and cut out all the old stems as soon as the fruit is picked. (Pick it all, by the way.) Look over your currant bushes and see if they are receiving the best care. It will pay to give it, for the currant is not only one of the best fruits we have, but it responds most generously to attention and is one of the most profitable plants you can have in a home lot. If you don't know all the use and profit there is in this neglected fruit, ask THE AMERICAN GARDEN for light.

The early peas and beans have gone, the corn is at its best (and *how* good only those know who have enjoyed it within an hour after it has been pulled !), the potatoes are coming in. It is the beginning of the main vegetable harvest. The thing now is to pick and gather clean. Leave no tomatoes to decay upon the ground. Pick every one, little and big, and if there are more than can be consumed at once, get out your preserving jars.

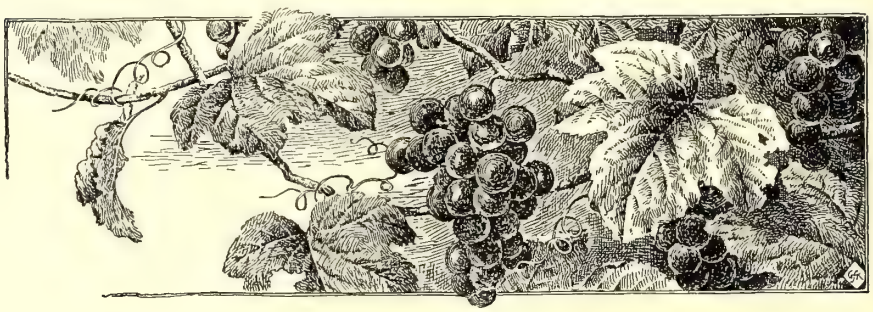
There is a whole literature on canning and preserving, and it is not necessary to discuss how to save the crops here. The "now" of the matter is just this : Preserve in some way every thing possible ; peas, corn, beans and tomatoes. Gather and store in a cool cellar every potato and root that is ripe. Vegetables are cheap to-day. They will be dear next December, and economy lies in preserving and saving every pound of food that can be saved from the garden.

The "now" for the work in the home lot is chiefly to stop the drain on the land by unnecessary plants. The moment the last peas and beans are picked, pull up the vines. Let alone, they will grow for several weeks yet, exhausting your ground to no purpose. An empty plant is a useless plant. Up with it ! It is only a cumberer and a robber of the ground. Clear away every potato vine, every corn stalk, every pea vine, bean bush or other plant the day its crop is gathered.

It is not too late to get another crop out of the ground, and a very good plan, as fast as the old plants are removed, is to spade up the ground and plant white turnips. This will, even in the northern New England states, give a root crop before the ground freezes up that will be very acceptable on November dinner tables. Spinach may also be sown in your empty places as fast as other crops are gathered and removed.

This is the "now" of the home lot. Keep down the weeds, gather and save your crops and remove every useless plant to make room for fall turnips and spinach. Bury all waste from house and garden.

All this means work, to be sure, but taken rightly, what delightful work ! You are busy, you say ; you toil for daily bread in store or shop from 7 o'clock in the morning until the 6 o'clock whistle sets you free in the evening. Well, you can put butter and sauce on that daily bread in the home lot, and be better fitted for the earning of the bread. Try the early morning hours, when the freshness of nature makes toil a pleasure. Appetite for breakfast will follow an hour's work in the garden, and the day's work will go all the better. Interest the whole family—the children will be delighted to help if managed properly, and health for them, with much valuable knowledge, can be but one of the good results of a right use of THE HOME LOT.



# The Editor's Outlook.

*FLORISTS' DISPLAY GROUNDS.*

EDITOR GRANT'S suggestion, at the nurserymen's convention, that commercial florists should establish show grounds, is worthy of careful attention. Where do we get decisive impressions of ornamental plants? From the specimens crowded into a greenhouse, or the little fellows on the benches ready for shipping, or the masses at the auction rooms? Very rarely are these ever really attractive to the half-inclined amateur, whose custom is sought. From the catalogues? O, yes; but what a doubting and doubtful customer it is who buys from such pictures and descriptions, except he buy from the all-too-few, whose catalogues are synonyms for accuracy and fair statement. But let the commercial florist and nurserymen plant show grounds—small or large, according to his land and means—where his various specialties are grown in perfection, how happily would his trade develop among those who should visit his place, and how greatly would his visitors increase in number! If proof be needed, we need not wait for the future creation of such places, for most of our successful growers to-day owe their success in no small measure to just such conditions. The wise youngsters in the trade will surely go and do likewise.

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*SOUTHERN POSSIBILITIES.*

SOUTHERN gardeners do not half appreciate their long, sunny and temperate autumn weather. Their practices, in many respects, are the same as those of gardeners where frost comes much earlier and more severe. We feel sure that the great difficulty in growing good fall cabbage in the south arises from sowing the seed too early and carrying the plants through all the long, hot summer. Even the much-enduring collard is sown too soon, and set out too early. All summer long it manages to keep alive when a less hardy plant would perish. But it drops its leaves and gets awfully long-legged. Now these plants will make all the growth necessary, and a much better growth too, between August and Christmas. There is an old notion in the south that fall cabbage and collard must not be cultivated during "dog-days," so we generally see them barely maintaining existence, and if they live over the "dog-days" they grow with the coming fall rains and better culture. But there is no necessity whatever for starting cabbage seed until dog-days are gone, and we believe collards will do equally as well sown later. We are perfectly satisfied that with moist, rich soil and good cultivation, cabbage seed sown south in August and transplanted in September will make as good cabbage as those brought here every winter by the car load. Experiments with late sowing of collard seed this year will be made at Raleigh; see what is the difference between them and those sown early.

Only a few years ago the late potato crop was as uncertain in the south as the cabbage crop now is; but with a better knowledge of the conditions for success, as fine potatoes can be grown in the middle south in the fall as can be grown anywhere. Salsify sown in July and August will make a better crop than that sown in spring, which always loses its lower leaves in mid-summer if it does not run to seed. Sweet potatoes planted in July and August from cuttings of the vines of the early planting will give potatoes that will keep much better in winter than those raised from early planted sets.

Garden peas sown in the middle south September 1 to 15 will, in ordinary seasons, give a good crop of green peas before frost gets hard enough to injure them, and they will stand more frost in the fall than in the spring, owing to the ground being warm. In short, autumn, after the summer heat is past, is the season for growing many things which our hot and dry summers injure. Tomato seed sown early in June will furnish plants that will give a better crop than the early ones, and fruit of firm quality.

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*SOCIETY AMERICAN FLORISTS*

TORONTO, CANADA, will entertain the Society of American Florists, the third week in August. Doubtless the usual large attendance will be reported, this society being very popular among the large class for whom it speaks, the immense importance of which was surprisingly shown by the preliminary census returns reported in the June GARDEN.

This society is young; it is healthy and vigorous, and has great possibilities before it. Its mistakes—it has some sins of omission, at least, to its charge—are those of youth and inexperience, traceable to lack of conception among its leaders of

their responsibility, as well as their apparent failure in managing a body of men unaccustomed to deliberation. Though kindly criticism has not been received in good part, it has borne fruit—the Boston meeting last August, was a manifest improvement in many ways over former sessions.

Great difficulty is experienced in obtaining a proper attendance at any but the opening session of the meeting. The many valuable papers and essays presented fall on the ears of probably not more than one-fourth the members who register. The week, to many of the florists, is the one relaxation of the year, and they will spend as little of it as possible in convention. Though the papers and discussions are fully reported for the benefit of absentees, it is unfortunate that more are not at hand to participate. Arrangements for perhaps but one session daily, at an early hour, will doubtless eventually be made, with a view to obtaining better attendance, and permitting all to join in the sight-seeing and local entertainments.

The exhibition attached to the meetings, including various horticultural appliances and products, has usually been loosely managed, and largely fails of its proper use and benefit. It should be controlled by the society itself, under a well considered system, and its awards might then become worth striving for. So long as it is left to chance and the local organization in the city selected for meeting, the trade exhibition will fail to be of much importance. The florists have much to do that is of prime importance, and their national society can become a great national power for the good of horticulture in the broadest sense. But to this end questions will need to be discussed with fairness and sincerity, and action thereon be above petty trade limitations.

The surroundings at Toronto will be very pleasant, as the society meets in a commodious hall in the Toronto Horticultural Gardens. The intercourse with Canadian brethren will be profitable, but the only practical result will be "talk," as Canada has a tremendous tariff fence which she has propped up from both sides against her blood-brother.

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*HARD WORK.*

"FARM work is hard, because done brutally." So says a writer on another page, and a fact so well stated deserves to become an aphorism. How true it is one sees daily who meets our farmers, especially in the eastern and southern states. Many of them are dull, almost stupid; slow in action and in thought; suspicious, yet credulous. Surrounded by natural conditions which ought to uplift and ennoble, with beauty on every hand, they see none of it. The thought has often presented itself to the writer that they deserved the miserable lot so many complain of, because they have created it for themselves! In many sections the farmers' sons and daughters, if they happen to have a sparkle of life, go away as quickly as they are able from the uninteresting toil of their fathers and mothers. That this is all wrong is most fully proved by the prosperity and happiness of the exceptional farmers who take their work as it should be taken, and have a proper pride in their noble occupation.

"It pays to find the bright side." True, it does; pays in dollars, pays in life and enjoyment of it. In no other occupation will a discovery of the bright side prove nore beneficial than in that of the farmer and horticulturist. All the periodicals in this class are uplifters toward the bright side, and largely from their efforts is a better and brighter condition appearing. "I bring up my children to work, but to be experimenters and investigators. * * A pleasant home is the end; not nasty clothes, foul habits and money!" Here is a whole gospel! Such "bringing up" makes the children industrious, but intelligent; trains their brains no less than their hands; makes of them honest, prosperous, contented citizens, the mainstay of the American home—and that is the mainstay of our grand republic. Let us do all we can to lift the tillers of the soil out of the "brutality" of farm work to the intelligent happiness of the bright side!

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*PLEASURE EN ROUTE.*

ARE your eyes open! You have perhaps taken a railroad journey during the hot July days. The train was stuffy, the rails shining streaks of quivering heat; the smoke and cinders annoyed you more than ever before, possibly. You could not read with ease; though drowsy, sleep added so much to your discomfort that it was avoided.

Was this all of the trip? Then your eyes were *not* open! Look out the window over the face of the country. Here in a great field, just shorn of its harvest, stands a lonely chestnut tree, a stately, perfectly symmetrical monument to nature. Next a trim farm strikes the eye as we flash onward—that farmer is prosperous, and isn't worrying about his condition! In this bit of forest, notice the many cool greens, deep and light, all restful. The prevailing wild flowers—see how they vary in color. For awhile the general effect is white; then it changes to blue, and possibly to yellow or red. And so the panorama flashes by, full of life and interest, and the journey is over before you know it.


*** THE AMERICAN GARDEN *stands for simplicity, good taste and correctness in names of varieties. In general botanical nomenclature it follows Bentham and Hooker and Nicholson's Dictionary of Gardening. In the names of fruits, it adopts the catalogue of the American Pomological Society, and in vegetables the Horticulturists' revision in Annals of Horticulture. In florists' plants, it follows the determinations of the Nomenclature committee of the Society of American Florists. It opposes trinomial nomenclature, and therefore places a comma or the abbreviation* VAR. *between the specific and varietal names. It uses capital initials for all specific and varietal Latin names which are derived from proper nouns.*

THE CALIFORNIA ONION SEED crop is estimated at about three-fourths of a full yield.

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IN taking off roses and other flowers they should always be cut and not broken, as it is almost impossible to break a part of a branch without doing injury to the plant.

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THE *American Florist* suggests that June 1 should be established as the settling day in the horticultural trade. This is an excellent idea which we hope to see thoroughly discussed at the Toronto meeting.

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THE twenty-third session of the Pomological Society will be held at Washington, D. C., on September 22, 23, 24 and 25. An official program will be issued at an early day.—G. B. BRACKETT, *Sec., Denmark, Ia.*

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FRUIT PROSPECTS IN ENGLAND were at first very favorable, but severe frosts on May 17 and 19, did much damage. Apples, plums, cherries, currants and gooseberries were blackened, and only a small crop is now expected.

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THE QUESTION BOX is fast becoming one of the most interesting features of the magazine. All readers are invited to take part in the discussions therein. It is inserted among the advertising pages, but is paged with the regular text pages for convenience in binding.

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SOCIETY OF AMERICAN FLORISTS.—Secretary Stewart announces that a uniform rate of one and one-third fare for the round trip to Toronto for the annual meeting, August 18, 19 and 20, has been arranged with all the trunk line railroads east of Chicago. It is expected that this will be a large and enthusiastic meeting.

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AT the funeral of Edward Burgess, New England's celebrated designer of fast yachts, which took place July 15 at Boston, the floral tributes were memorably elaborate, appropriate and artistic. Among the many beautiful devices was a large anchor composed of white roses and lilies, a testimonial from the Eastern Yacht Club.

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NATURALLY every home lot gardener has his own particular snags and rocks to encounter. Unexpected difficulties are sure to appear. What shall be done? Why, write to the editor of the Home Lot Department, AMERICAN GARDEN, Times building, New York. THE AMERICAN GARDEN stands for HELP. It will help all it can—all who want help.

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NOMENCLATURE OF VEGETABLES.—The American Seed Trade Association has endorsed the rules of nomenclature made by the committee of station horticulturists (Bailey, Goff, W. J. Green), and a committee has been appointed to take up fully the whole question of nomenclature. The discussion was a prominent one at the Cincinnati meeting. All this is a great step in advance.

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C. W. MATHEWS, a member of the last graduating class of Cornell University, has been awarded a fellowship in horticulture, by means of which the university supports him while he undertakes original investigations. Fellowships have long been given in other studies, but this is probably the first fellowship ever given for purely agricultural work in America. It is an earnest of the position which agricultural thought is taking in our great seats of learning, and it is a commanding compliment to its holder.

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SEVERAL car-loads of tomatoes from Crystal Springs, Mississppi, have been sold in New York recently at prices that should prove satisfactory. The fruits are packed in baskets holding five or six quarts, four of which are placed in a carrier. This carrier is made with solid ends and a middle piece, the sides, bottom and top being made of thin stuff sufficiently open to give good ventilation and also to show off the fruits. The tomatoes were fine ones and sold for $2 and upwards per box.

THE FRONTISPIECE in this issue is an interesting view of a palm garden in the place of Dr. T. J. Richardson, New Orleans, from a photograph kindly sent us by J. Roedder, gardener to Dr. Richardson, who is said to have first introduced palms into that city some 25 years ago. *Chamærops excelsa*, shown in the picture, surrounded by crotons, stands 26 feet high; on either side is a *Washingtonia robusta*, and a *Phœnix reclinata* at the rear stands 20 feet high and boasts a trunk eight feet in circumference. These are among the best species for that climate, as determined by Dr. Richardson's long experience.

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SOME FINE BOTAN PLUMS have been sent us by Mr. S. L. Bishop, of H. W. Reid & Co., Waycross, Ga. Successful fruit growers believe that the Botan and the Chabot (which is very like the Botan, but not quite so sweet) will revolutionize plum culture in the south and the middle states. The flesh is of a greenish orange color, being tender, very juicy, sweet and of a pleasing odor. The skin is tough and acid, and its thickness undoubtedly has some resisting power against the curculio. The trees bear while young and are highly productive. It is claimed by good authority that the Abundance is the same as the Botan.

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APPLES FROM TASMANIA.—New York draws its supplies from the ends of the earth. Last month a new source of fruit supply contributed its quota. Apples from Tasmania were offered in our markets. They much resembled Newtown Pippins, and were called Pippins by the dealers. They were packed in boxes holding about a bushel each, each apple being wrapped in paper and the boxes being paper lined. These boxes have a division through the center like lemon boxes, but are flatter, being but a few inches high. The material is solid oak, riven out instead of sawed, and they present a curious appearance. The apples bring $2 to $2.50 per box.

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DELAWARE PEACH CROP.—In the July GARDEN I am quoted as saying there will be one-third of a crop of peaches in southern Delaware this season. While I thought so at that writing, I feel sure now that there will be only a few carloads marketed, and some growers will not even ship a peach. In Kent and New Castle counties, Delaware, also in Talbot, Coroline, Queen Anne and Kent counties, Maryland, there are immense crops, but here they are so near a failure it is too close for comfort. Strawberries, raspberries and blackberries though a short crop have paid well, much better than for years past. It may be that our time will come hereafter to assist in supplying Delaware's famous peaches. Our orchards are in splendid condition and ready for a big crop; bank account likewise.

*Sussex Co., Del.* CHAS. WRIGHT.

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DIVISION OF PREMIUMS.—The method employed in an exhibition at St. Louis last year, and described by J. M. Jordan to *The American Florist*, is worthy of careful attention at all exhibitions. The amount of prize money for any particular class or group was offered in a lump. The exhibits were then judged by points, and the amount divided among the competitors in proportion to the number of points given to each by the judges. At the exhibition in question, it is stated that a magnificent display was made, and the credit is given to this system of awards, as each exhibitor was assured of receiving something. The men who ordinarily feel that competition with large growers would be useless, were not discouraged under this plan, and contributed each his quota. If there is any reason why this is not a good system, we would like to have it pointed out, as we fail to see it.

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WHAT IS HARDY WITH YOU?—Allow me to make a suggestion for the consideration of editors and readers. Let the readers of THE AMERICAN GARDEN send you a list of trees, shrubs and herbaceous perennials that are hardy in their vicinities. Where flowering trees or shrubs survive the winter but do not flower, state the fact. The replies need not come from south of the Ohio river, but should include Canada. A summary of this information would be of great value. Many trees and shrubs will not stand our climate here, that are hardy in the same latitude east. Your eastern nurserymen often recommend plants in good faith as hardy in this climate which will not stand the test. A great deal of money is annually lost in plants that will not stand the climate of their new home; and at the same time there are those who fear to plant some good things because a neighbor lost one and attributed it to the lack of hardiness, yet in a few years find them thriving in a garden within a few miles of home. When you get the returns, you can eliminate ordinary oaks, hickories, etc., if you desire. Then condense. A list of this kind would be of great benefit to many of your readers.——W. C. E., *Highland Park, Ill.*

[The suggestion has our hearty approval. The box is open to receive the responses.—ED. AM. G.]

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JAPANESE PLANTS.—Louis Boehmer, Yokohama, Japan writes, in response to a request in the May GARDEN for the address of a firm exporting plants from Japan, that we should not forget him. That was an oversight indeed, as Mr. Boehmer is an "old subscriber" and occasional advertiser with us, and our relations with him have always been of the pleasantest. No complaint against him of any description has ever reached us, which is much to say of any man in any trade. His catalogue is deliciously Japanese, being printed on curious soft cloth like paper used for some Japanese books, in a cover exquisitely painted and bound in Japanese style. Mr. Boehmer also writes, "Messrs. H. H. Berger & Co., in San Francisco, have been for many years in connection with me, and they are always willing to give information about fruits, etc., from here to every body who wants to have plants or seeds. Prof. Georgeson's articles are very nicely written, but some

of the fruits he mentioned are not fit for use at all, and some are not to be had, because they are very scarce and not under culture. All plants imported from here or Messrs. Berger are true to name, and the customers are made acquainted with the true value of the fruits." We should be glad to receive from our Japanese readers, for publication, notes on any of these fruits and other plants suitable for introduction to America.

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TWELVE ACRES OF ROSES IN BLOOM.—The *Post-Express* says that Ellwanger & Barry's plantation of twelve acres of roses is the largest in America, as is probably true. The collection comprises about 100,000 plants, and last June when the whole area was a mass of bloom it was a magnificent sight.

Among the firm's recent additions are the Japanese roses [probably *Rosa rugosa.*—ED.], remarkable for their robust, vigorous growth, great hardiness and remarkable blooming qualities. These varieties are not only ornamental by reason of the beautiful flowers which they produce, but also on account of their handsome foliage and the showy fruit with which the plants are covered in autumn. The Japanese rose will prove valuable, especially for regions where rose culture has been unsuccessful heretofore, owing to the severity of the climate. Madame George Bruant, of the last type, is a striking representative, producing large white flowers, highly perfumed and in every way charming.

The following are new roses raised in Ireland, near Belfast, and have produced a great sensation among the rose lovers on account of their remarkable beauty:

*Caroline d' Arden.* Pure, soft rose color; large, perfectly formed, and of most delightful fragrance.

*Earl of Dufferin.* Large, perfect symmetry, and most delightfully fragrant; velvety-crimson, shaded with dark maroon.

*Lady Arthur Hill.* Beautiful rosy-lilac color—a shade hitherto unknown to roses; blooms large, full, perfectly symmetrical in form.

*Lady Helen Stewart.* Bright crimson-scarlet, highly perfumed.—F. F.

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MEATY THINGS FROM THE NURSERYMEN'S CONVENTION (*Continued*).—The splendid record of the American Pomological Society in straightening out the nomenclature of fruits has required forty years of constant effort. The work for the present is the raising of seedling fruits. It is a work for all young nurserymen to engage in at once, and there is no section where the demand for seedling fruits is so great as in the northwest, where hardy sorts must be had.

*How to Sell Nursery Stock.* Editor Grant, of *The American Florist.*—If a florist were induced to plant on his place a sample of a varied collection of ornamental stock, when his customers saw them at their hey-day, wouldn't they be apt to place an order, for delivery at the proper season, if similar specimens could be supplied?

Wouldn't it be an advantage if the florist could make his prices reasonable, and then be ready to send a man who knew which end of the tree to put into the ground?

The florist is generally found where agents have pretty well drummed and too often left unfavorable impressions. The people do not care to buy any more cats in a bag. They want to deal with some one they know to be reliable, and whom they can find again. The florist dealer being right on the ground all the time can soon determine in his trial-show ground what is best for his locality and direct his sales accordingly, thus giving an additional satisfaction to buyers and promoting trade.

*Fruit in Minnesota.* S. B. Green.—Apples tried and found wanting: Ben Davis, Baldwin, Yellow Bellflower, Roman Stem, Golden Russet, Winesap, etc. The Wealthy is all right, and the Russians are coming forward, like Duchess, Tetofsky, Hibernial, Autumn Streaked, Ostrokoff, Glass, White Pigeon, Charlamoff, Green Streaked and Yellow Annis. The hardy American plums have a great future here. Grapes succeed admirably around our lakes, of which we have 1,000 or more. Concord leads. Ours is not a polar climate.

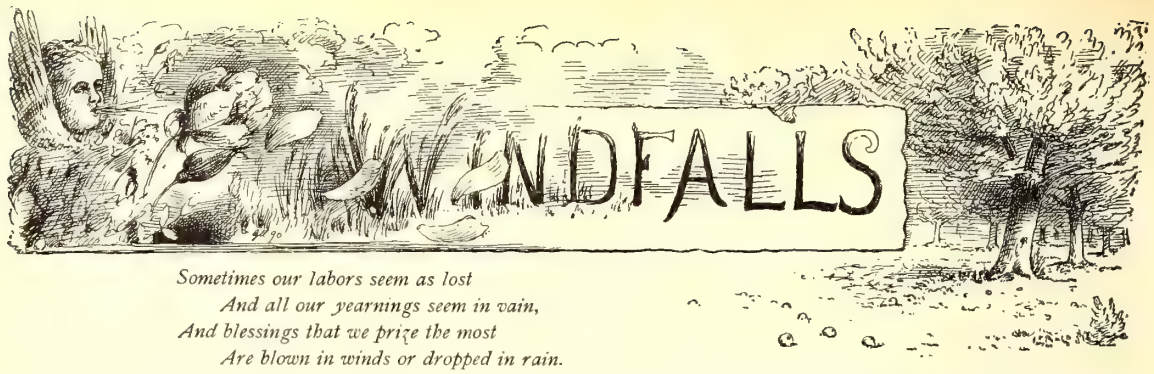
Several of our native fruits, notably the sand cherry (*Prunus pumila*) and the buffalo berry (*Shepherdia argentea*), in addition to the plum, will well repay careful cultivation, being very prolific even in their wild state.

Forest planting has been extensive. Many formerly treeless counties now have nearly as many growing trees as those which were considered heavily wooded.

*Varieties for Special Localities.* Col. C. L. Watrous, of Iowa.—At one of the splendid Boston exhibitions of the American Pomological Society a shrewd observer remarked that "premium specimens of any variety of fruit have come from a region close by the place of origin, showing that the seedlings have been saved, because of their excellence at the place of their origin, and as they spread out from there they meet with difficulties, which have changed these sorts until they have finally developed diseases." I said, "Why may we not here in the west grow a race of fruit by using our own wild fruit?" and a great many others thought of it at the same time, and the work has gone on.

The State Horticultural Society has established twenty permanent stations, where are planted any fruits or plants that the committee deems worthy of trial. We have now a hundred crosses on our native crab, some with fruit almost as large as small Winesaps. The pollen is taken from such apples as the Jonathan, Grimes, Northern Spy, Baldwin and other large apples of high quality, preferably of red color and late keeping quality. That is the way we are trying, as pioneers, to grow a race of fruit. We found that the imported fruits and their seedlings suffered injury in the straits of our severe season, while the natives seemed to enjoy life just as well after as they did before.

We are pursuing the same course with the plum, using pollen from European varieties; likewise the cherry and currant.




*Sometimes our labors seem as lost*
*And all our yearnings seem in vain,*
*And blessings that we prize the most*
*Are blown in winds or dropped in rain.*

**Michigan's Big Berry Crop.**—Probably the largest shipment of berries that ever left Benton Harbor on a single night was put aboard the steamboats June 22, for Chicago and Milwaukee. It is estimated that there were in round numbers 11,000 crates of fruit, 10,000 of which were strawberries and the rest cherries. About 2,000 crates were shipped to Milwaukee, and the balance to Chicago. The streets were blockaded with teams for several hours, there being as many as three to four hundred berry-wagons in sight at one time. Nearly 10,000 crates were shipped from St. Joseph, including the receipts by train and river boat, making an aggregate shipment of over 20,000 crates for the night.

The receipt of Michigan strawberries on South Water street, Chicago, June 23, was 38,000 crates, or 19,000 bushels. The total shipments from Benton Harbor, in two weeks, exceeded 100,000 crates, or about 60,000 bushels.—*Allegan (Mich.) Gazette.*

**New Method of Grape Pruning.**—M. Dezeimeris, a French grower, is announced by the inspector-general of agriculture in France as having discovered a new method in pruning the grape, which is described as follows: The cut is made at the node *above* the point where it is intended the end of the wood shall eventually remain, at the same time *destroying the bud* found there. The stump thus left is removed the following year, when its death is complete, and when at its base a collar has been formed which soon closes after the dead wood has been removed to its level. The theory is, that under this method the wood dies slowly, and without decomposition of the tissues. Stocks treated according to the new method for three years, when sawed lengthwise, appear to confirm the truth of the theory; and some old stocks, treated in the new way, had found an unhoped for vigor, which clearly manifests itself by the difference in size of the remaining stumps. The shoots of the year, very long, have a diameter double that of last year, which, themselves, are much larger than those of the year proceeding. There is an abundant production of fruit, while on neighboring vines, pruned by the old method, the production is very small.

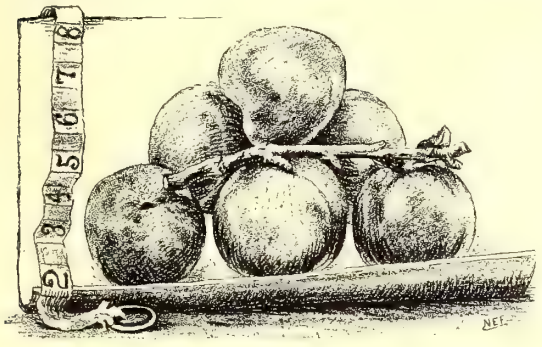
**The Burbank and Satsuma Plums.**—I procured plants in the spring of 1889, one of each of which has lived, and both are bearing this year. The Burbank is in a shady place while the Satsuma is fairly well situated. The latter grew over 30 feet the first season, and is now carrying over 300 plums of uniform size as large as the Wild Goose, and has withstood the curculio very well. Over two dozen plums started on a bud of one year's growth. Marianna, Robinson and Wild Goose are also full of fruit. The trees have not been jarred, but have been covered three times with Paris green. The Satsuma foliage is liable to be burned with the poison—D., *Conn., in Rural New-Yorker, July 10.*

**Grape Marmalade, Grape Jelly—Ambrosia from the Vineyards.**—*A valuable suggestion to grape growers.*—One of the many pleasant memories of a summer upon Chautauqua Lake, New York is the recollection of the fragrance of the vineyards. When the grapes are fast ripening, a ride past a vineyard gives "odors from Araby." I longed to try to carry those odors away—and succeeded. About the first week in September, the C. L. R. R. conductor brought me 100 lbs. of Concords fresh from the vineyards near Brocton. The kind host at "Green's" gave me permission to use his kitchen as my own. The result was 100 glasses of "Brocton Marmalade." I wish you could have smelled it and then tasted it! The odor was that of the sun-kissed grapes which grow best where the winds from Lake Erie play with their leaves; and until the last glass was sadly emptied it was a regular part of the menu to pass the marmalade around the table for all to inhale its inviting fragrance. Why cannot farmers' wives there keep the market supplied with the same delicious jelly? I append the exact directions for making as I made mine—but a person in her own home could make far more than I did. Out of 100 pounds father, mother, five sons and a daughter had eaten liberally, as only hearty people can, before the cooking began. *Brocton Marmalade.* Gather the grapes when fully ripe and leave them out on a porch over night to chill them—but *not* when cold enough to freeze. Next morning pick quickly from their stems, handle as lightly as possible. Wash by merely dipping into water. Put a porcelain kettle full upon the fire and crush a few to release the juice. When so thoroughly boiled that the skins are very small and seeds boil up to the top, take from the fire. Pour through a colander fine enough to retain the skins and seeds. To do this well will require some pressure with a silver or wooden spoon. Measure the juice carefully; add to each pint one pound (two cups) of the best granulated sugar and boil for twenty minutes, then put into tumblers as fast as possible. Lay a piece of writing paper on top of the jelly as soon as it hardens and then paste a larger circle

of paper over the glass. *Never* use a jelly glass with a tin top. If you have to buy them so throw away the tops, but the commonest grade of tumbler is much the best thing.—AGNES GRÉGOIRE.

**The Largest Peach Tree in Michigan.**—Oceana County, Michigan, can boast of the largest peach tree in that state, if not in the whole country It stands in the Gilson orchard in Claybanks township, only 20 rods from Lake Michigan. By measurement it is 18 inches in diameter at the ground, one foot in diameter four feet up at the limbs, while it has a spread of 32 feet. It is reported to be perfectly healthy, has always borne, and is in bearing this year, the thirty-second year of its age.

**Japanese Plums.**—I mail you a few samples of Oriental plums. One is the Hattonkin No. 2. The fruit of this variety resembles the Kelsey in shape, except that it is a little more pointed and not so large as the Kelsey, but is superior to it in flavor and ripens much earlier. I have two other varieties of Hattonkin imported at different times. Hattonkin No. 1 ripens twelve days earlier than Hattonkin No. 2, the latter part of May; it is a pale straw color, about twice the size of the Wild Goose, much like No. 2 in shape. It is a delicious plum. I have another kind, the largest of the Hattonkins, not ripe yet on my experimental grounds. This variety was imported by ex-Gov. Hubbard of Texas, while Minister to Japan. It has been introduced as the Hytan Kayo, and the commercial description, which is good, is as follows: "Large to very large. Commences to ripen immediately after Wild Goose. Larger than Wild



Goose and of a meaty character, much finer, and a better shipper. Conical in shape; color deep purplish-red, slightly mottled when over ripe; flavor good, sub-acid. Trees inclining to be dwarf."—J. L. NORMAND, *La.*

Mr. Normand also sends us several other varieties of these interesting Japanese plums, among them the beautiful and delicious Burbank, Shiro Smomo, Satsuma Blood, and two new varieties. The new kinds he has named Normand Yellow and Bailey. The Normand Yellow is a fruit of medium to large size, very firm and meaty, with a small free pit, and a very delicious flavor. The color is a clear golden yellow. We are strongly impressed with the variety. The Bailey is perhaps a little larger, a mottled orange ground color, overlaid with bright red and covered with a dense bloom. It is a very handsome fruit and apparently of excellent quality.

**Native Wild Fruits.**—In the article on native or wild fruits in THE AMERICAN GARDEN for January, one of the most important and useful was not mentioned, namely the persimmon. There are several varieties, early, medium and late. The early ones are the best and ripen by the last of September. They are a sure crop south of the Ohio river. They bloom in June, and the blossoms are excellent for bees. The fruits, gathered when half ripe and suspended by the branches in a dry place till dry, then put in boxes with a little sugar, are as good as dates for winter use; are a gentle laxative, and are liked by almost every one, as well as by live stock, chickens, etc., which fatten on them. The male persimmon bear only flowers, but swarms with bees when in bloom. Persimmons are easily grown and have few insect enemies. The wood is fine-grained and suitable for plain lumber and for carving. Every one ought to plant persimmons for ornament, for fruit and for the wood.—C. H. ENGLISH, *Missouri.*

**Apples on LeConte Roots in Georgia.**—"An interesting experiment in grafting has been made in Georgia, where apples have been grafted on to the LeConte pear. The results have been very gratifying, the trees appearing more hardy than when grown on their own stock, and the fruit produced was large and fine. This branch of horticulture is an inviting field for experiment."

The above was cut from the *Home and Farm* of June 1. That the results of such grafting in Georgia have been in all cases "very gratifying" must be taken *cum grano salis.* I have been experimenting in this line for several years, and have a hundred apple trees of twelve varieties grafted on Le Conte, now, in my test orchard. Budding or grafting apples on the Le Conte above ground has been with me, in all cases, an utter failure, whether done on one year stocks near the ground, or top-worked on branched trees. The scions ceased to grow after the second year. When grafted below ground, unless the apple scion throws out roots, and the Le Conte and apple roots both grow, there is failure again. The only successful trees I have are those having both Le Conte and apple roots. My best trees were grafted on pieces of Le Conte roots; the apple scions were eight inches long and the root pieces three inches. When the root pieces grew off thriftily, and the scion also made roots, I got a good tree; when the apple scion made no roots a poorly growing tree was the result; and so, when the apple roots grew and the Le Conte root made little or no growth, the latter soon decayed and was thrown off, and I have an apple tree with apple roots only. Crown grafted on one year Le Conte, the apple scion is apt to depend upon the Le Conte for sustenance, and is not so likely to make roots of its own as when piece roots are used.

Apple trees on apple roots require a cool moist soil, that we have not got here; but if we go about it right

we can tack on Le Conte roots to the tree, which penetrate the soil deeply in search of moisture and food, and we will get some apples. I am in latitude 30°, and have a pine woods (sandy loam) soil.—WM. JENNINGS, *Georgia.*

**The Beverly, a New Seedling Strawberry.**—In 1889 I set out half of my garden to my new seedling, the Beverly. When the committee from the Massachusetts Horticultural Society, in June, 1890, visited me, they could see the difference between the various kinds growing side by side, and I was awarded first prize for the best amateur strawberry garden in the state.

This is the story of the Beverly: In July, 1887 I sowed seed from Miner's Prolific. In June, 1888, the plant bore its fruit, which from the start seemed very promising, the late blossoms maturing large fruit. In August, 1888, I set a single row about 22 feet in length, which threw out runners very freely. In 1889 I gathered more fruit from that space of 22 feet than from two rows, one on each side, of Belmont and Jewell, each 40 feet long. In June, 1890, at the Massachusetts Horticultural Strawberry Show I was awarded the silver medal for the best seedling strawberry. Starting from one plant in 1888, in 1890 I picked 8¾ bushels of Beverly strawberries. The fruit resembles Miner's Prolific. It has a perfect blossom, and is the most wonderfully prolific bearer I have ever seen, the late blossoms maturing large fruit, which ripens all over. J. H. Hale visited my garden in June, 1890, on the eve of the strawberry show. He tested the quality of the Beverly with Belmont and Jewell, and pronounced the Beverly better than either. My experience with it is, that if runner plants are set in August in double rows three feet apart, and the plants one foot apart in the rows, and the runners are kept cut off, and the land is hoed as often as once a week, good crops are produced the following June. I manure the ground well at the start with stable manure, then apply ground bone and ashes in the proportion of three-quarters of ashes in bulk to a quarter of bone. I have entered my garden again for a prize this year. The Beverly is medium to late, and was not at its best this year before July 1st.—*Benj. M. Smith*, in *Rural New-Yorker.*

**Spraying of Grapes.**—Delaware College had my vineyard in 1889-90 to experiment with. I have 1,200 vines, and in 1888 had 240 pounds of grapes and stems. In 1889 I commenced to spray, and shipped a little over 3,000 pounds; in 1890 over 8,000 pounds. This year I have only found *five* rotten grapes. My grapes never looked so nice as they do at the present time; if nothing happens I will have 10,000 to 12,000 pounds. I spray six times: once with the simple copper mixture; three times with Bordeaux; twice with modified celeste. The last application of Bordeaux is just after the blossoms fall. I am trying the Bordeaux on my pear trees for the blight. I think it will check it. We had two attacks of the grape rot last season—June 17 was the first and July 7 the second. The last was much worse than the first.—L. E. ANTHONY, *Delaware.*

**A Fruit Cafe; why not?**—Some one has proposed a a fruit cafè. The idea is to have in fruit stores tables or a counter, as in a cafè, with fruit-knives, plates, napkins, etc., and to furnish fresh fruit in its season to be eaten on the spot. The idea is a good one. The fruit stands that occupy every corner on the avenues in New York are seldom patronized by ladies, because they cannot eat the fruit on the side-walk and are unwilling to carry it home in bags. It is the same with the fine fruit stores. The passer would gladly eat some of the fresh fruit so temptingly displayed, but there are no facilities for such a repast.

Why don't some enterprising fruit dealer try it? Fresh fruit neatly served at reasonable prices would certainly command trade. The resturants do sell fruit now, but they charge too much, and the eating is surrounded by too many suggestions concerning pie and cake. A fruit cafè for nothing but fruit, with perhaps milk, would be as popular as the "milk dairies."

**Gardens on the Roof.**—The enormously lofty buildings now being erected in our cities suggest a new method of bringing the garden into the town. The flat roofs of these buildings are usually of brick and make excellent places for gardens. Theatres and public halls are beginning to use their roofs for summer gardens, where music and ice cream are retailed among plants and flowers, far above the hot and suffocating streets. Among the new roof gardens the most notable is the garden on the top of the Madison Avenue Garden in New York and the private garden on the roof of the Northwestern Guaranty Loan Company at Minneapolis. We shall probably see many such roof gardens in the future, all of which is a good thing for the love of flowers and the flower trade.

**Water Cress for Health and Market.**—We should use more water-cress on our tables. It contains sulphur, iodine and phosphates, and is regarded as a blood purifier by competent authorities. In streams containing iron (as in Penn. and parts of New England) the growing plant absorbs iron from the water in large quantities and it is thus a vehicle for carrying iron into the system. The Italian cooks who are now so rapidly invading the restaurant and hotel kitchens in our large cities use it freely and teach us a good lesson.

If you have water on your place, by all means plant water cress for your table or for market. It is refreshing and appetizing eaten with meats, and a capital thing for the young peoples' daily ration.

**Experiments with Tomatoes.**—My garden is on the site of an old cedar swamp. The drainage is poor because of its peculiar position; two gravelly hill-sides, on the east and west, and a sandy slope on the north, are included. It receives every spring a liberal dressing of barn manure spread broadcast and plowed in.

Five years ago the best tomato I could raise, for all purposes, was the Trophy; since then I can do nothing with it. It grows rough, rots and seems to have lost its flavor. Livingston's Beauty is my best now for home consumption. It inclines, however, to crack after heavy

rain. Were it not that the Mikado is a trifle coarse it would certainly be my favorite. For earliness, firmness, yield and good keeping I have not found its equal among the eighteen or twenty varieties I have raised. It is free from the mean habit of most others, of rotting when first beginning to ripen. Planted in a hot-bed last March and set out on May 20th, it ripened perfect specimens 126 days from seed with no special care. I planted seeds of five varieties, Ignotum, Beauty, Mikado, Peach and Red Cross, on June 11th on a sandy slope facing southwest. A handful of Bradley's X L fertilizer was in each hill. After the usual preliminary rotting, I picked perfect specimens from Beauty and Ignotum in 99 days, Mikado following three days later. The Peach is handsome, productive and well flavored, but a poor keeper. Livingston's Beauty well deserves its name.—A. B. CHISHOLM, *Barnstable County, Mass.*

**A Large Mushroom** is described by *Land and Water.* Dimensions; Height, 7 ins.; diameter, 11 ins.; circumference of head, 32 ins.; circumference of stalk, 9 ins. Weight, 1 lb. 2½ oz.

**A Pink White Glory of Clover.**

A pink-white glory of clover,
Linking with summer's light;
A patch-work gay, all nectar,
Makes hills and valleys bright.

A pink-white glory of clover,
Comes in the rose-set June;
When the sky above is bluest,
The world with joy a-tune.

A pink-white glory of clover,
Out lasting summer flowers;
The roses, blooming and fading,
To autumn's chill, dark hours.

A pink-white glory of clover,
Going only with the leaves;
With the fall of the maples' crimson,
The binding of the sheaves.

—FLORENCE CARR.

**A Southern Artichoke Bed.**—A friend is enthusiastic over a bed of globe artichokes in the garden of my brother-in-law. It is some 14x40 feet long, with plants six or eight years old, and from three to four feet apart. These, he says, if properly advertised and merits known, would be greedily taken at the north in sub-tropical gardening. Imagine these plants, many of them four feet high, with leaves full two feet long by one foot wide, pale silvery greyish green, deeply lobed and deeply serrated! Imagine an enormous flower of Scotch thistle, as large as a quart measure, with its outside scaly calyx surmounted with the deep, rich purple, thread-like thistle flowers! Even after the artichoke has formed, the plant would be considered an attractive feature of a garden to those who can separate the beautiful from the useful, and utilize even the commoner forms of vegetables to beautify our homes. I recall a specimen plant on my brother's lawn, placed there for its gardenesque effect, which is now full five feet high, fully as broad, and which elicits universal admiration from passers by.—MRS. J. S. R. THOMSON, *Spartanburg, S. C.*

**Evaporating Sweet Potatoes.**—Though I have never seen them dried, the drying of sweet potatoes is a perfect success. I mention this so that some of our Northern friends can try it when they can get them cheap in the fall, and so be secure of a winter supply. They dry quickly and easily, even in the sun, and with one of the potato evaporators of the American Manufacturing Company it is simply fun to run them through. They are pared and sliced, of course. Steaming brings them back to their normal condition, and if a dish is filled with these steaming slices and some butter and sugar spread over the top and put into the oven and baked, they are a dish fit for a king. They are also as useful and better for pies than the winter squashes and pumpkins of Yankeedom. We formerly dried them in Virginia, but here in North Carolina where potatoes are kept over so easily and we can buy old potatoes until June at 50 cents per bushel, it don't pay.—*W. F. Massey, in Rural New-Yorker.*

**Kola Nut.**—Generally speaking, the virtues attributed to newly-introduced drugs or articles of food require to be as severely discounted as if they were patent medicines. This precaution is hardly needed in the case of the kola nut, provided the nuts are in a fresh wholesome condition. The power of the nut in enabling the partaker to undergo prolonged fatigue, whether of body or mind, and protracted abstinence from food, is established beyond question. The military authorities in India are likely to adopt it in cases of military expeditions, where food is scarce and difficult of carriage. A trial could be made of it in the hay-field and among harvesters. In the form of a drink it is very serviceable, as we can testify in the obviating and lessening the fatigue of prolonged mental exertion; but in the field "Kolatina," mixed with water or milk would, of course, be preferable. There is no fear of ill results, but a strong probability of its forming an excellent substitute for beer. We have spoken of kola as if it were new; this is hardly correct—the tree and its virtues have long been known to botanists, but it takes a long time for the general public to become acquainted with such matters.—*Gardener's Chronicle.*

**Pecans in Massachusetts.**—While I am about it I may say that some years ago I planted some few pecan nuts which I got at a grocery store. They were grown in Texas, and vegetated well enough, but the young trees were, as might have been expected, so much injured by the winter, that I soon gave them up and ceased to try to rear them. I afterwards got nuts from the late Arthur Bryant, of Princeton, Illinois, the trees from which proved to be perfectly hardy as respects the winter. I gave away most of them and am unable to say how they did. I have only two remaining, which are still small, having gone through various hardships owing to my being too busy to give them proper attention, but they do not appear to suffer from the winter. If any one is going to cultivate pecans he should remember that like all the genus they make very long tap roots, and should be transplanted while young.—R. M., *Salem, Mass.*

**The Lichti Nut in 1883.**—I notice in THE AMERICAN GARDEN for May, p. 269, the statement that the *Nephelium Lichti* was introduced into southern Florida in 1886. It

may be of interest to you to know that at the rose and strawberry show of the Massachusetts Horticultural Society, June 26, 1883, Charles Amory of Boston, exhibited specimens of this fruit raised by him at Sanford, Florida. I tasted it and found the flavor excellent. The dry, dark colored pulp of the dried fruit is, when fresh, a light colored gelatinous pulp.—ROBERT MANNING.

**A Recuperative Plant for the Pine Barrens of the South.**—On a recent visit to the piny woods sand hills in Moon county in this state, I notice growing all through the open piny woods, on the poorest sandy soils, large masses of a handsome blue lupin (*Lupinus diffusus*, Nuttall). The dense succulent growth of this plant and its handsome appearance in bloom struck me very forcibly, and the fact that it grows so rankly on these sands, when all other plants look stunted and starved, suggested the idea that here we have a plant adapted to the improvement of poor sandy soils in the south. Such a growth as I saw in these scattered clumps, if it were uniform over a large surface, would give a great mass of vegetable matter for plowing under. The plant would perhaps have no value as stock food, because of its bitter and unpleasant character, but for furnishing humus on poor sand it seems to me to be excellent. The fact too that it is a leguminous plant, and grows so rankly on the poorest soils, shows that it too has the power of accumulating nitrates in the soil. I suggest this plant as worthy of experiment on sandy soils throughout the south, and should endeavor to get seeds, which it makes in great profusion, and experiment with it in the piny woods country of North Carolina.—W. F. MASSEY, *N. C. College of Agriculture.*

**Preserving Plants.**—Mr. J. Sauer has made known a process for preserving plants in the form and with the flexibility that they possessed in the fresh state, and also for coloring or bronzing the plants thus prepared.

The plants, having been perfectly freed from dust, and washed, are immersed for two or three days in a strong solution of crystals of soda. The strength of the solution usually employed is eighteen ounces of crystals to one quart of water. Sometimes it is advantageous to add a little caustic lixivium.

The plants are dried between cloths for three or four hours, and are then greased either by immersing them in melted lard or by gently rubbing them with the hand with olive oil.

To color the plants thus prepared, they are painted with a solution of dextrine containing a proportion of about five per cent of solution of aloes. To this coating are applied the proper colored powders.—*Moniteur Scientifique.*

**Primula Japonica.**—At present, one of our most showy perennials is the Japan primrose. In our borders, it has stood for several winters, and has proved to be quite hardy. It should be planted in a sheltered and shady position; and if put in a good rich loam, it will throw up flower stems from 12 to 18 inches high, which will last for several weeks in flower. There are several forms; the only difference in them are the colors in their flowers. The original form is the best one, it being of a crimson color. This beautiful primrose can be raised very easily from seed; but it is very important to have fresh seed. In fact, the seed should be sown as soon as gathered, if not, it lies dormant for some time after sowing. It was discovered by Mr. Fortune in 1861, but he was not successful in introducing it into England until ten years later.—R. CAMERON, *Middlesex Co., Mass.*

**A Japanese Pæony.**—Six differently colored single Japanese pæonies adorn a Kearney street, (San Francisco) flower store to-day. They are grafted; the one I sketch is nearly white, each petal with a deep stain of magenta at its base, the yellow stamens showing beautifully; the flower nine inches across by a rule laid under it without spreading down the petals, the plant only six inches high. The cherry colored one was the prettiest; there were two flowers on the plant resembling *Pæonia decora, elatior*; another looked like *P. anemonæflora*, but the labels bore only Japanese letters. Pæonies, by rights, should grow on a big bush and there should be lots of them, weighing it down. Now I know where the pattern of my great grandmother's white linen curtains, embroidered with apparently impossible Kensington wool colored flowers, came from! Of course, the Japanese had their ridiculous looking plants ages ago, and her cousin, the captain, drew her the patterns in China or Japan; yet we think these single pæonies are the result of modern civilization!

A JAPANESE PEONY.

A tiny grafted Japanese plum tree lived and bloomed for four years, and a friend has one a dozen years old, that was like a white tent in March last.

An Australian acacia that grows finely in gardens in Oakland, is the most æsthetic plant I know for decoration; its bluish gray-green foliage dries and keeps its color and drooping grace for a year, on the wall. Its flowers are brilliant orange-yellow.—K. P. S. B., *California.*

**The German Irises** are now, June, in their glory. I have 15 varieties, in the most gorgeous combinations of rich colors. I have lost the names of most of them, and,

as the catalogue descriptions are so conflicting, I cannot place them; but I am sure of Madame Chereau, white, edged with blue, the best of all in my opinion. A bright yellow, also a pale straw, both nettled with black, and very satisfactory. A delicate lavender, a beauty, has just come into bloom. The Spanish irises are just blooming and will be a surprise to all who have not seen them. The flowers resemble our common blue flag, but the combinations of yellows, browns and blues are indescribable. The English irises are ready to come next; they are larger than the Spanish varieties; the flowers are self colored, rich blues and purples predominating. A clump of *Iris Siberica* is now very lovely. *Iris Kæmpferi* is ready to follow the English varieties. I have about a dozen varieties, and they are a fitting climax to the iris succession. Irises need all the water they can have when growing, but must have a dry situation in winter.

*Aquilegias.* A wretched big red grub has nearly ruined the plants. This grub seems to affect the chrysantha variety most. The chrysantha alba, catalogued as a novelty, blooms now for the first time and is very satisfactory. All the aquilegias are good.

*A new Campanula*, white and red spotted, offered by Henderson in 1890, is one of the best novelties in perennials yet offered.

In all respects, the most satisfactory new plant to us has been the Iceland poppies. They began with the tulips and are still a gorgeous sight with their yellow, orange and white flowers. I call them Iceland poppies, although they are offered under different names. They should be grown by all lovers of hardy plants. They flower late the first season, are perennials, and if the seed is not allowed to form will give a succession of flowers the most of the summer.

*The Oriental Poppies* are now magnificent. I have let them grow at their own sweet will and they light up the garden finely. A strange pink variety has appeared, probably a sport.

*Lillies. Lilium superbum* is fine. I bought one bulb of excelsum five years ago, and ten immense stalks came from it this year. I have a good many varieties of *L. umbellatum*, and they are very showy but not distinct. *L. Krameri* in my opinion is as lovely as any, but is not quite hardy, and for that matter few lilies are strictly hardy here.

*Clematis Davidiana* proves to be a good garden plant, not brilliant, but very fragrant. The habit of the flowers growing at the axils of the leaves rather spoils it for general cut-flower purposes.

*Hardy Asters.* A few of the varieties are good, but many are rather weedy, and being rank growers are not suited to small gardens. Their blooming so late is a good point, as the frost does not hurt them much. —P. F. BLODGETT, *Vermont, June 22.*

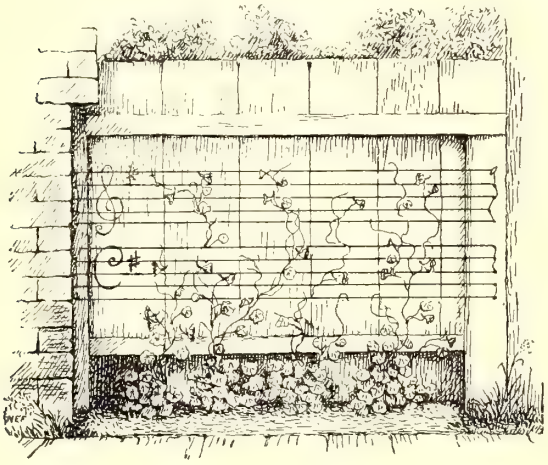
**Wild Oat Grass—A Pest** (*Danthonia spicata*).—There is in New England a species of grass known to botanists as *Danthonia spicata* (Beauv), but commonly called wild oats grass. When the country was new and there was more timbered land, this grass was confined to dry, rocky and sterile soil, on the exposed terraces or ledges of mountains, and sometimes in favored localities at lower elevations. There it could not be called a troublesome plant and excited no special attention, being regarded, like many other grasses, as a not very widely spread species. But, as the country became more and more cleared of its forests and got dryer, this apparently harmless plant went forth. Within the last thirty years it has become a great pest. Being a grass, and grasses generally being considered useful plants, it has made its way over the country without opposition. Even now after it has gained possession of thousands of acres of valuable pasture lands, which are too rough or stony for the plow, it is not generally known by the farmers as a plague. By thorough cultivation and the liberal use of manure, it can be kept out of meadow land, so long as the clover, timothy, fescue, orchard grass, etc., stay, but when these run out the wild oat grass creeps in with such other pests as mouse-ear (*Antennaria plantaginifolia*, Hook), and the white daisy. It has little or no value as hay, and in pastures the cattle, in trying to eat it, pull it up roots and all and spit it out as an unwholesome weed. Its principal foliage is at the base of the stalk, close to the ground, and consists of numerous short curly leaves, while the stalk is wiry and brittle. It propagates itself from seed. The seed of its small but well filled panicle is not the only means it has of multiplying. In many stalks, each joint contains a hidden head of flowers, which bear good seed and help to spread the plant. After the first snows the weak stalks are broken off by the wind and spread about, and it makes little difference whether a head with its seed or a well filled joint is left to grow. It thrives on almost any soil that is not too wet for timothy or clover and has gradually acclimated itself to wetter localities, until it seems to prosper where it was never seen thirty years ago. Mr. Pringle, of Vermont, who has given it much attention, believes the only means of eradicating it from land that can't be plowed is to stock it again down to forest.

Several years since, while spending a few days in Erie Co., N. Y., I saw, in the barns of a large stock farm, well mixed in among the hay, a considerable quantity of *Danthomia spicata*. Not having seen it growing in that locality, I inquired where the hay came from and learned that it had been brought from the east. I carefully searched for the plant after this, in the fields and by the roadsides, but found none in that region. This was six or eight years ago, but who can tell how much of Erie Co. may now be infested with this scourge from that one importation!—F. H. HORSFORD, *Mass.*

**Agapanthus umbellatus,** or blue African lily, is a fine plant. It must have a good loamy soil, enriched with well rotted manure. I frequently shift it into larger pots, only a little larger than the preceding, till a ten inch pot is reached just before blooming. The offsets, if any, are removed from the parent bulb at each shift, until after the flower-buds have formed. When ready to bloom the roots may not be cramped for room. If

rightly treated, it will send up a stalk of bloom two feet or more in height, which will be topped with as many as twenty heads of beautiful flowers, which will come into bloom one after the other and will form a grand object. The agapanthus will bloom sooner, and when not very large, if it is not shifted so often, nor into such large pots. It requires an abundance of water when growing. —JOYCE.

**Sweet Peas Set to Music.**—In the corner of my fence the sweet peas sing a merry song through the summer months. The strings are fastened from post to post, and the vines clamber and cling to the very top, and have a way of blossoming on the lines and spaces, as if they were writing a musical poem for my daily inspection and delight. The butterflies understand it, and come every day to hover over the "notes" and drink in the sweet melody. I plant my seeds in April. Manure covers the ground all winter and in the spring it is dug into the soil. The best quality these lovely flowers have is, that the more they are picked the more they come; in fact, one must not let them go to seed if she wants blossoms, so they are



freely given away. The young ladies want them for corsage bouquets, and the young men beg a few for their coat button-holes. I make a great use of strings in my garden, and some rainy day I gather the stray bits that collect so fast around the house, and tie them together, then wind the whole on a stick. Going along the path, I see a morning glory swaying around, asking for something to climb on; out comes my stick from my pocket, and the vine is soon twisting away towards the top. Or a dahlia needs fastening, or the gladiolas need tying in. In fact, strings are "must-haves" in the garden, and ought to be handy.—SISTER GRACIOUS.

**Campanula persicifolia.**—Although this plant has been grown in gardens about 200 years, it is still very highly esteemed. There are very few plants in the herbaceous border that are more striking than this species. It has erect stems and lanceolate leaves. The flower spike is from 18 inches to 2 feet high; the flowers are blue and all intermediate shades to white. There are numerous varieties of it in gardens, and the following are well worth growing, not only as garden decorations, but for cut-flowers: *C. persicifolia alba*, *C. persicifolia alba fl. pl.*, *C. persicifolia cærulea fl. pl.* All the above forms will grow in any garden soil, but they well repay to give them good culture. They are easily propagated by dividing the roots or by seeds.—R. CAMERON.

**Jerusalem Artichokes from Seed.**—For forty years the seed of the Jerusalem artichoke has been an unknown quantity. Recently, however, it has been obtained and caused to germinate, in Corsica. The seedlings are said to be more prolific than plants raised in the usual way.—*Le Jardin.*

**Success with Tea Roses.**—A writer discourages the growth of tea roses because of the difficulty of wintering them. I have tea roses which I have wintered in my garden three to six years without difficulty, in a climate much colder than Ohio. Many things which are hardy there, need protection here (Muscatine Co., Iowa). I have never had the least trouble in keeping roses, providing I kept them dry. I have them pegged down before very cold weather, but do not cover till the last of November or first of December. Then I put a few inches of dry manure on the bed, and over this a foot of dry leaves. Over this I put a tight board cover 2½ feet high in the center and sloping to the ground on each side. The ends are left open so that the air may circulate, but extend far enough over the edge of the bed to keep the moisture out. Where the leaves were wet I have always found that the plants rotted in the spring.

I have about 200 roses, and have fought the slug with London purple for several years. I have never had to make a second application. I use ¼ teaspoonful to one gallon water, dissolving it first in hot water. I put it on with a common watering pot.—*Iowa Sister.*

**Marchal Niel Roses on their own Roots.**—Some of us have been taught that they don't do well, but, as I have some experience to the contrary, it may be well to report that two bushes, set last October, have up to this date given us, by actual count, 256 buds and flowers.

These bushes were grown from cuttings on our own grounds, the spring previous.—J. F. WILSON, *Piney Park, Lower Ga., June 9th, 1891.*

**A Beautiful Tree.**—In the lawn of my neighbor is growing quite a large tree—probably thirty feet in height, of the yellow-wood or *Cladrastis tinctoria*, which at this writing, June 1st, is a most beautiful sight. The whole top is a mass of bloom; the drooping panicles of white blossoms are from ten to twelve inches in length and are double-shouldered. The perfume is delicate, and it is evidently appreciated by the bees, whose humming is distinctly audible when standing near the tree. It is such a lovely sight that passers-by all stop for a second glance at it. I call attention to it because it is worthy of a much more general planting than has hitherto been accorded it. The trunk has a smooth bark, somewhat resembling beech, and the top is symmetrical, being equally useful as a shade or ornamental tree. It seems

to be perfectly hardy, and so far as we can judge from an observation extending over ten years, is entirely free from insect pests.

In this connection, it may not be out of place to say a word for the tulip tree, or *Liriodendron tulipifera*, for those who contemplate setting out trees on lawns or roadsides. One grows somewhat weary of the never ending procession of maples and elms, and at times longs for a break in the monotony. The tulip tree is a very handsome tree and adds a pleasing variety to the list.—WIRNE, *Port Jervis, N. Y.*

[In our own grounds, two faults have developed in the otherwise magnificent yellow-wood. One is that some of the leaves begin to turn yellow and fall long before frost. The second is the liability of the main branches to split near the trunk in high winds. It may further be said that the petioles drop constantly from early winter until the ensuing spring, littering the lawn objectionably. EDS.]

**A Tree that Foretells Rain.**—The journal "Ciel et Terre," recently called attention to a remarkable property of the Fountainebleau service-tree (*Sorbus latifolia*). The leaves, which are green above and white below, turn so as to present the white under surface to the sky just before rain. When the tree turns white it is a certain indication of rain. This vegetable barometer is easily procured and is, moreover, a highly ornamental tree.—*Translated from Le Jardin.*

**London Summer Flower Show.**—Flower shows are delightful as well as fashionable institutions in London, always drawing, besides a host of the "commonalty" a large sprinkling of the nobility and frequently some of the royalties also. They are held chiefly at the Crystal Palace, Sydenham, the Royal Botanical Gardens, Kew, and the Botanical Gardens, Regent's Park. At the last, the first summer show was held early in June, and was a brilliant success. It was hard to say whether the display was brightest among the formal array under the canvas tent or among the flower beds in the bright sunshine out-of-doors. Here the auriculus, and early bulbous plants, tulips, narcissuses and daffodils, gladdened the eye with their bright variegated abundance; while from the tent came the sweet perfume of roses, wonderful orchids and pyramids of azaleas. Heaths, marvelous amaryllis and dazzling pelargoniums were in full bloom. All of the best that art or nature could produce in the floral line was there displayed to the best advantage in profuse abundance. There was plenty for everybody to admire—from the rather stiff and conventional selected triumphs of the gardener's art, to the unrestrained floral attractions of the open air. Fairest of all, however, and most charming, were the throngs of fashionable beauties that outdid the brightest of the floral marvels in comeliness of form and variegated splendor. The prevailing color in the costumes was heliotrope, but far redder in tone than the pinkish blue blossoms that adorn the garden. With youth, beauty, rank and wealth everywhere, the choicest and costliest flowers glorifying the scene and filling the warm air with fragrance and the music of the Life Guards' or Coldstream Guards' band pulsating in sweet cadence around, a London flower show is a sight not soon to be forgotten.

**Floriculture as a Business.**—In a recent census bulletin it is stated that floriculture, though carried on as a business for more than 100 years, has increased greatly in the past 25 years. Of 4,659 establishments, more than half, or 2,795, have started within this period. There are 312 commercial floricultural establishments, owned and managed by women. All the establishments have in the aggregate 28 millions square feet of glass, covering over 891 acres of ground. They employ 38 million dollars of capital; give employment to 16 thousand men and 19 hundred women, who earned in the census year over 8 million dollars. The products were over 12 million dollars for plants, and for cut flowers 14 millions. The horticultural societies of the Union, 358 in number, assisted by the horticultural and agricultural press, have aided to bring the industry to its present large proportions. It is estimated that 80 per cent. of the whole business has been developed during the past 25 years. The improving and refining influence of this business on the many ten thousands who have purchased at these establishments, or who have obtained supplies through their agency, could not be stated in numbers, and can be only dimly appreciated.

**Truck Farming.**—The census office has recently issued some highly interesting statistics of truck farming in the United States, as distinguished from market gardenning, which is conducted so near to the local market that the farmer depends on his own team for transportation. The average truck farm is situated a great distance from the market in which its produce is disposed of.

It is estimated that upward of $100,000,000 is invested in the industry in the United States, the annual production being three-quarters of this amount, or $76,500,000, realized from 534,440 acres of land. In the work are engaged 216,765 men, 9,264 women and 14,874 children, who are aided by 75,868 horses and mules, and use nearly $9,000,000 worth of agricultural implements. The industry is carried on in nearly all the states, but the principal districts are a narrow belt on the South Atlantic coast and along the Mississippi Valley. The more fertile soils are chosen; labor and the railroad do the rest. The big cities are the best customers of the truck farmer, the wants of the people in the smaller centers of population being to a large extent supplied from the immediate neighborhood, and they take less per capita of that grown in other climates than their own.

The merchants of Chicago draw hither the fruits of Georgia, Florida, the West India Islands and Central America; the peaches and berries of Illinois and Michigan, Indiana, Ohio and Missouri; apples, grapes and pears from California; and cranberries from the marshes of Wisconsin. And the range of their distributive work is almost equally wide.

Few people have a correct idea of the effect this business has on transportation. In the season for most of the fruits special trains run each day from the produc-

ing districts to this city, the peaches and strawberries load down the boats which ply regularly between Chicago and the ports on the opposite shore of Lake Michigan, and hundreds of persons are employed here in the work of receiving, besides the thousands who find employment in handling the material at other points while it is being collected and distributed, after having been raised by an army of workers. And all this is of modern origin. The vast increase to human comfort permitted by the enjoyment of the products of other areas than those which surround the consumer, and the concomitant benefit to the many who, in this direction, minister to the supply of what may be called necessary luxuries to their fellow creatures, is the outgrowth of the present generation, which, by making railroad transportation far-reaching, speedy and cheap, has permitted the interchange of commodities on a scale that would never have been dreamed of by the people of fifty years ago.—*Chicago Tribune.*

**Unfermented Wine.**—E. Hulse read a paper before the Victoria Vegetable Commission, of Australia, regarding the use of unfermented grape juice or "temperance wine." The grapes are picked when they are fully ripened, and the juice extracted and bottled as soon as possible afterwards. The bottles are filled brim full and placed up to their necks in vats of hot water, within ten degrees of boiling point. When the must is as hot as the water, the cork is forced into the bottle, expelling a portion of the liquid. If the least portion of air is left between the cork and the liquid, the oxygen contained in the air will set the saccharine matter in the wine in motion, and fermentation will ensue. When the cork is forced into the bottle the liquid is in a state of expansion from the heat. As it cools it contracts, leaving a vacancy between the cork and the liquid; but the vacancy must not be an atmospheric chamber. The cork must, of course, be thoroughly air-tight. If fermentation does set in, it may be driven off by re-heating the wine.

The bottles are then laid on their sides in a cool place, and the organic foreign substances must be allowed to settle, so that the liquid may become clear. The settling may occupy whatever period the manufacturer chooses; sufficient time should, however, be given. The wine can lie six months or a year without damage. At the end of the settling period it should again be filled into bottles, the sediment being left behind. These bottles must be brim full, and should again be set in vats of hot water, heated up to the same degree, and corked in precisely the same manner as at first, using sealing wax to exclude the air. The wine is then left to cool in the ordinary way, and must be put away where the temperature is even and cool. It is now ready for use, and will keep just as long as it is kept free from contact with the atmosphere. This makes a very delightful beverage, which is entirely free from alcohol.

**My Thinking Chair.**—Out under an old apple tree is a rustic chair, and there I do my thinking. Try the plan, ye tired housekeeper, especially if your head has to be over the dish-pan for a part of every day, or the children are fretful, as the best little darlings will be sometimes. Sit down under the tree, or in the shade, and let the breeze and the bird songs smooth out the wrinkles. You know Mr. Gladstone, the G. O. M., weighed down by the mighty affairs of the nation, retires to a dense woods on his country home-place, and solves the mighty problems, while he cuts a tree down. Near my chair is a bitter-sweet vine, and this is making its way into the branches rapidly. We don't appreciate this vine enough, perhaps because it is so cheap. We can find it in almost any woods within a few miles of the cities, and can dig up a small rooted piece, which will soon begin to grow, if planted in soft soil and kept moist. It is a beautiful vine for a veranda, and the berries in the fall are very bright and keep well all winter, hung over the picture frames. American women spend too much time indoors. Let them have thinking chairs under the trees or on the piazzas. If the "think" turns into a "sleep" out in the pure air, so much the better for the tired nerves and lame backs, and it is wonderful how the bothers and the worries disappear when we have to leave our chairs and tackle the household cares again.—Sister Gracious.

My Thinking Chair.

**Cash Value of a Reputation.**—One of the speakers at a meeting of the Connecticut Board of Agriculture said, that when visiting the west during the berry season, he went to the market to look at the fruit and found that red raspberries from Central Illinois were selling at $3

per package. Pointing to another lot, he asked, "What do you want for them?" Answer, "$4.50." Surprised at this higher rate, he asked, "Let me see them." "No; —Parker Earle's name is on the top of those boxes, and we do not want to open them for any one." That name alone was sufficient to sell them at an advanced price. Mr. Earle had made a reputation by always furnishing the best, with no sham interiors. A similar case occurred with the owner of a fine pear orchard in western New York. The commission man in Philadelphia found that the kegs of pears were all good through the packages —there were no special selections for the exteriors, and no scrubby ones inside. The consequence was, that it was not necessary to open those kegs to purchasers in order to obtain an advanced price, and many of them were sold while yet on the cars, long before arrival.—*Country Gentleman.*

**How to get Rid of Moles.**—Soak grains of corn in Fowler's solution of arsenic and drop into the runs of the moles. Inside of forty-eight hours the mole will cease operations. The mole is said not to eat seeds. It is true the American mole does not eat them when they are hard; but when they begin to germinate and are soft, he does eat them; and the solution of arsenic, being almost tasteless and odorless, does not arouse his suspicion that it is not safe to go ahead.—D. W. F., *Hanover, Ind.*

**An Easily Made Garden Roll.**—Wishing to roll down some freshly laid road material in one of my garden paths I got out my Planet Jr. and taking off the drill attachment and putting on the broad wheel used in drilling seed, I wrapped a large stone in cloth and laid it on top of the tool. The arrangement gave me a narrow, weighted roller, and on pushing it along the path I soon had it nicely rolled down. The road material was a rather clayey sand. Gravel would have been too rough for such a light roller, but for the work in hand my loaded Planet Jr. did the business. After the work was done the stone was lifted off and the tool was as good as ever. The cloth on the stone prevented injury to the paint.—AMATEUR.

**New England vs. Old England.**—I have alluded to the general absence of walls or fences, not only to separate one villa from another, but to protect all from public intrusion. It is rare that there is any division between private property and the road along which the tram-car passes. This is enough to account for the fact that gardens, except on large properties, are rarely seen. The English cottage, with its strip of ground, cram-full of color, its paling and wicket gate, is unknown in the eastern states. In California the waysides are bordered with geranium, cactus or pampas grass, woven into an impenetrable hedge, behind which you see that in every available inch of ground arums are thrusting up their white cornucopias; eschscholtzias fling down their gold before the door, while roses enlace their white and crimson arms above it. True, nature asks little here from the hand of man, while in the east she requires to be fed and carefully tended. When I remarked how little floriculture seemed to interest the dwellers in New England, I was always met by the same reply: "Labor is so dear." "But," I objected, "with us the city clerk, returning to his suburban home at the end of a hard day, the railway porter, nay, even the laborer, who has been delving for eight or nine hours, will turn to with his spade at the bit of garden he has made round his cottage; and somehow the flowers seem to bloom there more abundantly than in the rich man's demesne hard by." The fact is, the true love of flowers, the patient, careful love—not the cupidity for cut roses at $2 apiece—does not seem to be inherent in the national character. In Miss Wilkins' charming tales of the New England middle class you see, by the way the flowers are mentioned, that they are an accident, not a daily interest in village life. In the cities men are prodigal of bouquets to the ladies they desire to honor, and a favorite belle is "bunched" to an embarrassing degree if she desires to appear impartial on the occasion of a great ball. But this is far away from the healthy pleasure that, in England, country folk of all ranks take in the rearing of flowers.—*Hamilton Aide, in Nineteenth Century.*

**Bury the Garbage.**—People with small gardens are often perplexed by the "waste" question. What shall be done with the rhubarb leaves, the turnip tops, the useless pea vines and other rubbish? Then, there is in summer the matter of the garbage and waste from the house.

The ground, the pure, sweet earth is the best disinfectant and deodorizer known. Collect all the waste material and bury it. It will soon decay and enrich the ground. To dispose of garbage, dig a hole at least 18 inches deep and bury it, covering it well with fresh soil, In this way a troublesome matter is quickly and easily disposed of and a good insurance is taken out against evil smells and sickness. There is no excuse whatever for the dreadful pail sometimes seen at the back door. Interment is the only safe and sure plan. In August weather it is best to bury house waste every day.

**Government Seeds Tested.**—Sometime last spring, a clergyman who boards with us and has no use for seeds, received several packets from a member of congress and handed them over to me. Most of them were old varieties which have been supplanted by better ones, and I did not care to give them room or waste time upon them; but there was one packet marked French Chartier radish, which, being a good variety of recent origin, I thought might take the place of a 5 cent packet in my regular supply of seed. On these packets I found printed, "Please report results," and with your permission, I will make my report through the columns of THE AMERICAN GARDEN. The seed was sown in a cold frame; and at the same time and in the same frame, I sowed French Breakfast radish, received from a commercial seed house. The seed came up fairly well, but it required some two or three days longer for it to vegetate than it did for the Breakfast, indicating that it was old seed. I did not count all the specimens of each and every variety represented in this one packet, but there were a half-dozen or *less* of the genuine French Chartier, a few each of red, white and

cinnamon colored ones with *rat-tail* roots, while more than half were *black* with the same rat-tail roots and tendency to run up to seed at once, and one cinnamon colored specimen with a root large enough for the table. Fortunately we had a good supply from the seed obtained from a commercial seed store, and did not have to depend on these for our table. A summing up of the total result would read somewhat like this: Some unreliable seedsman or grower of worthless seeds, found a market for his old stock without imposing it *directly* upon the public; the P. O. department was furnished with business to do for nothing, and M. C. had an opportunity of displaying his love for his constituents and reminding them that he might again want votes, at the expense of the government; while I was supplied with an item for account of profit and loss.—Wm. F. Bassett, *Ocean Co., N. J.*

**A Vegetable Man-Trap in Australia.**—There is in cultivation a small white-flowered greenhouse shrub, named *Bauera rubioides*, which belongs to the saxifrage tribe. It is a native of Australia and Tasmania, and is quite an innocent-looking little plant; yet in some parts of its native country it is said to have sometimes caused the loss of human life. The following account has been furnished by two gentlemen residing in Tasmania, both of whom have been entangled in its meshes, and only escaped with great difficulty. My friend, Mr. A. J. O., writes as follows:

"The bauera is not a creeper or climber, but only a plant that is weak in the legs, having a very thin stem, so flexible that it usually supports itself against its neighbors, growing up and becoming entangled with them. A bauera scrub often commences very insidiously, so that a person not used to it may find himself in the thick of it before he knows where he is, for at the outer edge of the patch the plant grows only as an erect little plant about 18 inches high, while in the very heart of the scrub it may reach 10 feet, or sometimes even 20 feet high. As you get into the thick of it you find it a more and more tangled mass, till you become at length so enveloped in it as to render movement almost impossible. You cannot cut it with an axe, because it yields and offers no resistance to the blow, and even when cut with a knife or bill-hook, the confused mass of tangled rope-like stems falls more closely about you. All you can do is to struggle and flounder on to your speedy exhaustion. Moreover, you cannot see where you are going, and may be within a few yards of the outside of the patch without knowing in which direction to go."

Another gentleman who knows the plant well, and who once only escaped from its embraces in a state of utter exhaustion, gives the following account:

"A really good specimen of bauera scrub occupies the whole of the ground, having either smothered the other vegetation or having covered ground once cleared by bush fires, and usually on low-lying ground. In the gullies leading down to such places it grows mixed with tea tree and large tussocks of cutting grass, and here you can force your way through it, though never easily. It is where it occupies nearly the whole ground that the real trouble is. The Bauera throws up from the roots, which grow pretty thickly together, a number of slender stems up to about half an inch in thickness and tapering very gradually. These are interlaced with one another in all directions, until the whole becomes one compact mass—if one can apply such a term to what has no solidity. I have seen it growing in this way to a height of seven or eight feet, the stems being as pliable as a cart-rope and almost as difficult to break. Of course, a track can be made through bauera scrub by cutting it with strong knives or bill-hooks, and then tearing and treading down the cut portion as you go on, but to the solitary bushman or explorer it is most formidable. He will perhaps try to wriggle along the damp ground under it, but he soon finds this to be impossible; then he tries to tear the stems apart and struggle through. When he is exhausted with this work he will perhaps climb up some old stump, and try to flounder along the top of the scrub; but he soon sinks helpless into the yielding mass. The most extensive and densest bauera scrubs are found on the cold, damp soils derived from the Silurian and Cambrian schists and clay slates west of Tasmania."

These accounts are interesting as showing what different forms the same plant may assume when growing under different conditions. The species here referred to is found in all southern and eastern Australia as far as Queensland, but it is only apparently in the damp soil and climate of western Tasmania that it attains the luxuriance of growth here described, and becomes a real danger to the solitary traveler, who may become heedlessly caught in its tangled meshes.—A. R. W., in *London Garden.*

**Bordeaux Mixture in Texas.**—Dr. A. M. Ragland, of Pilot Point, Texas, writes that several in that section used the Bordeaux mixture last season with success. A. M. Dougherty began, before the leaves started, to wash his vines, trellises and posts with a strong solution of iron sulphate. After the fruit had set, he began with the Bordeaux mixture and made three applications at intervals of ten days. He left some rows for comparison, and says that those not treated were almost ruined by rot, while those treated made a good crop. J. A. Henderson sprayed his vines four times during the season of growth, with good effect. The Pilot Point Society, at its monthly meetings, will give special attention to the study of vegetable pathology and entomology, in connection with their experiment station. This is a most commendable step. What are other societies doing?

**Strawberry Notes from South Alabama.**—The strawberry crop here was an unusually small one. The dry weather last fall prevented the plants making a good growth. The steady cold of the winter, late frosts and summer drought, all helped to shorten the crop; and yet, kinds that have for years borne but little did well, such as Bubach, Jewell and Jessie. The Nunan is mostly planted here, but being a failure this year, will, in the near future, be discarded.—Julius Schnadelbach, *Ala.*

**Grafting the Persimmon.**—Robert A. Mills read an interesting paper before the Florida Horticultural Society on the Japanese persimmon. After giving its history in America he said that he had 300 trees all growing on native stock. "My choice of all the processes for propagating the kaki is root-grafting on native persimmon stock, and if possible where the native tree comes up. The best size is ½ to 1½ inches in diameter at the crown. It is not a serious objection if they stand within a foot of each other, or the roots can readily be transplanted in grove form, and when the leaves are off and at the end of the following year root-grafted. Grafts will grow if put in from November until the leaf-buds begin to swell on the native persimmon. Kakis 'leave out' in this portion of Florida later than the native trees.

"Grafting is so simple a process that even a novice may succeed with very little previous experience. After selecting the stock to be grafted, it is cut or sawed off at the ground, or below the surface if the 'stock' is long enough to allow splitting and inserting the graft. The graft should be cut wedge-shaped, the slopes about three-fourths of an inch long, leaving more bark on the (to be) split stock. Then place a piece of old cloth or paper over the top of the stock and heap damp earth on it, just covering the top of the graft. Grafting wax is not required.

"Frank Phillips, a neighbor and expert nurseyman, has adopted the plan of cutting the stock to be grafted at an angle of 45°, cutting the sharp end square off about the width of the graft, and then applying grafting wax, as he usually grafts above the ground. His theory is, that the sloping cut will heal quicker than a horizontal one. I have adopted the slanting cut when grafting kakis, omitting the grafting wax, as I prefer the root graft and damp earth, but apply crude pine gum, using the cloth or paper for protecting the split from the soil falling into it until the healing takes place. (Crude pine gum is a valuable application to freshly pruned trees or to large limbs taken off when they are to be transplanted).

"In this vicinity one fruit grower has planted out twenty acres to kakis and several others have from a few hundred to a thousand or more.

"Very few insects are enemies to the kaki. An exception is the 'girdler' beetle, which is quite destructive to all trees it may attack, but its ravages can be checkmated if one will carefully gather the several branches in which the eggs are deposited (before girdled) and burn them."

**A Well Merited Kick at Transportation Weakness.**—The Philadelphia Produce Exchange delivers itself as follows:

"*Resolved; First*, That we pay no lump freight bills.

"*Second*, That after May 25 we pay no freight bills except those bearing shipper's name, with itemized freight charges.

"*Third*, When goods come as routed we decline to pay a higher rate of freight than that named in the bill of lading.

"*Fourth*, We protest against the diversion of freight to any other route than that selected by the shipper, and when such diversion shall be made by any carrying company to a slower route than that named in the bill of lading, we shall claim damages for any loss in condition of such shipments growing out of a delay in transit.

"*Fifth*, That we will demand payment for damage caused by delay in transit or from improper handling.

"*Sixth*, That we will render bills to the transportation companies for shortage in shipments at same price the balance of shipment sold for, and will in no case discount said bills.

"*Seventh*, That we recommend the appointment by the Exchange of a special committee of five, to consider all grievances arising in the transportation of goods, and with full power to act in case individual firms cannot get a satisfactory adjustment thereof, and to communicate with the Inter-State Commission as to our legal rights in the points submitted, provided, that any expense incurred by this committee shall first be approved by the Board of Managers.

"*Eighth*, That we recommend the Exchange to supply its members with issued tariff freight rates and with time schedules from all points, as may be required.

"*Ninth*, That we recommend the appointment by the Exchange of an inspector under control of the above committee to visit transportation depots and docks at any and all times when goods are unloaded and delivered to consignees, and that the Exchange shall request the transportation companies centering at this point to recognize the authority, and as far as possible, facilitate the work of this inspector, provided, that any cost of such inspector shall be defrayed by subscriptions from members of the produce trade.

**Plums in Louisiana.**—Plum growing in southwest Louisiana is gaining ground. Our soils seem to be fitted by nature to produce nearly all varieties of plums. The "Old Field," or Chickasaw is a success, and many of the fruits are excellent—very large, rich and juicy. The Wild Goose grows and bears right along. Mariana is healthy and strong. All the Japan family find a pleasant home in our warm climate, and come into bearing early. It is really wonderful to see them grow. Satsuma is something to be proud of. It commences to fruit early, and is very large; but for beauty of foliage, the *Prunus Pissardii* stands at the head. I crown-grafted a single cutting of the pissardii into the peach in February last; it is to-day, by measure, 3 feet 10 inches in height—a perfect beauty. The fruit is a little acid; said to be fine for cooking and preserving.—W., *Haasville P. O., La.*

**Large Sweet Potatoes.**—Keep the vines from rooting outside the row or hills. Keep free from weeds and grass, as they pump up the moisture from about the plants and obstruct the sunlight. One of the largest sweet potatoes I ever saw was grown in hard, black soil, by training the plant up the side of the house. This vine grew 20 feet long, and bloomed as freely as any of the other vines.—A CORRESPONDENT.

# FOREIGN NOTES.

RICH BEDS of phosphates have been discovered at Belgium.

THE OLIVE INDUSTRY in northern Persia realizes annually about $18,700.

THE ANNUAL EXPENSES for maintaining the Kew botanic gardens amount to about $80,000.

THE MIDLAND COUNTIES PANSY SOCIETY, has recently been organized in central England.

A VALUABLE ORCHID.—A specimen of *Odontoglossum crispum, var. leopardinum* recently sold for over $500, at the Fernside orchid sale.

ENGLISH ORCHID GROWERS are exceedingly slow in following the rules of nomenclature as laid down by the committee, says *The Gardeners' Chronicle.*

THE FUCHSIA PURITY is becoming so popular in England that it is rapidly superseding the old white favorite Countess of Aberdeen.—*L'Illustration Horticole.*

FRANCOIS WIOT, an eminent Belgian horticulturist, died at Liége, April 14, aged 69.

James Wells, a well known English gardener, died recently, at the ripe age of 104 years.

SOME ENGLISH GRAPE GROWERS advise the removal of shoulders from grape clusters. The reason for this is that the shouldered clusters are too large, and more difficult to pack. They are trimmed when young so as to grow long and slender, which is the desired form.

A CHRYSANTHEMUM SHOW IN BERLIN will be held from November 12 to 15. There will be 33 classes, and eight gold medals, 31 large silver medals, 38 smaller silver medals, and 31 bronze medals offered as prizes. The address of the secretary is No. 42, Invaliden Strasse, Berlin.

TO FRESHEN ROSES.—Cut roses which have wilted may be freshened by making two longitudinal cuts, at right angles to each other, for about one and a-half inches up the stem, and then placing them in cool water. The four quarters will separate, and even buds will open and remain quite fresh for two weeks.—*Garden.*

A MONSTER MARECHAL NIEL.—The plant was set out April 16, 1888, and in the first year after planting made four shoots, each 25 feet long, and bore over 200 roses before being planted twelve months. Next year the growths were 30 feet long, and produced over 2,000 roses. It is at present the third season carrying over 3,000 buds and blooms.—*T. H. Hanaway, in The Garden.*

PRINCELY LEGACIES.—Gustave Dippe, a late European seedsmen, bequeathed $75,000 for the benefit of the working gardeners and apprentices of Quedlinburg, and an equal amount to other artisans in that town. He also left $12,000 to the gardeners of Halterstadt, and $10,000 to those of Neundorf, as well as like amounts to to men of other trades in those places.—*Illustration Horticole.*

NEW ZEALAND APPLES.—The *Lyttelton Times*, of New Zealand dated February 23, says: "About 400 cases of this season's apples have already left Papanui for England. This is the commencement of a large exportation, one gentleman alone, in the district, having purchased fruit which will fill at least 5,000 cases." These apples arrived in London in good condition and commanded more than double the price of English apples.

SHADING GREENHOUSES.—Take one pound common whiting, one ounce of the best glue, one-quarter ounce bichromate potash. Soak the glue the day before using, melting it in a common glue-pot, and then dissolve the bichromate in warm water. Mix the materials and thin down to the consistency required. This compound after exposure to light is almost as adherent as oil paint. By reducing the amount of bichromate, the material can be made also retentive. A coat of this wash on the greenhouse will last the whole summer, and it is easier to wash off than the limewash. Stir constantly while applying.—*Gardeners' Magazine.*

CHEMICAL MANURES ON FLOWERS.—Forty plants of Princess Stephanie pelargoniums were planted in groups of ten, the groups being grown under exactly the same conditions, except that they received different manures. The first group was treated with a complete fertilizer, containing nitrogen, potash, and phosphoric acid, and gave 750 flowers. The second plot was treated with potash and phosphoric acid and yielded 560 flowers. The third received nitrogen and potash, and yielded 400 flowers. The fourth group was grown without any manure and produced but 330 flowers. All the plants were practically equal as regards height and leaf development.—*Revue Horticole.*

NEW CAULIFLOWER "HOHENZOLLERN."—This variety originated from a cross between the cauliflower Early Giant of Naples, and the dark green kale, Naples. The two forms do not blossom at the same time, so pollen was saved and the cross effected later. Most of the seedlings possessed the following characters, and the above named variety was selected from the best plants. Stem medium high; leaves bluish-green, strongly ribbed, white veined, and curled, especially at the edges. The head is entirely covered by the leaves until it is about one-half grown, when it gradually appears. It is of medium size, well rounded, and of excellent flavor, being particularly fine for salads. The leaves are also excellent when cooked like those of the kale. The variety is well adapted for market purposes, but as yet no seeds are offered for sale.—*Gartenflora.*

**Concise.**

A teacher in a suburban school, not long ago, gave her pupils twelve minutes in which to write an "abstract." A shoe was the subject selected by her, and the boys were to write in the first person. No limit to the number of lines or words was given them.

Most of the boys wrote—and erased—during the whole time allotted, but the teacher noticed one fellow who sat idle until the time was within two minutes of expiring. As the scholars filed out, she said to him, "Brown, did you finish your abstract?"

"Yes, ma'am," he answered.

Curious to see what he could have written in so short a time, she looked over the papers, and found this:

"I am a worn-out shoe; my coffin is the ash-barrel; my grave, the dump."

She says that almost as firmly impressed on her memory as this remarkable composition, is the expression of amazement on the boy's face the next morning when he saw the "100" mark on his paper.—*Youth's Companion.*

●

**The Rain of Darkness.**

Quidnunc.—Are you in mourning, Scribbler? I notice you always wear black now, when you used always to wear light colors.

Scribbler.—Oh, no I'm not in mourning; but I bought me one of these fountain pens a little while ago, and I find it cheaper to wear black.—*Boston Courier.*

●

Great works are performed, not by strength, but perseverance.—*Steele.*

●

If a man should happen to reach perfection in this world, he would have to die immediately to enjoy himself.—*H. W. Shaw.*

# THE QUESTION BOX.

*☞ It is the privilege of subscribers to ask us any questions about gardening in any department. All will be answered by specialists..*

** * * If answers are desired by mail, stamps for return postage should be enclosed.*

** * * Readers are invited to answer briefly any questions in the Box, whenever their experience leads to a different conclusion than the printed replies.*

14. **Manure for Pansies.**—I have read that stable manure is injurious to pansies. Is it true, and if so, what is best for them ?—M. I. S., *Suffolk Co., N. Y.*

Ans.—Well-decayed stable manure is first rate for pansies. They like a mellow, rich, moist soil. Fresh manure, or that which is not well decomposed, is hot and dry.

15. **May we touch the Flowers ?**—I have heard it said that if you touch a pansy (or any other flower) with the hand when it is growing on the plant, it prevents its going to seed. Is this statement correct ?—M. I. S.

Ans.—No. If it were a fact, crossing would be impossible.

16. **Why Carnations do not thrive South.**—I have for years tried to cultivate carnations, my favorite flower, but alas, with utter failure. If we put them out in open ground April 1st, they grow all right during April and May, and fail utterly after those two months to make any more growth or put out flowers. Can you suggest a remedy ?—W. M. C., *Guntersville, Ala.*

Ans.—Carnations do not like hot, dry weather. That, we fancy, is the main trouble with your plants. Try growing them in partial shade, in moist ground.

17. **A Christmas Pear.**—Please recommend a late pear similar to the Bartlett that will keep until Christmas or longer.—W. M. C., *Ala.*

Ans.—Winter Nelis.

18. **Espalier Pears in Tennessee.**—Can I plant standard and dwarf pears of the following varieties in espalier form, and depend on their succeeding in Nashville, Tenn., properly pruned, watered and fertilized, viz : Lawson or Comet, Keiffer, Idaho, Bartlett ; dwarfs seven feet apart each way, closely pruned, and standards trained according to the instructions in The American Garden?—Mrs. W. M. C., *Guntersville, Ala.*

Ans.—The standards would probably succeed, though we can not answer for Lawson or Idaho, those being comparatively new varieties. We should not plant dwarfs of the kinds named. A selection of dwarfs may be made from the following, suited to espalier training : Beurré d'Anjou, Duchesse d'Angouleme, Howell, Urbaniste, Beurre Superfin, Brandywine, Tyson, and Josephine de Malines.

19. **Starting Plants for the Window Garden.**—I have often heard June named as the best time, but Henderson's "Practical Floriculture" recommends the fall as cuttings started then give more healthy plants.—W. I. S., *Patchogue, N. Y.*

Ans.—Early fall or late summer is the best time, according to our experience.

20. **Rhododendrons in Iowa.**—Has any one succeeded in growing them in this state ?—E. L. J., *Muscatine, Ia.*

21. **Planting a Little Border.**—Next to the lawn, and running parallel with a neat wire fence and the street, I have a bed several feet long and about three feet wide. Further back out of sight I have annuals and hardy perennials, from which I might select for the border named. Would it be bad taste to fill it with a variety arranged in groups, each sort by itself, in an effective way as to height and color, with no turf and but little space between the groups ? Would this come under the head of "dowdy gardens ?" I do not care to fill the bed with one or two kinds only, if they can be tastefully arranged with different kinds. If one or two varieties only are used, would it be best to plant in rows ? If a variety, would it be well to group them in fanciful shape ?—S. I. M., *Long Island, N. Y.*

Ans.—In so small and narrow a plot, it would be unwise to divide it by strips of sod or break it up into fancy figures. Groups of narrow bedding plants of suitable size might be selected to give a pretty effect—pelargoniums, dwarf dahlias or cannas, dwarf nasturtiums, pansies, pinks, petunias and the like. But we should prefer to select different varieties of the same species for so small a bed. Mixed borders, to be satisfactory, should be of considerable size. If different species be used in groups, a better effect could be obtained than if mixed together.

22. **Potatoes without Tops or Roots.**—I planted potatoes of the Late Rose variety last spring that were somewhat heated in the hole. Well, young potatoes are forming on many of them without throwing out any top or root. There are hundreds of such hills, and many of the new potatoes are of the size of walnuts. I have before seen this occur in the pit, but not in the field. By what physiologic law do they grow ?—Benj. Buckman *Sangamon Co., Ill.*

23. **Rhododendrons and Magnolias in Iowa.**—Has any one succeeded with rhododendrons and magnolias in Iowa ?—Iowa Sister.

24. **Black Walnuts** are the most profitable nuts, as they seldom fail to bear a crop, and are not only good for man and beast but will make hens lay when cracked for them in winter.—C. H. E.

25. **Abundance Plum.**—Is this a desirable variety, and does it come up to all that is claimed for it by the nurserymen ?—F. S., *Philadelphia, Pa.*

Ans.—This is probably the same as the Botan, an excellent fruit, mentioned elsewhere in this issue. Set the trees in either fall or spring.

26. **Campanula Portenschlagiana.**—This beautiful little harebell is covered with flowers in the rock garden. It is a low-growing evergreen species, with cordate, bright green leaves, and grows from six to nine inches high. The flowers are pale blue and erect. It is a native of Dalmatia and grows there on walls and rocks. It grows very freely, and is well adapted for the rock garden.—R. C., *Cambridge, Mass.*

27. **"Pricking out Ferns."**—What is meant by the expression?—F. E. W.

ANS.—"Pricking out" simply means transplanting.

28. **Palms from Seed.**—Where can I find out how to propagate palms from seed?—F. E. W.

ANS.—The palm family is a large one, and seeds of the different species require to be grown differently, and require different periods for germination. In a general way it may be said that the seeds should be fresh. They should be sown in shallow boxes, well-drained and filled with ordinary garden soil, mixed with enough sand to make it moderately porous. Keep the boxes in a temperature of about 70°. As soon as the seedlings have made growth enough to be easily handled, they should be transplanted into small pots. They need air and light at this stage, but should be shaded from too bright sunlight. Give them plenty of water. Transplant to larger pots as the growth requires. Williams' "Stove and Greenhouse Plants" is an excellent book on these subjects. Price, $5.

29. **Exterminating Roots.**—Can you inform me how to kill grape vines and apple trees so that they will not sprout? What is the best month and method for success?—J. T. G.

ANS.—The only sure way is to pull the roots out clean, especially of the vines. Trees girdled in August usually die, root and branch.

30. **Easter Beurre Pear.**—Is it a hardy, profitable, late-keeping pear for market? If not, what is a large, late, hardy sort that will keep till March or April, and good for market?—M. S., *Michigan*.

ANS.—Yes, but it does not thrive over well in Michigan, and is not of the hardiest kinds. Winter Nelis would be better, but it ripens in early winter. We advise you to try Josephine de Malines.

31. **Pear Hedges.**—Would seedling pears make a good thorn hedge?—M. S.

ANS.—We should not select them for such a purpose.

32. **Seedling Fruit Trees Wanted.**—Where can I buy seedling stocks of western growers as quoted in Nursery Book?—M. S.

ANS.—Try The Storrs & Harrison Co., Painesville, Ohio; Professor J. L. Budd, Amy, Iowa; Phœnix Nurseries, Bloomington, Illinois.

33. **Fruit Tree Seeds.**—Where can I purchase seeds that will grow the first year?

ANS.—Thorburn & Co., and Peter Henderson & Co., of New York; Thos. Meehan & Sons, Germantown, Pa.

34. **Native Orchids.**—W. R. L. D.—Various short articles on the native American cypripediums may be found in the volume of THE AMERICAN GARDEN for 1890 in the following issues: March, page 159; April, page 215; May, page 311; October, page 597; November, pages 690 and 692. The numbers may be had at twenty cents each. The price of the bound volume for 1890 is $2.25.

35. **Back Numbers** of THE AMERICAN GARDEN may be had of any issue since January, 1887. Prices vary from fifteen to twenty-five cents each, according to their scarcity. Bound volumes for the years 1887, 1888 and 1889 may be had at $2 each; for 1890 at $2.25. Volumes will be bound for subscribers at seventy-five cents per volume, carriage to be paid both ways by the sender.

36. **Mt. Vernon Strawberry.**—L.—This has long been known as being the same as the Kirkwood, and not very desirable.

37. **Miss Blanche Ferry Sweet Pea.**—Y.—This is a fine variety, and remarkably floriferous. It is called a dwarf, but requires bushing or trellising.

38. **Price of Hamburg Grapes.**—A. S. N.—New York dealers are now (July 13) paying to growers 75 cents to one dollar per pound. Any prices paid to growers above these figures are very rare exceptions, although, of course, the market varies from time to time.

39. **Unfermented Grape Juice.**—L.—THE AMERICAN GARDEN method, successfully used for years, is as follows: The juice is squeezed from fully ripe grapes, boiled slowly till reduced one-half. Add a half-pint of granulated sugar to each quart of the liquor, ten minutes before removing from the fire. Then bottle, inserting the corks after cooling. This will keep for years without changing. When wanted for use, a large spoonful in a glass of water makes a delicious and refreshing drink. The invigorating and healthful qualities of the grape are thus preserved, without any of the objectionable features of fermented wine.

40. **Currant Wine from Pulp.**—L.—We have made good currant wine from the pulp left after jelly making, as follows: From ten quarts of ripe currants we squeezed enough juice to make nine tumblers of jelly. The remaining pulp was put in about five quarts of cold water and left to stand about twenty-four hours. Then it was strained, about two pounds granulated sugar added to the liquor, which was set away in a stone jar for three days, when it was poured into bottles, not corked, to clear. The bottles are kept even full, refilling as the water evaporates, and kept uncorked till the wine works clear, probably in two or three weeks.

41. **Roses for Kentucky.**—In the July AMERICAN GARDEN (page 450) "Subscriber" inquires for 12 hardy roses for Kentucky. We presume he means perpetual bloomers. The following list has always been hardy with us: Etoile de Lyon (Tea), Sombreuil (T.), Souv. de la Malmaison (Bourbon), Hermosa (B.), Mad. Jos. Schwartz (T.), Mad. Lambard (T.), Adam (T.), La France (H.T.), Coquette des Blanches (H.N.), Dinsmore, Marie Van Houtte (T.) and Homer (T.) There are several others, but the above are all good.—GEORGE THOMPSON & SONS, *Louisville, Ky.*

42. **How to Fertilize Lawn Grass.**—**M. M.**—The special commercial fertilizers for lawns are much superior to barn yard manure, being entirely free from weeds; some of them are odorless, and they can therefore be applied at any time. It is best to sow broadcast just before a rain or a watering, in limited quantity, and very evenly; too much will destroy the grass. Applied to old lawns, these fertilizers induce a rapid and luxuriant growth; they are very helpful, also, to newly seeded lawns after the first mowing.

A Lesson to American Forest Despoilers.

Tree planting by means of live fascines in the French Alps, where the forests were recklessly destroyed in the same manner that American forests are disappearing to-day.

(*See Professor Fernow's article in this issue.*)

# The American Garden.

*Vol. XII.* *SEPTEMBER, 1891.* *No. 9.*

## THE HOME GARDEN

OF THE FARM; OF THE VILLAGE LOT; OF THE TOWN; OF THE COUNTRY PLACE.

CAN there be a home without a garden? A home with all the pleasant, cheerful comfortable, endearing associations connected, not merely with the word, but with the idea; a home that is a delight in childhood, a satisfaction in manhood, a refuge and solace in declining years; a home that is constantly brought to mind, through association, by the sight elsewhere of a familiar flower, tree, shrub or useful vegetable; a home that clings to the memory, after years of separation, in distant places and amid different scenes and interests; a home that is the shrine of all that is dearest, the abode of all happiness, the treasure-house for whose dear sake all our thoughts are busy, all our labors undertaken? Isn't the garden the appropriate setting of such a jewel? Without the garden, wouldn't it be as uninteresting and forgetable as one of a row of city dwellings distinguishable from each other by the numbers only? It is the garden more than any other surroundings that gives comfort and happiness to the home. Of all, it is the spot longest and most fondly remembered. How many of the world's great warriors, statesmen, sages, poets, inventors, merchants and philanthropists have found their highest happiness and contentment in the multifarious occupations, quiet labors and absorbing studies of the garden!

The garden everywhere is a promoter of economy and health. In it nature pours forth her choicest and most wholesome gifts for the mere cost of seed and care. A home garden well attended is the most powerful foe of the sheriff and the doctor. In the farmer's garden the family have the vegetable, fruit and flower markets at their very door. The supplies offered are precisely those they want, exactly of the quality they desire and in the freshest and most wholesome condition, all at the mere cost of production.

What a source of endless interest and enjoyment to every member of the family is the trim little garden in the village lot! What healthful pleasure in preparing the ground and putting in the seed! What delight in seeing each plant appear, grow, blossom or ripen its fruit! What satisfaction in coöperating with nature in her marvelous processes! How much more palatable, yes, and nutritive and wholesome, too, the fruits and vegetables grown under one's own eye and care, than those picked up stale or wilted in the market or store! How far more beautiful and fragrant the flowers raised around the house than those seen elsewhere, even over the fence! What charming amusement and pastime for the wife during the husband's absence are the varied labors of the garden in the frequent monotony of village life! What a satisfaction to the husband is the hour spent before or after business in pottering in the garden! Oh, the village garden, the neat, trim village garden! And the town garden, and the garden of the suburban or country place; who does not know or cannot realize their added charms in contrast to the hard, grim grind of city life!

# THE GARDENS OF NEWPORT—IV.

ACCORDING to the elder Pliny, "Epicurus, that connoisseur in the enjoyments of a life of ease, was the first to lay out a garden at Athens; up to his time it had never been thought of, to dwell in the country in the middle of the town." But in these days, that is just the mode of life in Newport—a city by the sea, with its 25,000 inhabitants. While there are a few business thoroughfares and a considerable number of narrow, crooked streets, which took form long before the Declaration of Independence and without the services of engineer or road-builder, that are destitute of trees and without ornamentation, the city in its modern dress is an aggregation of forest, lawn and garden, each in its highest perfection. Here, as perhaps nowhere else, almost every one may dwell in the country, though in the heart of a town, and it is to enjoy such a life that so many families of wealth and culture come from all parts of the country and establish their summer homes.

Gardening has here been reduced to a fine art. It would be of little purpose to compare these creations with the famous gardens of antiquity, of which so much has been said in praise. In those combinations the useful was always blended with the beautiful; or perhaps it would be more just to say, a tree or plant was not esteemed less ornamental because it served a useful purpose in the affairs of every-day life. In the finest gardens of ancient Rome, cabbages were grown as freely as roses, and Cato speaks as highly of their excellences. Fruits and vegetables of every desirable sort helped to make up the arrangement, and, as Pliny represents the case, no one thought less of things because they were common and utilitarian.

From what we have already written about the gardens of Newport, one might be led to infer that to secure a beautiful display of foliage and flowers, the owner must have broad acres at command. But I propose now to give some account of a most attractive place where the work has been confined to a limited space, and original conditions were by no means especially favorable. It is the summer home of Arthur B. Emmons, of Boston, situated on the side of the hill sloping toward the water, and in full view of Newport's famous bathing beach. The house stands below the principal street, on a miniature plateau made by grading and leveling, the space so treated being barely sufficient for the residence, with a small semi-circular carriage-way in front on the upper hillside. This leaves a declivity at an angle of about 45 degrees in front, which becomes gradually less on the two sides as the hill slopes downward. The entrance is from a side street, a little below the highest point, about 60 feet from the house, the whole width of the lot being 200 feet, and the depth of that portion of which I am to speak, about 60 feet. Under ordinary treatment, this might be as uninteresting and cheerless a spot as are hundreds of which the reader, as well as the writer, must have knowledge. Let us see what there is here to admire.

On either side of the gate, as one enters, are three medium-sided maples of the variety known as *Acer Schwerdlerii*, whose foliage—bright crimson in early spring—changes gradually to bronze, and later in the summer becomes dark green. On the left is, first, a border of spireas, *S. Thunbergii*, than which there is scarcely a more beautiful species of low-growing foliage shrubs. Its numerous slender branches are crowded with intermingled leaves of green and gold through the late summer and autumn, and are all that can be desired. As a foliage plant, no other spirea can compare with it, though its blossoms, which appear in spring in advance of the leaves, are of but little account. Behind this bushy hedge stand a taller group of golden spireas, *S. opulifolia aurea*, occupying the hillside, and farther on, double lines of *Hydrangea paniculata grandiflora*. These occupy the declivity up to the privet hedge, which marks the line of the street.

On the opposite side of the path, near the maples, stands a deciduous or bald cypress, a group of retinosporas, spireas, variegated weigelias and numerous spruces, firs, etc, extending to the rear of the estate, which constitutes the southern boundary. On the northern side a hedge of tall golden spireas extends the whole distance, with numerous smaller plants in front. We have thus an outline of three sides, the dwelling, with its tracings of Japan ivy (*Ampelopsis Veitchii*) constituting the fourth.

The illustration shows the space in front of the house, which does not itself appear, the buildings shown being on a neighboring estate. The central group is surrounded by the carriage-way, the surface on the opposite side rising sharply to the privet hedge already mentioned. In this bed the first object of interest during July and early August is the mass of tall white yuccas, such as always present a striking appearance, and the wonder is that the several species are not more largely planted in private grounds. It is only within a few years that they have come to be appreciated at anything like their true value; but, though formerly little known, they are now to be seen in most of the Newport gardens which are under intelligent culture. About fifty specimens are found in these grounds, arranged mostly in groups, though in some instances dotting the borders as single specimens. They are not only beautiful when in flower, but almost equally so in the tropical appearance of their leaves at other times. Many of the yuccas are adapted only to hot-house culture, but several of the species are sufficiently hardy to be grown in the open air without the fear of harm from sun or frost. They are, so far as known, all natives of America, and are found distributed through the Southern States and Mexico in considerable numbers.

The specimens shown in the illustration belong to the species *Y. filamentosa*, which is the one here in most general cultivation. The specific name signifies thready, and comes from the abundance of thread-like filaments given off from the margins of the leaves, though in this respect it differs but little from some of the other kinds. Each plant produces 30 to 50 leaves, springing from a permanent root-stock, which rises slightly above the ground; they are nearly two feet in length and about two inches wide, fleshy, light green in color, with whitish edges, and sharply pointed. The flowers are produced on a long stem, four to eight feet above the leaf cluster, and are very showy. They are in panicles, creamy white within and of a greenish cast without, each floret, of which there are often as many as fifty on a stem, being some two inches long and an inch or more across. Such a plant, with its base of rich green and its elevated flowers, is always

VIEW IN THE GROUNDS OF ARTHUR B. EMMONS AT NEWPORT, SHOWING MASSES OF YUCCAS AND BOX.

beautiful, whether standing singly or in groups.

There are other species among the yuccas equally interesting and attractive that are also perfectly hardy in this climate. The *Y. angustifolia* has narrower leaves, 18 to 25 inches long, channelled on the upper side, sharp-pointed and margined with light red. These are often produced in bunches of 100 or more. The flower stem is sometimes naked to the height of three to five feet, and then crowned with a raceme of 30 to 40 blossoms, each two to two and a half inches long. These are greenish white, and very effective in almost any situation.

The sword-leaved yucca, *Y. flexilis ensifolia*, has its flowers slightly tinted with red on the outside, but its chief point of distinction is in its foliage, the leaves being two feet long, narrow, stiff, acutely pointed and margined by a hard and almost horny substance. A hedge of these plants would be impassable by man or beast, and, as the flower-cluster is from three to four feet long, it would serve as an ornament as well as a defence. There are many other species and varieties of value as hardy ornamental plants, but none, to be preferred to these.

The low, round-headed shrubs in this central plot and the similar group on the opposite bank are compact specimens of the old-fashioned box (buxus), and of the yew family (taxus). They are nearly two feet high and of about the same diameter, having been so well cared for that they look like simple balls of green leaves, scarcely a stem or branch being visible. Of late the box has mostly gone out of use for edgings and borders to garden walks, partly because of the introduction of new sorts, but more especially from the fact that such stiff and angular pathways are now seldom tolerated. But these plants are still valuable in many positions. It may not be universally known that there is one variety of the box which produces leaves margined with white, and another in which the foliage is tinted with yellow.

The yews are well-known plants, natives of Central and northern Europe, northern Asia and North America. They belong to the coniferæ, and constitute a genus of six or eight species and several varieties adapted to cultivation. They are known to botanists under the old Latin name taxus, which was used by Pliny, Virgil and other ancient writers. Some of them are especially adapted to cold climates and inhospitable situations, growing well in Siberia. "The yew," says an English authority, "is of geological antiquity; it formed part of the forests of Britain at a period long anterior to historic times. It is found among the buried trees on the Norfolk coast near Cromer. It also crops out in another forest now beneath the Bristol channel, in which, if there be any truth in bones, the elephant, rhinoceros and beaver roamed." Some of its specimens are very large, one known as the "Derby yew" in Derbyshire, England, having a trunk nearly 20 feet in circumference, with a spread of branches covering 70 feet. The age of this tree is estimated at more than 1,300 years. The trunk of the Crowhurst yew, mentioned by Evelyn, was found to be more than 30 feet in circumference, when measured in 1876, and it, too, is supposed to have seen more than a thousand years. There are many other noted specimens in England, but few or none of so great size in America.

The common or, as it is sometimes called, the English yew, *Taxus baccata*, is more widely distributed than any other, and by some it is held to be the species from which all others have sprung. It usually possesses a short trunk and a somewhat spreading head, being quite variable in form, though capable, in cultivation, of being brought to almost any shape and kept within desired proportions. The foliage is dark, giving the tree a rich and somewhat somber appearance. The leaves are small but numerous, closely arranged along the branches, linear, sharply pointed, glossy green above and slightly paler beneath. This is the largest species known, sometimes reaching 40 to 50 feet in height, with a girth of trunk 15 to 25 feet, though usually much smaller. As some of the sorts are more ornamental, this is not now much used in cultivation.

The variety known as *T. adpressa* is of much smaller proportions than the preceding, seldom rising more than 10 or 12 feet. The leaves are oblong, somewhat rounded at each end, small on the lesser branches, but larger and more sharply pointed on the leaders. They are on short footstalks, flat, somewhat divided, dark green above and much lighter underneath. As the secondary branches are very numerous, the little tree can easily be cut into a low, round head, as is here shown.

Doraston's yew, *T. Dorastoni*, is one of the most beautiful of plants. It differs from *T. adpressa* in having longer branches, nearly horizontal at the stem, but pendulous at the extremities. As the branches are in whorls, the drooping ends make it appear as an almost solid mass of foliage. But what is still more interesting is the fact that the dark green leaves when young are broadly margined with golden yellow, but when older become bright green, with margins of silvery white. The effect is striking, and when the species becomes better known it is sure to be a favorite among the ornamentals.

The so-called Irish yew, *T. fastigiata*, is of upright,

pyramidal form, and almost invariably assumes the singular shape for which it is distinguished, and is very distinct. The leaves grow mostly in tufts. There is a variety known as the golden Irish yew, with leaves green in the middle and margined with yellow. This may be grafted on the common stock with striking effect. Mr. Temple speaks of specimens with which he was familiar as having a cylindrical mass of black foliage 18 inches in diameter, solid from the earth up four feet, and surmounted by a solid, broadened cone three feet wide and as many high, of rich golden color. There is another variety, with its leaves blotched with white, which is beautiful. None of the Irish yews are so hardy as not to be benefited by protection when young.

*T. erecta* is easily trained to low, round forms, for which its mass of small leaves gives it a peculiar fitness. This bed has for its central figure a finely formed Colorado blue spruce, *Picea pungens*, with several Japanese maples and other hardy plants, togetherwith a few annuals to fill. It is almost a matter of surprise that so many plants can be used to advantage in so small a space with such excellent effects. L. D. Davis.

# SIXTY-FOUR MILLIONS OF DOLLARS.

THE COST OF SPOILING THE FORESTS—THE LESSON OF FRENCH EXPERIENCE—AMERICA DRIFTING IN THE SAME ROAD.

*By the Chief of the Forestry Division of the United States Department of Agriculture.*

IT IS an old observation that every body wants to learn by his own experience. History, it is said, repeats itself, and it seems especially the foolish actions of man that again and again reappear, in spite of the experience of past ages or neighboring people. One folly committed in all ages and nearly all countries is the irrational destruction of natural forests, and we are just now presenting to other nations the spectacle of the youngster who must learn by his own experience.

We could have begun in Asia, the cradle of humanity, and followed the wanderings of man to trace in his trail the consequences of forest destruction by which he has turned one region after the other into a desert, or has rendered them less fertile, less capable of supporting human life than they were before ; but my object is rather to bring home to the readers of The American Garden an idea of the consequences of such folly. I have selected from the classic work of the French Forest Administration on "Reboisement of the Mountains" two characteristic pictures, which largely explain themselves.

Briefly, the history of the folly which the French people now seek to remedy dates back to the French revolution, when the forest lands were handed over to the people individually, who, left entirely to their own sweet will and ignorance, cut the timber, burnt the forest floor and grazed off sod and young growth, just as is done in the Adirondacks and in every American mountain and woodlot to-day. The consequences were, first, that the waterflow was disturbed; torrents carried sand and debris into the plains below, covered thousands of acres of land, making them unfertile, and impoverishing whole communities. The reason for this deluge was found in the forest destruction. So far, over $30,000,000 have been spent in retrieving this folly, and a further expenditure of $34,000,000 is estimated as necessary to quiet the torrents and cover again the mountain slopes.

In the frontispiece illustration of this issue the first work toward such reforestation is shown, consisting in the building of live fascine works, made of willows, etc., across the gullies on and near the very tops of the mountains, where the danger begins. Further down, these works are supplemented by retaining walls, to allow the debris to settle and to retard the rush of waters. On page 521 the picture shows how, on the steeper slopes, it becomes necessary to cut trenches into the mountain side, in which to plant trees and shrubs. Often there is no soil left on these places, and soil for young seedlings must be carried in baskets to the trench.

The experience of the last 30 years in the French Alps has demonstrated not only that reforestation is the only practical remedy, but also that it is very difficult and expensive; and that proper treatment of the original forest cover, the application of "forestry," would have saved the losses by floods, furnished a continued supply of wood and timber and saved the great expense of planting.

Let us profit by this experience. Forestry is not to prevent the cutting of trees, nor does it consist in the planting of trees after the old ones are cut.

Forestry in a wooded country means so cutting the forest that the trees will improve in value until

maturity, and when mature, so removing the marketable growth that when it is removed, a young growth of the right composition and density will start on the same ground.

There is a spontaneous reforestation by nature going on, and if fire and cattle are kept out and man has not cleared too severely, nature will cover the ground.

To be sure, the cover may not be of a desirable kind, and even if desirable species are found in the young growth, to get the most useful material, man must assist nature and help along these better kinds in their struggles against others.

The aspen and some of the birches produce plentifully every year, and the seeds are winged and so light that the winds carry them over large areas. The wild cherry chooses the birds as means of transportation and spreading. The acacias of Australia have hard seeds that germinate but slowly and lie in the ground for years. If, however, a fire runs over and the rest of vegetation is destroyed, then their time has come, and a dense growth of acacias springs up.

Cut down the poplar, or the ailanthus, or the chestnut, and it will quickly send up shoots to repair the damage and defend its position. The post oak in the prairies relies upon its vigorous root to withstand the recurring fires, every year sending up a shoot to be cut off prematurely by fire or cattle, but in the end by sheer persistency gaining the ground.

Important conditions which decide the ultimate domination of this or the other tree or species are the varying amounts of light which the different species need or can be satisfied with, and their rapidity of growth, which gives them a chance of getting out of the shade.

The art of the forester rests in securing reproduction as well as in fostering growth by timely thinnings. To give advice as to how this must be done requires an intimate knowledge of the life history and behavior of each of the species that compose a forest. We have in eastern forests from 5 to 50 different species in combination, and only a charlatan would give advice off-hand as to how a wood lot should be managed. *The forester, like the physician, can prescribe only for given conditions after diagnosis.* Yet there are some principles which underlie each operation which can be briefly stated.

If we compare trees grown in the open field in the full enjoyment of light with those grown in the dense forest, we perceive great differences. Other conditions being the same, we will find that while the former have, during the same time, attained a greater diameter and have more and stronger branches, the latter excel in the length, straightness and cylindrical form of their trunks and have fewer branches, which die off before they are much developed.

The remedy against formation of strong branches and the best means of getting rid of the smaller branches without injury consists in growing trees in close proximity in the forest. In this way the sunlight, necessary to the development of branches, is cut off, and a clean shaft is the result. The shade of the dense growth is also useful in protecting the soil against the drying effects of the sun and wind, for by the moisture of the soil is the tree fed. Hence undergrowth is desirable if the crowns of the trees do not shade the ground sufficiently, and cutting it out is a mistaken operation.

Grasses and weeds which cover the ground, if there is light enough, are "curses" of the forest, for this lower vegetation evaporates much more water than tree growth, does not shade the soil efficiently, and is a sign that the crown cover is not sufficient, allowing too much sunlight and heat to reach the soil and drying it out.

Such grasses as *Poa flexuosa*, *Festuca nutans*, *Cinni arundinacea*, the partridge berry, ground hemlock and rhododendron are characteristic shade plants, but when fireweed, rosinweed, sunflowers, goldenrod and meadow grasses make their appearance, it is a sure sign that thinning is overdone.

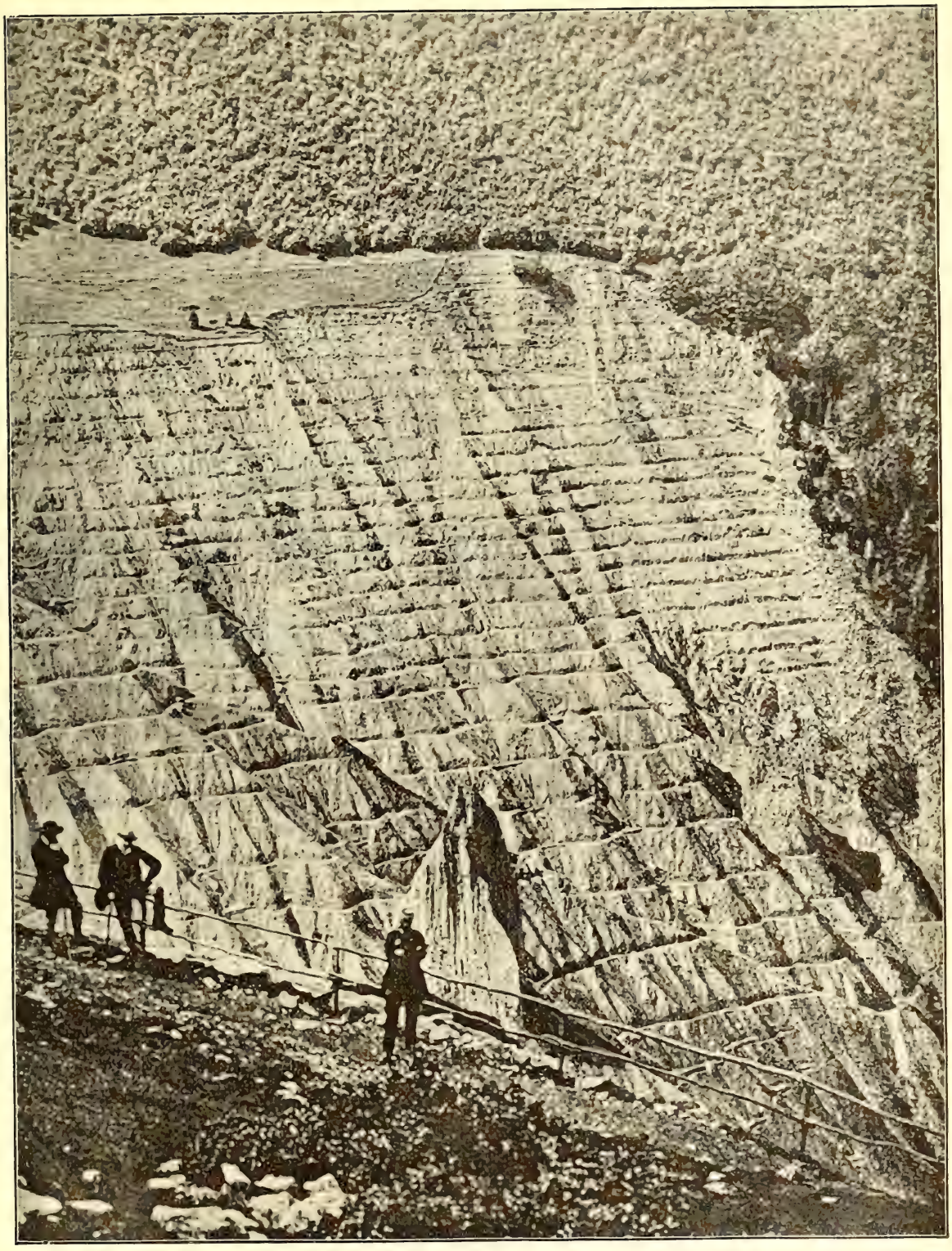
The whole secret of forest management consists in so balancing the light conditions that while the soil is protected against drying, straight trunks are formed without too much branching.

If we succeed in meeting these demands in regard to foliage and light, then we have established desirable forest conditions.

The axe is the instrument with which the forester cultivates. If you have a wood-lot, one from which the best timber has been culled, and without a promising undergrowth, the first operation may be to cut from a portion each year all the old and defective trees, leaving only a few of the most desirable to serve as seed trees. Then fence it securely to keep out sheep, cattle and horses. When the young growth is secured, then all the old trees must soon be removed to give the young growth a chance for development, light being the essential factor in this. Should there be vacant places larger than one or two square rods, it may be desirable to plant them with whatever kinds are suitable.

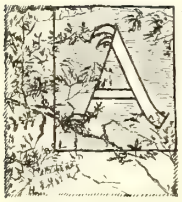
B. E. Fernow.

[TO BE CONTINUED.]



Forest Planting in the French Alps, by means of Cross Terraces.

# VEGETABLES IN EASTERN YANKEEDOM.



T A MEETING of the Boston market gardeners, an interesting lecture on gardening in Japan was delivered by W. P. Brooks, now Professor of Agriculture at the Massachusetts Agricultural College, who had previously passed twelve years as Professor of Agriculture in the land of the Mikado.

There, territory is assigned to foreigners apart from the natives, and they are not subject to the native laws, but are governed, under consular jurisdiction, by the laws of their respective countries. The Japanese farmers bear three-fourths of the total taxation of the country, which amounts to about one-sixtieth of the income of each. The population of the islands is about 38,000,000. These occupy an area which would hold about 7,800,000 people in the United States. The farmers compose about two-thirds of the total population, produce all the food and clothing of the people, and about half the exports, in the form of rice, tea, silk and wheat. The proportion of land under cultivation is only one-eighth, or 12½ per cent. In the United States only 15 per cent. of the land is under tillage, including mowing land, which is not included in the Japanese estimate. Indeed, there is very little of that kind of land there, as nearly all the cultivated land is under hoed crops. The land is largely along the mountain sides and is cultivated in terraces, which are banked up on the outside edges. The principal crop is rice, which is irrigated by conducting the mountain streams on to the banked terraces, an abundant supply of water being in this way secured.

The more level parts of the country are not cultivated, for the mountain streams which are one day babbling brooks are the next day roaring torrents which inundate the land, a large part of which is therefore unfit for cultivation. Owing to the absence of railroads and canals, and even of passable common roads, farm products are too bulky for profitable transportation to any considerable distance, as the charges would more than offset the price of the goods. Farming operations are therefore followed mainly near the centers of consumption ; but there every foot of cultivated land receives the utmost care. In the United States the unit of production is man ; in Japan it is the land. In the latter the amount of production per man per year is eight bushels ; in the former it is seven times as much. Generally, the land is very poor, but the climate is favorable, as it is particularly humid, with plentiful rainfalls.

The individual holdings are small, running from half an acre to an acre and a-half ; but two crops are raised in a season, which is a long one. The first is rice or winter grain or some hardy vegetable ; the second a garden crop.

There are two classes of land—the wet and dry. The first is valued at $180 and the second at $55 per acre. Wages are twenty cents per day. The Japanese spend much for the luxuries and little for the necessaries of life. Produce is sold at very low figures ; string beans enough for a meal for a good sized family cost only two cents ; two watermelons can be bought for one cent. Plants furnishing oil are largely cultivated, for, like the people of southern Europe, the Japanese eat very little meat, using oil instead. Of plants whose green leaves are used as food, 35 species are raised, and 30 of plants that afford starch, including 17 species of lilies, which are grown for their bulbs. Enormous quantities of beans are produced, including 17 species, each embracing many varieties. Vegetables supplying nitrogenous food take the place of meat ; some of these contain 40 per cent. of albuminoids. Many kinds of turnips are grown, but no Swedes. They are hung up, leaves and all, under the eaves of the houses, dried and made into soup. Enormous quantities of red radishes are raised, mostly three feet long, and are eaten raw or pickled ; but in the latter condition they have a disagreeable flavor to strangers. Parsnips are not favorites, but burdock roots are, and grow four feet long. Horse radish is cultivated, but not our kind. Tomatoes play a small part in the dietary of the people, but egg-plants are extensively grown and used in soups, and at the end of the growing season the nubbins are picked off and pickled. Peppers are not favorites. Ginger is eaten green. Onions, though not long cultivated, are taking the place of garlic. Sweet potatoes are very extensively cultivated and largely eaten instead of rice, for it pays to export the latter. Irish potatoes receive no attention, and the few grown are small and degenerate. The professor, however, raised our Early Rose and Beauty of Hebron at the rate of 300 to 400 bushels per acre,

without manure. Sweet corn is not grown, but field corn is, and is eaten largely in a green state. The Japanese squash is a miserable, small thing of little account. Melons are extensively raised, and made to produce enormous crops by pinching back the laterals. Long cucumbers are largely cultivated, but instead of running along the ground, the vines are raised on brush like peas. A field of cucumbers is spoken of as a cucumber orchard! Peas with edible pods are quite extensively cultivated. Celery and asparagus are neglected. Young bamboo sprouts, which are very sweet and wholesome, take the place of the latter.

A Japanese Produce Seller.

The Japanese idea of planting is to give each plant just the amount of light and air that experience has taught them will produce the largest yield. A hoe, somewhat like our grub-hoe, is the chief implement of cultivation. Its blade is about 12 inches long, and five or six wide. This tool takes the place of the plow; indeed, as there are very few draft animals, the latter could not be largely used. It is used very rapidly in cultivating, and not a weed is allowed to thrive, as every atom of fertility must go into the crop. Roots are harvested with the same handy implement, while grain is reaped with a tool like our corn cutter.

All kinds of manure, including the excrements of the people and of their few domestic animals, are saved with the greatest care. The excrements of every family are a source of income, and the farmer collects them from the non-productive classes, and carries them to the mountains in two buckets, suspended from the ends of a long pole, balanced across the shoulders. The price paid is eight cents per bucket. Next in importance for manurial purposes is fish. Huge piles may be seen along the seashore. They are carried into the interior like night-soil or on pack-saddles, if the farmer is fortunate enough to own a beast of burden. Sea-weed is largely used for manure, but since some sorts have been cultivated for food, the business has been less extensive. The Japanese feed the plant rather than the land, and the manure is applied several times during the growth of crop.

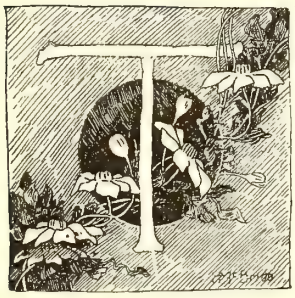
As regards individual wealth, a farmer worth $50

is considered well off. The amount of work done by a Japanese equals about a quarter of what would be expected from a man in this country, which somewhat equalizes the low price of labor. American kerosene oil has done a great deal to extend the working hours of the Japanese, who, before its introduction, relied on vegetable oils for light.

E. P. KIRBY.

# THE ECONOMIC PLANTS OF JAPAN—VIII.*

CITRUS FRUITS.



THE CITRUS family is grown all over southern Japan, and reaches northward with two long arms along the east and the west coast of the main island. On the east coast the northern limit for the hardier varieties extends to within some twenty-five or thirty miles of Yokohama, where, near the little town of Kodzu, several plantations may be seen. On the west coast the orange belt does not reach quite so far north, the climate there being somewhat colder. Oranges can be found on sale in every town and village all winter long. The earliest gathered fruits reaches Tokio about the middle of September, but they are small and green, and not at all comparable in quality with the later varieties. They are always shipped in light boxes of uniform size, with a capacity of about half a bushel. In packing the fruit is graded, each box containing from 80 to 250 oranges, according to the size of the fruit. The retail price in Tokio varies from 50 cents to one dollar per box. Each of the following species is represented by several varieties.

CITRUS NOBILIS, Lour.; Jap., *Mikan, To-mikan,* or *Oonshiu-mikan.* The Mandarin orange. To this species belong the finest and hardiest varieties cultivated in Japan. It is a small spreading tree or large bush, very bushy and branching, the branches for the most part almost reaching the ground, and spreading out over an area as large as the tree is high. The bark is green on the young wood, grayish on the older branches. Leaves oval, not large, dark green above, lighter below, margin smooth ; petioles not winged, and no thorns on the tree. The fruit is distinguished by being usually more or less oblate, and also because the peel separates most easily from the pulp. The sections of the pulp also are but loosely attached to each other, and though the rind is rich in oil, it does not have the pleasing aroma that the common orange is noted for. Some regard it only as a variety of

CITRUS AURANTIUM, L.; Jap., *Yudzu.* The common golden orange. There are several varieties belonging to this species cultivated in the extreme south.

CITRUS BIGARADIA, Duhamel ; Jap., *Dai-dai.* The Bitter orange. It has a large globular fruit, some varieties of which are edible. The flowers of this species furnish the neroli oil, valued as a scent. The rind is used as a flavoring material, and is also candied.

CITRUS DECUMANA, L.; Jap., *Zabon.* The Shaddock or Pommelmos is distinguished for the size of its fruit, which, ordinarily, is about six inches in diameter, and occasionally a fruit will reach the weight of 20 pounds.

CITRUS MEDICA, L., variety *chirocarpus,* Lour.; Jap., *Bushiukan.* A kind of lemon. It has an oblong cylindrical fruit, the apex of which is divided, forming half a dozen finger-like projections.

CITRUS JAPONICA, Thunb.; Jap., *Kin-kan* (literally meaning Gold Orange). In America called the Kumquat, which is the Chinese for the same meaning. It is a native species, forming a large bush or small tree, 12 to 15 feet high, the branches rather slender and willowy, without thorns. Leaf small, narrow, oval or almost lanceolate, blunted apex, petiole not winged. It bears a very small fruit with a sweet, spicy rind, little and very sour pulp, and many seeds. The trees cannot stand frost. In Tokio it is much grown in pots. Loaded with the little golden fruit, the plant is very ornamental.

CITRUS MEDICA, var. *limonium,* Risso. The Lemon.

CITRUS TRIFOLIA, Thunb. ( *Citrus fusca,* Loureiro ; *Citrus trifoliata,* L.); Jap., *Karatachi, Kikoku.* (Fig. 1). It is a deciduous and very hardy species. It bears a globular fruit which, however, is not edible. It is much used in Japan as a stock on which to graft orange trees, and even more extensively used as a hedge plant.

As will be seen from the foregoing species which have been enumerated, the orange family is well represented in Japan, and next to the kaki (persimmon) the orange is the most important fruit of the country, holding the second place only because its culture is limited to a smaller area. There are at least seven botanical species and several sub-species under culture, and a very large number of varieties. Many of the varieties, however, must be regarded mainly as curiosities, being almost worthless from a commercial point of view. Of the varieties which furnish really first-class fruit, there are comparatively few ; but some of these will take rank with the very best to be found in any country.

*Culture.*—As regards situation, the orange prefers high, dry land, and dislikes low, swampy soil like rice lands. The best orchards are on rolling, well-drained land and

on the southern or eastern slopes of hills and mountains. A northern exposure does not answer, and a western slope is not so good as an eastern one. As to soil, a loam or clay loam with sand and gravel enough to afford drainage, is the best for oranges in Japan. In many places where the slope is too steep to plant on directly, it has been terraced and one or two rows of trees planted on each level, so in places terrace after terrace of thrifty orange trees climb to the tops of lofty hills, or so far as soil and temperature will permit.

*Propagation.*—The Japanese orange grower grafts his trees; budding is rarely resorted to. For stocks he uses the *kikoku* (*Citrus trifolia*, Thunb.) for the less vigorous varieties, and the *yudzu* (a variety of *Citrus aurantium*) for the strong growers. The first named stock, in a measure, dwarfs the trees and carries with it all the advantages and disadvantages of dwarfs. It is claimed for it that it causes the tree to bear in five or six years from the graft, and sometimes as early as three years; that the trees can stand closer; that they are less exposed to injury by the wind; and that, being low, they receive more benefit from the reflected heat from the earth than taller trees. The main drawback is that the trees are short-lived, their average age being but fifty or sixty years. On the other hand, it is claimed that when the *yudzu* is used the trees seldom bear under ten years, but that the fruit, as a rule, is larger and more attractive, and that the trees will continue to bear for upwards of a hundred years. As a consequence of these characteristics, well-to-do growers who chiefly look to the enhancement of their estate in value use the more vigorous stocks for their plantations, while the poorer growers, who want quick returns, graft their trees on the *kikoku*.

The seed intended for stocks is removed in the fall, washed and buried in matting or straw sacks in a warm place, where it remains until spring. In March it is taken up and sown broadcast on a seed-bed, for which a warm place and rich soil is chosen The seedlings remain here till the following spring, when they are transplanted to nursery rows one and a-half to two feet apart, and six inches apart in the row. The tap root is shortened one-half to two-thirds of its length on the *kikoku* stock, but on the *yudzu* it is merely bent, this being believed to favor the development of fibrous roots. Here the *kikoku* remains until three years old when they are grafted, whereas the *yudzu* often remains until six or seven years old, their growth being slow while young. They are fertilized at intervals when necessary, usually with liquid manure make from night-soil.

The grafting is done about the middle of April, and without removing the stock. The cion is inserted as

FLOWERING TWIG OF CITRUS TRIFOLIATA.

close to the ground as possible. The method used is a kind of side-grafting, which is employed by the Japanese for all sorts of woody plants. The base of the cion is prepared with a slant, smooth cut, an inch to an inch and a-half in length, and the stock being cut off at a suitable place (not more than two inches above ground), a vertical cut is made on one side from above downward, separating but not cutting off the bark, and a thin sliver

of wood as broad as the wood on the cut surface of the cion. In this incision the cion is inserted, the bark clasping it on the outside, and secured with two or three straws of rice halm, which has been moistened and beated with a mallet to make it pliable. This is the universal and very excellent tying material employed by Japanese horticulturists. After grafting, the earth is heaped about the wound, and a flower pot is inverted over the graft. The cions are not tall, having usually three buds. This method is very successful. It is claimed that 98 per cent. grow, and the operation is simply and rapidly done.

When three years old from the graft and upwards, they are planted in the orchard. They do not receive much training. The Japanese have a theory that the natural and best shape of the tree is like that of the fruit. The trunks are usually about one and a-half feet long, and often the trees branch close to the ground. What pruning they get is usually done in March, and consists only in thinning out the branches when too thick; they are not shortened. Young orchards are often mulched when it is necessary to keep the soil moist, straw being the common material used. In the northern portion of the orange belt young trees require winter protection in many places. This is given by sticking leafy bamboo tops in the ground about them, and when this is insufficient, wrapping with straw. Large trees are often protected by erecting a light scaffolding of bamboo sticks over them, and covering the top with mats.

Bearing trees are manured every year, usually in April, and often several times during the year. Fish manure, made from sardines (*shime kasu*), is a favorite fertilizer for the orange, some growers holding that it increases the sweetness and lustre of the fruit above all other fertilizers. Liquid manure made from night-soil is also a common fertilizer.

*Gathering.*—Most varieties ripen in November and December. The fruits are cut off with shears and assorted into three grades. They are then packed in boxes made of thin cryptomeria boards. The dimensions are 14½ inches long, 11½ inches broad and 8½ inches deep. This size is universal. The lid is fastened on with wooden pegs, and the whole box tied about with straw rope. The fruit is not handled when wet.

*Storing.*—Most varieties will, with reasonable precautions, keep until April and get sweeter all the time. Those that are not shipped immediately are stored in baskets in some cheap thatched building erected for the purpose in some sheltered place. Other methods are sometimes resorted to. One is to wrap each fruit in a thin piece of waxed paper; another is to pack them in large bamboo tubes, and bury these in the ground; and sometimes they are packed between thin layers of oak leaves.

### DESCRIPTION OF VARIETIES.

The following eleven varieties undoubtedly belong to *Citrus nobilis*:

OONSHIU-MIKAN.—This fruit deserves to be placed at the head of the list, as it unquestionably is the best of all the Japanese varieties. The tree is of medium vigor, and spreading. Leaf large, with considerable luster. The fruit is medium to large, flattened, with sometimes a slight depression at the apex. Color orange or reddish orange; rind very thin and separating easily, sometimes with uneven surface, but smooth and with some luster; the more smooth and lustrous, the better the quality of the fruit. Under the rind is a thin layer of somewhat fibrous pith. The pulp divides with eleven or twelve sections, which separate easily from each other; each section is enclosed in a thin but tough membrane, which does not adhere to the flesh except on the outer or spherical side. The sections do not meet in the axis of the fruit, but leave an open space, or it is filled with pith. The flesh is of a deep orange color, very juicy and very sweet, pleasant when fully ripe, and totally seedless. It all dissolves in the mouth, leaving little or no fibrous residue. It is best in January and February, when it has been stored for a couple of months. A good-sized fruit weighs about one-quarter of a pound.

The tree is remarkably hardy. It is grown in districts where there are heavy snows every winter, and some frost. The Japanese themselves consider it their best orange. It has for some reason been dubbed "Satsuma" in California—a name that is as misleading as it is improper—it being not at all cultivated in the province of Satsuma. The characters denoting it are pronounced oonshiu (or unshiu, with short u). "Satsuma" is unknown as a name for this variety in Japan, and to avoid confusion in ordering, as well as for the intrinsic merit of the truth, the term should be dropped.

KINOKUNI-MIKAN (Syn. *Maru-mikan*).—Tree of only medium vigor, and leaves small. Fruit resembles the Oonshiu, but averages smaller, rounded at the base, with irregular surface; apex flattened and often depressed. Color reddish yellow, with some luster; rind very thin, and separates readily from the pulp. The latter has eleven or twelve sections enclosed in thin, tough membranes, which part easily from each other. Flesh orange yellow, juicy; each section has one seed, and occasionally none. Fruit open and pithy in the center.

O-HIRA-MIKAN.—Fruit medium-sized, flattened, and in appearance and character like the preceding variety, but more acid in flavor, and has eleven to thirteen sections, each containing one to three plump seeds; base depressed.

SHEN-SHIU.—Fruit medium to small, flat; base slightly folded; apex flat, or depressed and folded; color yellow, with some luster. Rind thin, smooth, easily separated; sections eleven to twelve, parting easily from each other; seeds few and very small; center hollow; flesh sub-acid.

BENI-ROJI.—Fruit medium, flattened, reddish yellow, the stem set in a circle of little rounded elevations; apex depressed; rind rather thick, and its surface somewhat rough. Pith under the rind slightly bitter. Sections eleven to twelve in number, easily parting from each other, and owing to a large opening in the axis of the fruit, they are crescent shaped. Seeds large, long and

pointed; flesh deep yellow; quality only fair, but appearance of the fruit fine.

KISHIU-MIKAN.—Very small and much flattened; color orange red; rind very thin, and no pith under it; peels easily. Sections crescent shaped, large and hollow in the center, but no pith; membranes thin; seeds few, very small, mostly undeveloped or deformed; flesh orange color, very sweet, delicious and juicy. It is, perhaps, the sweetest of the Japanese varieties, and it comes in market early and remains until March.

YATSUSHIRO-MIKAN.—Leaf large, of dark green color. Fruit medium to large, flattened and depressed at the apex, and a little raised at the base; color bluish-yellow; rind thick, and surface with many undulations; pith under the rind bitterish; sections eleven to twelve; membranes thick and part easily; axis hollow and pithy; seeds plump; flesh sub-acid. Second rate, but fine appearance.

FUKUSHIU-MIKAN.—The tree and leaf like the Kinokuni variety. Fruit medium, depressed at the apex and elevated at the base; color reddish yellow; rind thin, surface smooth; sections easily parted; seeds numerous. Quality poor, but fruit looks fine.

KAWA-CHI-MIKAN.—Fruit medium, roundish, much depressed and folded both at the base and apex; color reddish orange; rind thick, somewhat rough. Opening in the center large; sections separate easily; seeds few; pulp orange color, sweet and sub-acid. Quality good.

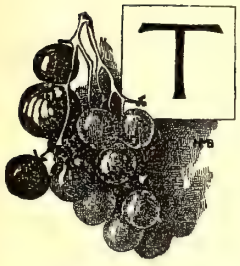
KOJI.—Fruit small, flattened, base and apex depressed and folded; color bright yellow; rind very thin; membranes thin. Sections part easily; center hollow and pithy; seeds plump, of varying sizes; flesh yellow, rather sour when first brought to market. It is one of the first that becomes marketable in the fall, which is its chief value.

SAKURA-JIMA-MIKAN.—Fruit small, flattened, somewhat depressed at the base and apex. Color deep reddish-orange; rind smooth, thin, separating easily; opening in center large and pithy; seeds few; flesh orange color, juicy, sweet. Quality fine.

SHIRAWA-KOJI.—Fruit small, flattened, depressed slightly at the base and apex; rind very thin, so as to show the form of the sections on the outside, smooth; color reddish-yellow. Sections eleven to thirteen; membranes thin; seeds small, but plump and numerous; flesh yellow, juicy, sub-acid; center open and pithy. This is quite a distinct orange.

*Kansas Agricultural College.* C. C. GEORGESON.

# MY RASPBERRY FIELDS IN 1891.



THE raspberry crop rushes the grower, because it must be picked as soon as the berries are ready—that is, every second day. Old berries either drop off or rot in the basket. It is important to have each picking a clean one, for if not, some old berries get into the baskets and start mould. This year is exactly right for the raspberry—not over hot and showers enough. The drought that damaged strawberries passed in time. The very first picking of raspberries was of small berries, but they did not continue to pick small. The crop is now (August 1st) passing off in finest order. The demand for nice berries, well handled, never slacks. I shall soon have finished marketing, out of my garden, about 100 bushels of as grand berries as I have ever seen. The wholesale price for bulk of reds has been 10 cents a quart. About one-tenth of the crop brought 12 to 18 cents. The opening rates for fine fruit begins at about 18. The price would not fall so rapidly but for the ignorance of a few growers, who go into market and offer fruit at low rates because they do not know its true value. Red raspberries at 10 cents average pay well. Last year I did not sell below 12½ cents.

The fruit should be picked every second day and at once placed in a cool cellar on the floor and marketed early the next morning. Of course, I do not refer to shippers who must ship as soon as picked. The highest profit is in growing just as large gardens as you can handle inside your own family, without hired help. Then secure, if possible regular customers, and see that they are carefully supplied with choice fruit. It is not just to growers to supply families with daily boxes, but there is no injustice in supplying, for canning, at wholesale rates by the quantity.

I find there is a difference of one-half in weight on crates, and sometimes more. This makes a vast difference in the net cost of handling, or in freight for a grower. I do not care to run the risk of advertising, but will say that the ideal is a 32 or 40-quart crate (I prefer the latter), with the best of light material, corner bound with sheet iron. These can be not only more easily handled, but occupy the least possible room. The Disbrow crate, of Rochester, may be mentioned as one of those built on this ideal. There are others of a superior sort, but most of these we see and handle in berry seasons are cumbrous and clumsy.

The proper method of growing is that method which will insure (1) moist soil, (2) bushes well up from tangling, (3) planting as close as will endure well, in order to get the largest return from the soil. For the first point, mulch between rows with coal ashes, sawdust, marsh hay or straw—whatever cheap material you can best obtain. But it is more important to grow the rows about five feet or six apart, and let the canes,

after spring cultivating, shade the ground. I tie my canes to a wire, fastened to stakes, set 20 feet apart. Having made sure of the bushes being kept well in place, I cut them off at six feet from the ground. This insures a shaded soil. The advantage is not small while picking, for we are quite well shaded ourselves. This plan refers, of course, to red raspberries. Blacks I tie to stakes, or cut short and leave them to themselves. But if you expect a raspberry stool to last many years, you must not cut it in summer. I can grow blacks for five years without renewal on a rational system, but close cutting spoils them in two or three years.

The varieties now of most value are, of reds: (1) Cuthbert for main crop. It is a wonderful berry, and in growth is superb. The fruit is always large and always abundant, even under neglect. It can easily be made to average as large as robins' eggs. Some neat baskets look like Bubach strawberries. In flavor it is not quite the best, but is very good. (2) For very early, one might plant a few of Thompsons', but it is not marketable except it is very early. (3) For a superfine flavor, plant a few Turner, if you are willing to take special care of them. Unfortunately, it easily runs wild and fruitless. (4) Shaffer's Colossal has a monstrous berry in size, is an immense cropper and excellent in quality. Be sure to try them canned. The flavor is best. (5) Golden Queen is a fine yellow, grows well, and bears admirably. It is much like Cuthbert. As a family berry, it is excellent.

I do not see what more could be wanted than these for family use. Perhaps a market list would be: Turner or Marlboro, Shaffer, Cuthbert. The last must always be held to cover main crop. It has color, solidity, size, prolific bearing and fair flavor. The main points required are size and color. But the Cuthbert cans well. It looks well after being placed in the cans. Housewives demand such a fruit. Shaffer sells less readily. It is, however, well to have a few rows of other sorts besides Cuthbert.

It is curious how much ignorance rules in fruit buying. Color is really a bad test. White currants are refused by nearly all buyers, but they are much the finer for eating, and they make a beautiful red jelly. Cuthbert is not the best red raspberry for a cultivated patch—Clarke, Turner and Pride of Hudson are far better—but its color is just right.

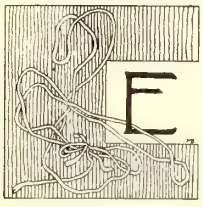
Of black raspberries, I believe the best early is Palmer and the best late Gregg. Good for succession are Palmer, Ada, Hilborn and Gregg. Earheart is a fairly good berry and has the advantage of giving continuous crops. For family use, a very good early sort is Davison's Thornless, owing to its lack of thorns, good flavor and fair size. Black raspberries sometimes glut the market, and should be grown extensively only as a crop for evaporation and export.

Any one can manage a raspberry row in his garden, and every family should have one. The three family fruits after apples are currants, cherries and raspberries. I allow seedlings to come up about my vineyard and so get new roots.

For a given space of ground in small fruits I get most money from blackberries; next, from raspberries. The blackberry, however, is not always a sure crop, even with Snyder, Taylor and Agawam. Besides, the advantage is with the raspberry for ease of culture.

*Oneida Co., N. Y.* E. P. Powell.

## SOME FINE EARLY APPLES IN MY GARDEN.



EARLY apples are not grown to the extent they should be perhaps, or would be, if all fruit growers really knew how many valuable sorts were at their disposal. Without much investigation, and content to do pretty much as his father did, or his neighbors do, the average grower or farmer, when he plants and orchard, orders only the Sweet Bough and Early Harvest, or Astrachan for his early sorts. Neither of these are inclined to bear early or prove very productive at first; nor is the fruit fair and fine while the trees are young. Thus the grower is not filled with rose-colored impressions, and he is apt to regret that he did not plant more late and less early apples. It is also true that the demand for early apples in the markets is much more limited than for the winter sorts. Ripe fruit in July and August is usually in great variety and supply; luscious berries flood the market, pears and peaches begin their plenteous reign. Like all these, the early apple is also perishable and cannot well be held for price. But notwithstanding all this and more, which I fully anticipate and grant, there is still a most important place in the galaxy of summer fruits which nothing but a good early apple can fill. If this were not so we should not have the fruit. Sated with the berry tribe, saturated with Georgia melon juice, and disgusted, shall I say, with the flavorless though attractive California fruits, how pleasant and delightful it is to turn to a delicious, tender, melting, juicy, sub-acid and beautiful July apple! So quickly grown; why it seems only a few short weeks ago that the trees were pink with blossoms, and but a few days ago that we sprayed the young fruit against the attacks of insects, and now here are the apples, ripe and mellow, dropping in our hands, or on the ground, if we are so careless as to permit it, for they were not made to linger upon

the tree. Yes, we need the summer apple and it pays to grow it. Even the private garden should have a tree or two of the best kinds, and the market grower, why should he be without it? Mine have never done so well as this season. They are large, smooth and fine, and ripen handsomely.

Among the varieties I have, Williams' Favorite is especially prized for its beauty, quality and productiveness. I do not find it in general cultivation in this part of New York state; in fact, few of the growers seem to know of it at all, though it is well starred in our pomological catalogues, as it should be. It originated at Roxbury, Mass.; size medium, Belleflower-shaped, smooth skin, light red ground, darker striped when exposed to sun; flesh yellowish white, tender and melting, mild, agreeable sub-acid, juicy and delicious. Though ordinarily classed as a fine market sort, I consider it a most delicious table apple for dessert purposes. Mine begin to ripen the middle of July and extend to September. It is very productive in my garden, which is a low, rich soil. I don't believe Williams' Favorite is grown to the extent its merits deserve. I have specimens measuring three inches in length by two and one half in diameter, and they are far more beautiful in marking than an artist could portray.

Then I have the Summer Rose, that pretty little apple of which I may have spoken before in the *Rural*. It is just as good now as when I urged readers to plant it years ago; as pretty and good as it well can be; small, of course, but awfully condensed. Mine is on Paradise stock and it bears "for crazy," growing very slowly of course. I mean to give it a more vigorous foundation if room can be found.

The Duchess is also bearing abundantly with me. I wish it were less acid, it grows so fair and even in size and it looks so handsome. But sugar is cheap now and that makes it more available than ever for cooking, and yet I prefer to grow the sugar in the fruit because it tastes better that way. But the Duchess is a valuable market apple and it ought to be in every orchard. It is perhaps the best contribution to our apple list yet received from Russia.

The Early Harvest, which Downing considered the best of all early apples, is indeed splendid with me this season, but it was not always so in the past, as it blossomed profusely, bore sparingly and dropped prematurely, though the tree is large and vigorous. This year, however, it is loaded, and the fruit is very large, fair and perfect. I have magnificent specimens measuring 10¼ inches in circumference, and the quality is excellent. Of course no grower should be without this familiar variety, even though it often bears poorly and behaves badly under the best conditions.

*Ulster Co., N. Y.* H. HENDRICKS.

# OUR STRAWBERRY TRIALS.

BEING A REPORT OF THE PRESENT SEASON'S RESULTS WITH NEW AND RECENT VARIETIES OF STRAWBERRIES ON THE RURAL NEW-YORKER EXPERIMENT GROUNDS.

MICHEL'S EARLY (Bisexual), originated with J. G. Michel, of Judsonia, Ark. Plants sent to us by C. P. Bauer, of the same place, April 1, 1890. It has been sold under the name of Osceola, plants having been stolen from Mr. Michel. June 1: Bearing abundantly at this date. June 8: Prolific berries, small to medium size; scarlet, firm, good quality. Its chief value is in its quality and earliness. June 10: Berries are small. June 12: Still productive. June 19: Season past. Probably the best in quality of the earliest kinds.

HOWARD'S NO. 6 (Pistillate), from A. B. Howard, Belchertown, Mass. June 1: First ripe this date. Heart-shape, scarlet, quite firm, sweet, mild, medium size, regular. Healthy plants. June 8: Petioles long. Berries ripening freely. Scarlet to crimson in color, red flesh. Size medium. Not so sweet as in the earlier and drier season. June 10: ripening freely. June 16: vines very productive. Berries of uniform size, small but sweet. June 27: Here and there a berry still ripening.

PARKER EARLE.—*The R. N.-Y.* has neither anything to add to nor to modify in what it has said regarding this fine berry. It should be tried in every part of the country.

PEARL (Bis.)—June 1: Begins to ripen. Rather long, conical, heart-shape, often narrowing toward apex, sometimes with a broad tip, sometimes slightly necked. Glossy crimson in color. Quite firm, red flesh, fine quality. Plants rather low-growing. Season medium. It is a fairly productive variety.

PERFECTION (Bis.), from Fred. E. Smith, Hudson Centre, N. H., April 23, 1890. June 1: Often ripens unevenly. Fine quality. Petioles tall, plants healthy. Only fairly productive. June 8: Medium as to season. Conically heart-shape, tapering to a point. Perfection in shape. Flesh light-colored, fine flavor. Berries large, not firm. June 16: Season past.

SHUSTER'S GEM (P.)—First sent here in May, 1886, by J. T. Lovett, of Little Silver, N. J. June 7, of 1887, our report was as follows: "Plants tall, vigorous. Often 30 berries to a stem. Often of irregular shape, often 'hollow hearted,' rather soft. Broadly ovate in shape. Tips sometimes whitish; scarlet color. Productiveness and size of berry are its chief merits. Large average size." Many reports of this berry which, during the season just past, has been perhaps our most productive variety, have since appeared in *The R. N.-Y.*, all going to show that it is unwise to judge of any new variety from a brief trial. June 4: Leaves large, long petioles, vigorous and healthy. Peduncles branching often bearing 20 berries. Suckers freely. Berries

usually heart shape, large and tolerably regular. Begins to ripen this date. Very prolific. June 8: Very productive. Berries heart-shape, often with a deep central suture as if two berries were joined together. Tips often flaring. Quality medium only. Firm for so large a berry. Large to very large. June 12: Still ripening lots of berries. June 19: Still bearing freely. Weather wet, but berries firm. June 23: Still bearing freely. Berries quite firm, though there has been a succession of rainy days. June 27: Still bearing a few.

All this considered, we must regard the Shuster as a remarkable berry—as good as Bubach in all respects and better in some as, *e. g.*, color, shape, productiveness, long-bearing period and retention of size during the entire season.

LOVETT'S EARLY (P.), from J. T. Lovett.—Plants of this variety were sent for trial a year or more ago, but we were requested to destroy the lot by the introducer as there was some doubt as to their purity. Plants (true) set out last spring were permitted to bear a few berries. They were crimson in color, conical in shape and of excellent quality.

SMITH'S No. 5, from Fred. E. Smith, Hudson Center, N. H., April 23, 1889. (Bis.).—June 8: Vines healthy. Berries medium size, regular, slightly necked. Quality mealy and mild. Season rather late. Not very productive. June 16: Berries small, but of fine flavor.

WOLVERTON (Bis.), from M. Crawford, Cuyahoga Falls, O. Originated by John Little, of Canada. Plants vigorous, productive, late. June 8: Berries heart-shape, regular often, with a central suture. Scarlet, white flesh. Quality fair. June 10: Ripening scantily. June 16: Productive. Berries uniform in size, though not large. June 22: Still a few berries. June 27: Past.

LOUDON'S No. 15 (Bis.).—June 8: Vines strong, medium height. Late. None fully ripe. Necked, heart-shaped; white flesh, somewhat mealy, good flavor. June 16: Fairly productive now. Medium size, good flavor. June 22: Not productive.

SMITH'S No. 4 (Bis.).—Plants medium height, healthy. Berries scarlet, medium to small in size, not very productive; flavor good. Not worthy of introduction.

SHARPLESS AND JESSIE (Bis.), from Jerry Dutter, Angola, Md., May 8, 1888. Plants fine. Late. June 8: Still many berries, both green and ripe. It is a little later than Sharpless, of a better shape, fully as large and of about the same quality.

VIOLA (Bis.), from S. K. Kramer, Galeanna, Franklin County, O., April 30, 1889. June 8: Plants vigorous, petioles rather long. Late, not productive. None ripe. June 18: Ripening well. Quality good and berry firm; in size from medium to large. June 27: Still a few ripe berries of medium size. Our notes as to this strawberry are imperfect.

MINEOLA (Bis.), from N. Hallock, Creedmoor, L. I. Berry roundish oblate with short neck, scarlet, large. Vines low growing. Quality fine. Medium to late, fairly productive. June 8: Not productive. June 18: Not productive—qnality fine. Berries of medium size.

STANDARD (nearly P.), from J. B. Campbell, N. Reading, Mass. Late. Rather low vines. Berries irregular, not very productive. June 18: Not productive. June 22: A few berries of medium size, qnite firm, mealy and mild in flavor. June 27: Quite a number of ripe berries, still of fair size, and a few green ones.

PRES. HARRISON (Bis.)—Scarlet in color, variable in shape. Medium as to season, not very productive. June 16: Berries small and firm, flavor good, not productive. June 22: A few berries of fair size and good quality.

FARNSWORTH (Bis.), from C. A. Green, Rochester, N. Y., April, 1891. Fine quality as judged by spring-set plants. Conical, glossy crimson. June 10: Quality fine.

LOUISE, from N. Hallock, Creedmoor, L. I., and from W. Atlee Burpee, Philadelphia, April 3 and May 20, 1888. (Bis.) Excellent quality, heart-shape, inclined to conical. Light to medium red; firm. Vigorous plants. As grown here it is not sufficiently productive. Season from medium to late. It is worthy of trial on account of its quality and the vigor of the plant.

BELMONT (Bis.)—Late. Plants healthy, but not very productive.

LADY RUSK, from Wm. Stahl, Quincy, Ill., April 4, 1890. (P.) June 8: Season medium, heart-shape, often as if two berries were joined together. Light-colored flesh, crimson skin, rather acid, productive. June 10: Ripening freely, berries sour. June 12: Height of season, berries smallish to medium, Quality medium; not remarkable. June 19: Quality sweeter. A few still ripening. June 23: Season over.

RACSTER, from John Racster, Davenport, Iowa. (Bis.) It appears that this should be called Beder Wood, (Moline, Ill.) the originator. Mr. Wood, as our trustworthy authority, Mr. Crawford, states, allowed a few plants to be tried by one George Ashford, of Iowa. He propogated a stock, and a neighbor (Racster) introduced them under his own name. June 8: Plants fairly vigorous, berries large, heart-shaped, regular, crimson. Round tips, short neck, quality fair. Productive. A few still ripening,

GEN. PUTNAM, from J. H. Hale, South Glastonbury, Conn., August 13, 1890. (P.) Strong plants. Berries between crimson and scarlet, regular in shape, often nearly as broad at tip as at stem, though not coxcombed. Quite firm, large size. not very productive, good quality, mealy. June 18: Flavor excellent. A few still ripening. June 27: A few ripe berries, rather soft.

CLOUD'S SEEDLING, from A. B. Coleman, Princeton, Ky., April, 1889, has never done as well here as in many other places South. The plants are hardy, medium as to season of ripening. Berries heart-shaped, inclined to crescent shape, medium size, regular, sour. It is a fairly productive variety.

SAUNDERS (Bis.) is a promising variety from Canada; spring-set plants.

JESSIE does not thrive.

YALE, from S. Hoyt's Sons, New Canaan, Conn., September 12, 1888 (Bis.)—Late. June 8, not ripe.

June 12: Ripening freely now. Dark red color and dark red flesh. Large, to very large, good quality, roundish, heart-shape, often with a slight neck, generally regular, often ribbed, but not coxcombed. Vine healthy. Prolific at this time—more so than in preceding years. June 19: Still a large number of green and ripening berries. June 22: Of all the berries ripening *at this date*, Yale is preferred for quality, shape and productiveness. It is a fine late berry, never before quite appreciated as such by *The R. N.-Y.*

CLARA, from the Cleveland Nursery Co., March, 1889 (Bis.)—Plants healthy, berries fair quality, conical, necked. June 18: Many large berries ripening, and many green still. Quality fine. June 22: It is now bearing large quatities of berries both ripe and green of medium to large size. It appears to be later than Gandy. June 23: Suffering from rain. Berries soft and decaying. June 29: A few green berries. Season practically past.

EUREKA, from the Cleveland Nursery Co., Cleveland, O., March, 1889 (nearly P.)—June 10; just beginning to ripen. Large size, flavor medium, June 19: Large number of green berries. Much the same may be said of this as of Clara. This season both are later than Gandy, of good shape and fair quality. June 23: Berries soft and decaying.

SEEDLING No. 3, from T. R. Hunt, Lambertsville, N. J. (Bis.)—Plants thrifty. Berry medium red. Conical, heart-shaped, often with truncate tip—sometimes green. Rather acid. June 10: Generally green tip. Quality medium—quite productive. June 12: A promising late berry, now at its best. Heart-shaped, inclined to conical. Good quality, large to very large. A handsome berry. Vines healthy. June 19: A few berries, both ripe and green. June 23: Past.

SEEDLING No. 1 (P.), from T. R. Hunt, as above.—Vines vigorous. Medium as to season. Heart-shape, large, regular, often with white tips, colored flesh, medium quality. Much like No. 3. The quality is not so good. June 19: A large number of ripe berries. More productive now than No. 3, with an equal number of green berries. June 23: About past.

EVERBEARING, from Seth Winquist, Russellville, Oreg.—"a chance seedling of 1882" (Bis.)—Thrifty vines, suckers freely. Berries heart-shape, regular, glossy crimson medium size, fine quality. Spring set plants.

TIPPECANOE, from M. Crawford, April, 1890.—Berries large, heart-shape, truncate, scarlet, rather soft, mild quality—not very productive. These plants have been interfered with by potato vines.

AUGUR'S No. 70 (P.) or MIDDLEFIELD, from P. M. Augur, Middlefield, Conn., August 24, 1887.—Fine plants, large leaves on tall stems. Berries light scarlet, fine flavor, not firm. Heart-shape, very regular. Suckers freely; productive. It is a fine home berry. Mid-season.

WABASH, from J. A. Foote, Crawfordsville, Ind., September, 1887 (Bis.)—Berry irregular, dark red, flesh red—finest quality. Harmed by potato vines.

MISCELLANEOUS.

Edgar Queen (J. C. Vaughan). Spring-set plants.

Shuster's Gem up to June 12 was our most prolific variety, and the berries were large during its entire season. It lacks in quality and might be a better shape.

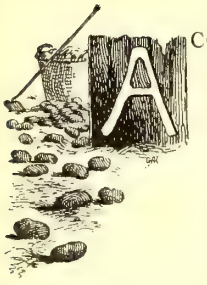
Hampden is not remarkable in any way. The height of its season this year was June 12. Peduncles weak, and the berries lie on the soil. Medium size, running to both small and large. Red flesh, not high-flavored.

Gandy ripens late, and is of excellent quality. Heart-shape, generally regular. Large to very large.

The season was dry in the early portion, then wet, and finally, very dry. Soil a rich, mellow, sandy loam.

E. S. CARMAN.

# THE FAMILY FRUIT GARDEN.



A CORRESPONDENT says: "Cannot you direct those of us who wish to set out a small garden of fruit for home use so that we shall avoid mistakes in varieties, culture and prices, and get returns as soon as possible?" That is exactly what a fruit lover would like, and I will undertake to do it in very few lines, which I trust will be clear enough.

(1) Do not attempt too much. Get catalogues of the reliable firms. Burn up all that look like circus posters, and consult carefully the sober ones.

(2) Get your ground *clean* and well drained. Be prepared to carry off surface water so that the ground shall not be washed. Get out the quack roots beforehand.

(3) You want the following fruits: Strawberries, raspberries, blackberries, currants, gooseberries, grapes. Around the plot, or across it, should run rows of cherries, plums, apricots, quinces and peaches, if in a peach climate. The size of the plot is your business. Better small to begin with, during the kindergarten period, which all fruit growers have to go through.

(4) For strawberries, select Cumberland and Bubach. You will have time to add more, but these two will fill your soul as well as your mouth. Grow them in hills till you know how to manage rows.

(5) For raspberries, select Cuthbert and Golden Queen. For blackcaps, take Palmer and Gregg. For purple, take Shaffer's Colossal. Grow all of them in rows six feet apart. Tie the canes to wires fastened to posts twenty feet apart. Cut back to five or six feet. Set blacks four feet apart in the row; reds one foot apart.

(6) For blackberries, select Agawam and Taylor. Set them on one side where they can have the ground

to themselves. Hoe for two years, then let them take care of the ground themselves. Only cut out dead canes and cut back new ones to five or six feet.

(7) For currants, select White Grape, Fay and Versailles. Don't buy the Cherry currant. Set these in rows three feet apart in row.

(8) For gooseberries, take the large English sorts if your ground is high and sunny and soil is strong. If not, take the American, Houghton or Smith. These do not differ much. We will give you something better in a few years. Set like currants.

(9) For grapes, begin with Worden, Diamond, Brighton, Niagara, Herbert. Herbert and Brighton must be planted intermixed with the others; that is, if you get five vines set them as I have written the list above, and eight feet apart. If you want a vine for house or barn, take Worden or Diamond.

(10) A good plan for a plot is rows of grapes ten feet apart; rows of currants, raspberries and gooseberries half way between. Strawberries may be planted and grown for two or three years under the grapes; blackberries repeatedly.

(11) For prices consult catalogues. Grapes, 2-year-old vines, large and well-rooted, should cost about twenty-five to forty cents each; strawberries, fifty cents a hundred; raspberries, two dollars a hundred; blackberries, three dollars a hundred; currants and gooseberries, four dollars a hundred for fine plants. I have nothing for sale at any price, at any time. Do not write. Do not buy of agents; send direct to safe firms.

(12) You have no extraordinary lessons to learn about trimming. Use your brains and your hoe; these go well together. You will not succeed without both. As you go on, you will find out a host of things and facts.

(13) Begin with a little memorandum book, in which you set down the names of all sorts and specify position. No system of labeling in the field ends anywhere but in confusion of mind and vexation of spirit.

(14) Don't write your experience for the papers before the third or fourth years, because you will change your mind. Some of us have a great deal to be sorry for, and to rub out, if we could.

(15) Dear amateur, go ahead! You will succeed if you deserve to. If you are a humbug, fruit will have nothing to do with you.

*Oneida Co., N. Y.* E. P. Powell.

# VINTAGE TIME IN CALIFORNIA.

THE GOD of day has just peeped through the clouds above Old Baldy as we mount our horses for a ten-mile ride among the vineyards of San Gabriel Valley. There is a hint of coolness in the fresh breeze that sweeps away the dense clouds of dust, rising at every step from the sun-parched vegetation; and looking upward, we note that Old Baldy has put on a snowy night-cap between darkness and dawn. The roses of June are still lingering, the stately eucalyptus and fern-like pepper are green with the greenness of springtime, yet, only twenty miles beyond is wintry desolation! What contrasts! Many thousands of acres are planted to vines in California, wine and raisin making being important industries. A close estimate gives 150,000 acres, divided among about 5,000 vineyards.

That of San Gabriel comprises nearly 1,000 acres, planted to a dozen different varieties of vines. Those thriving best in this location are Mataro, Carignau, Grenache, Trusseau, Berger, Folle Blanche and Zinfandel. The Folle Blanche, Carignau and Berger are wine grapes, producing angelica, port and hock, respectively. The sweet Muscatel is used for raisin making.

At this season the grounds are swarming with vintagers, most of them being Chinamen, whose broad, basket-shaped hats, dotting the long aisles of green, are not unlike an array of toad-stools. As fast as the bunches are severed from the stems, they are tossed into baskets borne upon sturdy backs, and then carried to the roadway to be dumped upon the ever increasing heaps that await the carrier's cart. A bright-eyed señorita, the overseer's daughter, picks up a six-pound bunch from the mound and offers it to us with a laughing comment in broken English. We essay a reply, but our Spanish being on a par with her English, the talk languishes.

We follow the carrier's cart as it makes its rounds, and finally bring up at the crushing room, where wine making is going on in its first stages. The press, which is operated by steam, receives the fruit as it is thrown from the cart down a sluiceway, and it is crushed upon a serrated cylinder; the juice, freed from stems and skins by a wire screen, is then passed through a pipe to the fermenting vats below. Nothing goes to waste; not even the skins and stems, which, dried, are used in firing.

Raisin making is a simple process. When the grapes are perfectly ripe, they are picked and laid in shallow, wooden trays between the rows of vines. Here they remain from two to three weeks, being turned occasionally so that the sun may dry every drop of moisture. They are then gathered up in sweat boxes, taken to the packing house, sorted and packed.

When the vintage has ended, the vines are allowed to rest until December, when they are pruned. They are set about eight feet apart, which allows room for tilling.

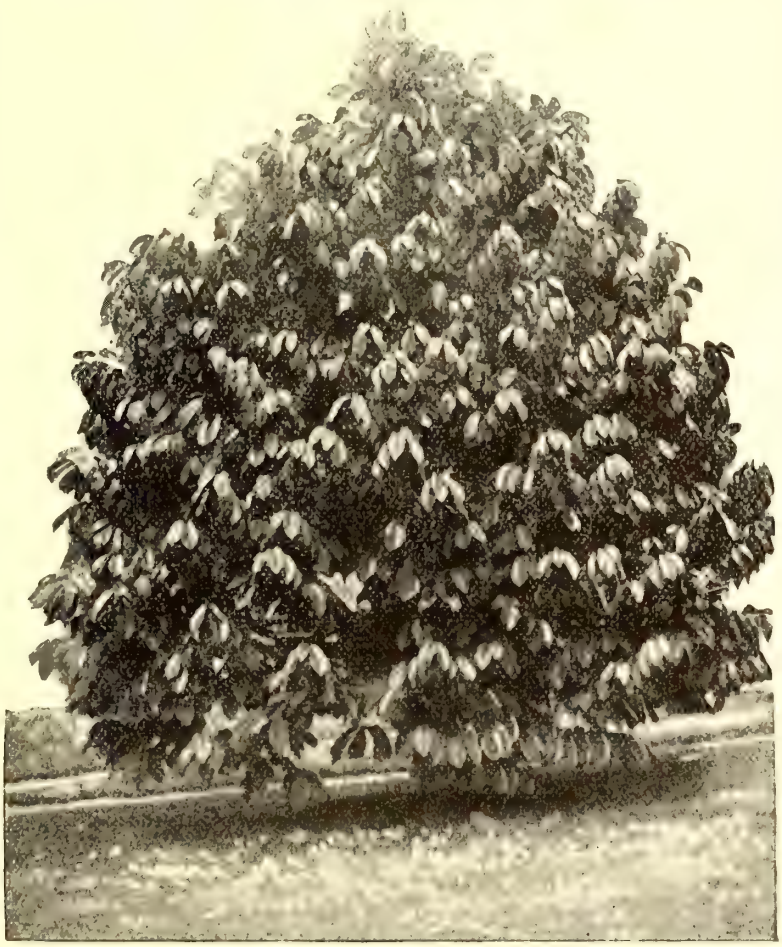
The California grape raiser depends largely upon irrigation, and this is resorted to more frequently when the soil is light and sandy than when it is of "adobe," which holds water a long time. The presence of continued moisture in the atmosphere induces fungoid diseases; therefore those localities furtherest removed from fog districts are best suited to vine culture.

J. Torrey Connor.

# THE PAPAW.

WHAT tree is this? asked one of the most noted of American horticulturists, when on a visit to the Rural Grounds the other day. It was the papaw, *Asimina triloba*, which is not hardy at the home of our visitor. Though a native in the woods of Bergen county, N. J., it is unknown as a fruit to the people of the neighborhood.

The specimen whose portrait we give was transplanted about ten years ago, from the border of a low, swampy field. It is now about ten feet high, and well clothed with its distinctive, somewhat tropical looking foliage. This tree began to fruit three years ago. This year it is bearing abundantly, sometimes singly, again in pairs, triplets, quadruplets, while we find as many as eight and ten in a cluster. The specimen shown on page 534 was taken from the tree July 6. It ripens easily before frost, and the banana-like flesh is relished by some, though deemed insipid by others. It grows from 3 to 4 inches in length by an inch in diameter, being of a long cyndrical shape, rounded at either end, the skin very smooth and of a greenish-yellow color when ripe. The tree blooms early, before the leaves appear. The three calyx petals are green, and within are two whorls of wavy, dull purple petals, three in each whorl. In a ball as large as a pea are the stamens, surmounting which is the pistil. The flowers are about an inch in diameter, with the general form of a little cup. The leaves push just as the tree is in fullest bloom.



THE PAWPAW TREE (*Asimina triloba*).

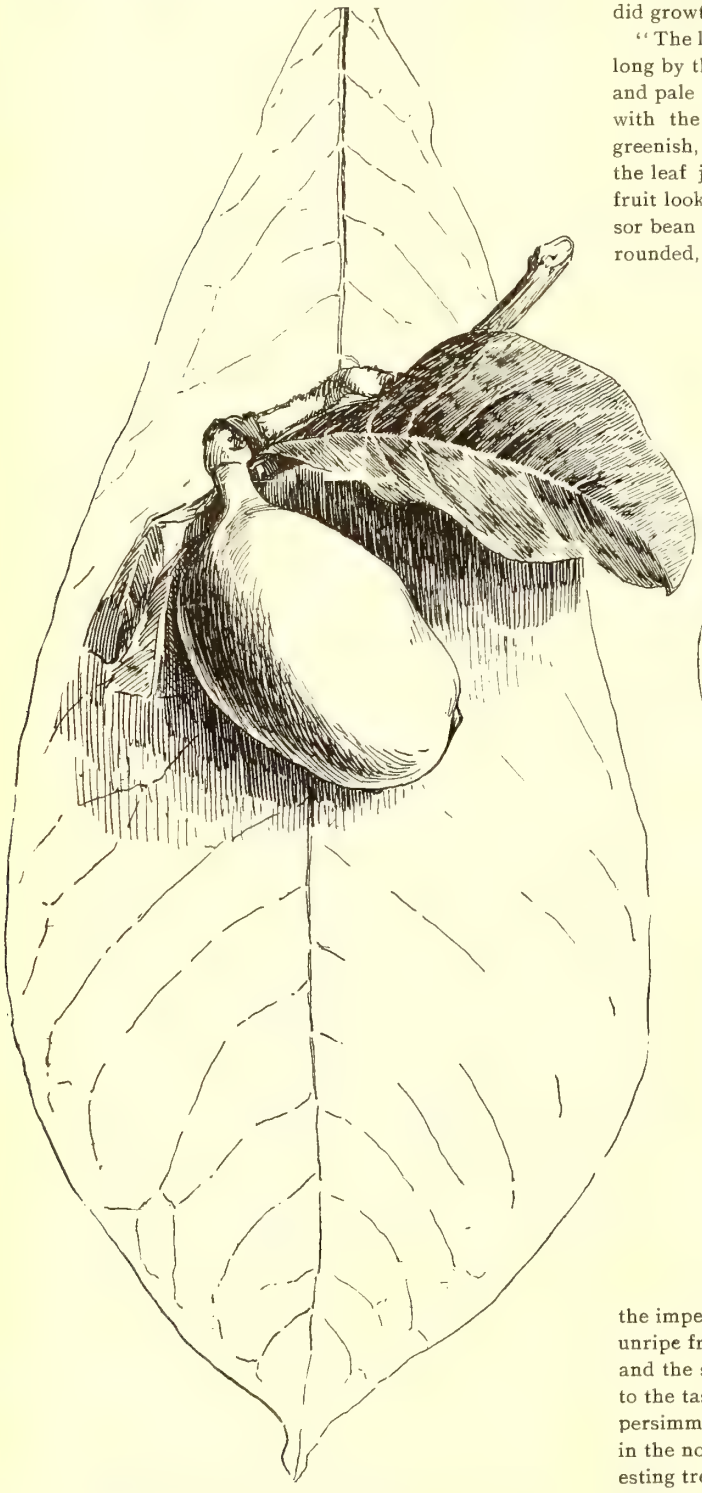
Most of the flowers are below the terminal shoots, so that when the large, obovate leaves are developed, the fruit underneath, which is of the color of the leaves, is rarely seen and easily overlooked, even though one is searching for it. The following account of the tree is from Wm. Falconer, in the *Rural New-Yorker*:

"The papaw is a small tree indigenous to the Middle and Southern States, from western New York to southern Michigan and southward to middle Florida and eastern Texas, but rare near the Atlantic coast. It attains its greatest development in the Mississippi Valley, and especially along the tributaries of the lower Ohio river. Although it is hardy around New York, it is only precariously hardy north of here. The papaw belongs to the custard apple family of plants, and is the only tree of the genus belonging to this country; two or three other species, low shrubs, occur in the Southern States, but are not hardy in the north. Although named papaw tree, it is not the papaw of commerce, which is *Carica papaya*, a soft-wooded fast growing plant of tropical America, now cultivated considerably in southern Florida. The name papaw has been given to *Asimina triloba* from a fancied resemblance of its fruit to that of the carica.

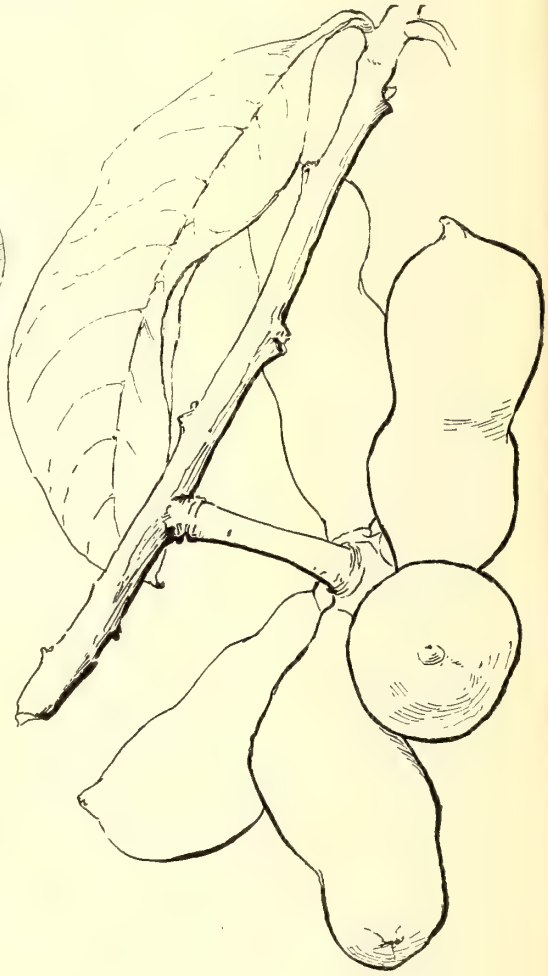
"As a garden plant, however, the papaw is well worth

growing for its shapely form and ample, abundant and fine foliage, as well as for its fruit. But it should have a sheltered place in northern gardens, and good ground always. It grows well with us on Long Island, and the specimen in the Rural Grounds, which I have seen, is a handsome, broad-headed bush-tree with a splendid growth of leaves and carrying a good deal of fruit.

"The leaves are obovate-lanceolate, nine or ten inches long by three or four inches wide, and light green above and pale on the under side. The flowers, which appear with the leaves in May, are about 1½ inch across, greenish, changing with age to brown, and solitary at the leaf joints of the previous year's young wood. The fruit looks like an almost cylindrical, very fleshy Windsor bean pod; it is three to five inches long, oblong, rounded, somewhat falcate, and often misshapen from the imperfect development of some of its seeds. The unripe fruit is green, but when ripe the flesh is yellow and the skin dark brown; it is then sweet and luscious to the taste, but it is with the papaw as it is with the persimmon—we cannot reasonably expect as good fruit in the north as may be had in the south. It is an interesting tree, and well suited to small grounds or to positions near the dwelling." E. S. CARMAN.



AVERAGE SIZE LEAF AND FRUIT OF PAPAW.



A CLUSTER OF HALF-GROWN PAPAW FRUIT.

# NOTES FROM ST. FEREOL DE PONSONBY.

KWEERKUS AND FREE LANCE HAVE A TILT OVER OLD SUBSTITUTION, AND O. S. GETS BADLY WORSTED IN THE TOURNAMENT—IT IS SUGGESTED THAT THE MEDIUM OF POETRY BE USED BY OLD SUBSTITUTION FOR HIS SOPHISTRY.

A VOLUMINOUS letter recently received from a southwestern city discusses nomenclature and substitution in an exhaustive manner. The tone of the letter occasionally lapses into asperity, which proves that the feelings of the writer are seriously engaged in his subject.

My friend, whom, in a spirit of premeditated substitution I shall call Mr. Kweerkus, takes occasion to say, with blunt decision, that the above mentioned topics "have become very tiresome." That they should have become "tiresome" in certain quarters is not at all surprising, and it is quite cheering to be told that such is the case, for that result was the main object kept in view when the agitation was first started.

As to the discussion being "worn out," that happy consummation will only come to pass when those whose practices gave it a *raison d'etre* shall have mended their ways. Alphonse Karr's reply to an ardent advocate for the abolishment of the death penalty was apt. "All very well, my dear friend, but let the murderers begin first." Let both careless and tricky florists cease to practice substitution, then customers will cease to discuss it. Mr. Kweerkus brings his highly entertaining communication to a close with a short string of terse, epigrammatic sentences, which are well worth the dignified title of floristical maxims :

"Half the time, customers don't know what they want."

"When they order novelties and are disappointed, the florist is not to blame."

"Substitution is no robbery."

"The florist is not responsible for the ignorance of amateurs."

"Errors, as a rule, are due to accident." Etc., etc.

When viewed from a single standpoint, these maxims are somewhat frisky and misleading. Take, for instance, one of them, and subject it to a little judicious comment. Amateurs do not complain of substitution when practised in the legitimate way, common to all respectable dealers; that is to say, when the variety demanded is not in stock, another of equal or superior merit is sent instead, with its correct name attached. For example, White Baroness could be quite appropriately sent in place of Mabel Morrison, or Merveille de Lyon in place of White Baroness. No reasonable person could object to such changes, and under such circumstances substitution would be no robbery. But when a plant is sent bearing the name of the variety ordered, and eventually proves to be a totally different and inferior sort, such as a Mad. Plantier in place of Merveille de Lyon, then substitution is virtual robbery. The customer is robbed of the difference in value, and what is still more galling and flagrant, he is robbed of all the exquisite pleasure the genuine plant would have conferred upon him.

From a certain point of view, Mr. Kweerkus's maxims are desperately funny, though as specimens of hilarious literature they can never hope to compete with their prototype — philosophy—in its well-known proverbial form; for those serio-comic nuggets of compressed wisdom have established for themselves a reputation for sedate jollity difficult to surpass. Still, after all, Mr. Kweerkus should not feel too despondent; his maxims may in time conquer that high position to which their sententious, platitudinarian merits so richly entitle them.

In the meantime, while patiently awaiting the fruition of that brilliant future, would it not be well to make a temporary use of such rich and inviting material. If Mr. Kweerkus will deign to accept a suggestion from such an humble source, I think I feel justified in recommending him to offer them to a certain restricted class of florists as appropriate mottoes to hang up in their packing rooms. They would, without doubt, quickly supersede that ancient device, "Necessity is the mother of invention," which has so long been the guiding star of a few versatile tradesmen, whenever orders came rushing in for varieties of plants of which they had none in stock. Elaborately embroidered on parti-colored wool (emblematic of the mixed condition of their plants), on gilt card-board (whose brassy gleam would fitly symbolize the dealer's cheek), these hope-giving mottoes ought to prove extremely popular in the lower walks of floristical life.

Just fancy the harrowing condition of an ambitious and enterprising florist, almost driven to desperation by showers of upbraiding letters from furious customers, complaining that he had sent them the very plants they didn't want; that his moonflowers had turned out to be Dutchman's pipes; that his snow white gladioli were blood red; that his double hollyhocks were painfully single, and his novelties in general a hybrid collection of antique chestnuts, etc. !

What unspeakable consolation would be conferred upon such an unhappy man by a cheering motto like "The Florist is not to Blame for the Ignorance of Amateurs." The bracing influence of such reassuring doctrine could not fail to fortify his moral faculties, and

revived and encouraged by its refreshing laxity, the erstwhile harassed florist would buoyantly take up life's weary burthen with renewed vigor, and as his roving eye caught another orthodox motto, "Substitution is No Robbery," he would, with a serene and peaceful conscience, go on, as of yore, tranquilly tying Mabel Morrison labels to vigorous specimens of Coquette des Blanches (or any other rose of easy propagation); occasionally varying the placid monotony of his task by pausing to put up a few packets of intensely nondescript pansy seed, which, with an absent-minded air, he would inadvertently label "Bugnot's Choicest Selected," the meanwhile lightening his labor and storing up moral strength for future conflicts with punctilious customers, by casting grateful glances at the approving legends, which had been his faithful support and mainstay in a trying hour.

I dare say it may seem invidious and hypercritical to insinuate that these maxims could, under any circumstances, be improved; nevertheless, I cannot resist suggesting that a poetic garb would add a graceful charm to their sterling worth, and that a melodious metrical version would at once place them beyond the most artful attacks of hostile critics, something like this, for example:

"When'er you're deceived by accounts
Of flowers you never have seen,
Why, the case just to this then amounts,
That you're very decidedly green;
And it's luminously plain to be seen
That the fault's not the florist's (I ween)."

It must be quite obvious to any impartial critic that this stanza is neatly, even elegantly turned. The fact is so very transparent that it would be sheer affectation to deny it. I therefore acknowledge with cheerful alacrity that it is indeed very cleverly done, and at the same time call attention to the admirable manner in which the dominant idea of the original maxim (*i. e.*, the irresponsibility of the florists) is scrupulously maintained; it shines through the pellucid verse "like a bee embedded in amber," as the genial Goldsmith was wont to say. This point is worthy of serious consideration, for an ordinary, slip-shod sort of a poet, destitute of moral rectitude, would have been so selfishly intent on mere technical finish that the florists might have been sacrificed to the exigencies of the metre. I have carefully avoided this peril, and faithful to the spirit of the original, I have, without the slightest ambiguity or remorse, placed the customers in fault; and Mr. Kweerkus is hereby assured that should he at any time feel inclined to favor me with a few more maxims, they shall receive the same impartial treatment at my hands, for my feelings as an amateur shall ever rest subordinate to my duties as a gifted, but conscientious poet.

I readily grant that the attempt to embalm this motto in dulcet poesy was an ambitious undertaking, which nothing but the most faultless execution could justify; hence, I feel free (with due diffidence) to warmly congratulate myself on having, with such marked ability, performed a delicate and difficult task. I wish it to be clearly understood, however, that I modestly submit the stanza simply to illustrate the suggestion I presented to Mr. Kweerkus, and not from any crafty, ambitious hope that it may be definitely adopted by the (irregular) trade. Should the members of that select body, from motives of economy, prefer to engage the services of Mr. Aldrich, Mr. Stedman, Whitcomb Riley or any other rival poet, I shall not take offense, but will simply remark that quality, not price, should be kept in view.

As to the maxims, it goes without saying that the excessive mental efforts which give them birth must necessarily entail an exhaustive intellectual strain, for which reason it would be barbarous and inhuman to exact frequent installments. Figuratively speaking, we shouldn't "kill the goose that lays the golden egg" (reference to the goose implies nothing personal; the allusion is to be accepted in a strictly metaphorical sense). Now that we have had such striking proof of his ability to impart instruction in a popular and entertaining form, it is to be hoped that Mr. K. will occasionally employ a few of his leisure moments in elaborating fresh maxims; and should he find it inconvenient to forward them direct to me, let him, if he be in the floral line, give them publicity through the medium of his annual catalogue.

In conclusion, I deem it my duty to say that, having with becoming reticence recorded my success, perfect candor demands that I should now show the reverse of the medal. This course involves the humiliating confession that I have signally failed in handling one of Mr. K.'s maxims, to wit, "Substitution is No Robbery." Its extreme originality of thought and rugged virility of form offered serious obstacles, and after persistent efforts, the only presentable rendering was this:

"Substitution is no robbery—
Not half as bad as political jobbery."

On the principle that we cannot have too much of a good thing, I am keenly aware that the brevity of this specimen is very disappointing—a defect entirely due to the dearth in the English language of rhyming equivalents to the final word of the original maxim, and not to any lack of skill or good will on the part of the poet.

This effort has been submitted to an eminent critic, who frankly admits that, regarded as mere poetry, the thing is quite irreproachable, but he strongly objects to the sentiment of the closing line, on the ground that it is an oblique attack of the domestic policy of the federal government, an injurious slur on the central government of every sovereign state of the Union, and a flagrant insult to the municipal authorities of every leading American city, not even excepting that of New York. Moreover, it distinctly contains a malicious and unmerited reproach on the noble philanthropy, the matchless economy and the rare diplomatic tact with which our Indian affairs have been managed for the last couple of years or so. The latter aspersion, he insists, is alone quite sufficient to stamp my production with opprobrium, and he would advise Mr. K. to reflect seriously before consenting to accept a dangerous version, entailing such grave responsibility.

Furthermore, as "political jobbery" and "robbery" are perfectly synonymous terms, it is manifestly unjust to rate the politicians twice as vicious as the substituting florists. To be counted equally vicious, he very judiciously observes, is surely obloquy enough for any class of men outside the range of strictly professional bandits, and he thinks I ought to remodel the maxim to that effect. Under these depressing circumstances, Mr. K. is respectfully requested to refrain from circulating the present version until further orders. F. LANCE.

# CAMPHOR PRODUCTION IN FLORIDA.

CAMPHOR is a name given to a colorless translucent body having a tough waxy structure with a specific gravity equal to about that of water, and commonly obtained from the chipped wood, roots and leaves of the camphor tree — *Camphora officinarum*—by distillation. As known in commerce, it is procured mainly from Japan and the islands of Formosa, Sumatra and Borneo; though one species of the trees that produce it abound in China.

Of late years successful efforts have been made to grow the camphor tree in Florida, where it thrives in any kind of soil like a native pine or oak. It remains, we are told, in growing condition for nine months out of the twelve, and is not affected by cold weather. After two or three years it needs no care, even on the poorest land, and in 12 years attains a height of from 40 to 50 feet and a diameter of from 12 to 14 feet. When four or five years old it attains a height of 10 feet and a trunk diameter of four inches. A considerable amount of camphor has already been made, though mainly for experimental purposes. The treatment of the tree has been, briefly, as follows: At the age of four or five years the first cutting is made for distillation by pruning from the ground to the height at which the head of the tree is to be retained. From that time on the head is sheared in a suitable manner without neglecting to prune from the ground up, with a view of making the head longer. With this treatment distillation is carried on every year, and in 12 to 15 years the trunk will have attained sufficient size to be sawed into lumber, so that the valuable camphor wood may be utilized. It answers for all house and ship timbers and articles of furniture, especially for such as are intended to contain and preserve clothes. It is very easy to work, splits readily and is never attacked by the many destructive insects which so speedily devour most other woods. The trees being set 15 feet apart, the stumps may be allowed to produce shoots until young trees have advanced sufficiently to take the places of the old ones, when the stumps are to be uprooted and subjected to distillation. Under proper treatment every particle of the tree can be made to yield camphor, so that nothing goes to waste.

It is claimed that if cultivated on an extensive scale, the camphor tree would yield a larger profit in Florida than any other product. Moreover, it is a handsome evergreen, hardy in that climate, and it is not eaten by cattle or other stock, while it requires no fence protection, being strong enough not to be broken by cattle. It is sanguinely prophesied that in ten years more camphor trees will be grown in Florida than orange trees, and that this new industry will turn out to be more profitable than sugar production. At present the price of year-old trees range from 25 to 50 cents apiece, and that of old ones proportionately more.

In medicine, camphor is extensively used, both internally and externally, as a stimulant; but its chief medicinal use is in the preparation of liniments, into the composition of many of which it enters. It has a vulgar reputation as a prophylactic or preventive of disease, on which account it is in great demand during serious epidemics. It possesses properties invaluable to naturalists and others for keeping furs, skins and other animal substances free from moths, and it also preserves cabinets of insects from attacks. Although large quantities of camphor are consumed in Europe and America, its chief consumption is in India and other eastern countries, especially China, where mere whim or fashion has put a price of from $1,000 to $1,200 per pical (133 pounds) on one particular kind; while the ordinary camphor of commerce is sold at from $12 to $15 per pical.

# PANSIES GALORE.

MANY WAYS OF PANSY LOVERS IN DIVERSE SOILS AND CLIMATES.

A SYMPOSIUM.

"Pansies or thoughts, my darling,
So I give them all to you,
They are first to bloom in springtime,
And in autumn frost still true."

ROM the little garden of Mary Bennet at Walton in England originated many varieties of pansy. That was in 1810. It is still called lady's delight in many old fashioned gardens. In order to grow fine flowers the soil must be a rich, moist loam, with partial shade, and they thrive well in a northern aspect, or in the outer shade of an apple tree—not so close to the tree as to become spindling. Seed may be sown in a hot-bed in spring, or in the open ground, and very fine flowers are produced from cuttings, which are taken off at the second or third joint; these root readily. The seedlings should be transplanted in rows about eight inches apart, when they show the second set of leaves. The hoe should be used steadily, and a watering of liquid manure given to the roots twice a week. To obtain fine flowers the first that open should be taken off, and on subsequent blossoming all withered flowers and dead leaves should be picked, as the seed would exhaust the plant. No plant better repays constant watering, and this helps to keep down the red spider, which is one of its principal enemies.

The perfume of the pansy is faint and refreshing, having a touch of the violet; and its many hued blossoms have been compared to faces on account of the peculiar markings. The royal purple, gorgeous yellow, and violet tinged white flowers are general favorites; and the oddly marked brown and gold ones are also pleasing. The most perfect flowers are those which have no petal projecting beyond a circle drawn around them and still each petal will touch the line. The eye must be clear and the color rich.

There is no place where pansies grow so well as in newly turned pasture land. For winter protection nothing is better than a few evergreen boughs, after a light dressing of compost, and if the covering is removed during mild weather in winter they are often found blooming, if in a protected position, and the winter sunshine reaches them. If the land is damp and not well drained the plants are liable to root-rot, especially in heavy soil. The only cure is to take off cuttings, and plant them in fresh light soil.

The pansy is a flower much used in decoration; one of the loveliest crosses I have seen was of the Lord Beaconsfield, alternating with White, and the length of time they remain fresh in favorable situations recommends them to such use. Though seemingly easy to cultivate and propagate, it is difficult to keep choice kinds, as they are liable to damp off, or to suffer from the sun. Drainage, partial shade, and striking new cuttings from the choicest varieties, are the only methods of keeping them from deteriorating. They root quickly, and often the cutting will produce finer flowers than the parent.—ANNA L. JACK, *Lower Canada.*

A PANSY BLOSSOM, AND HOW TO OBTAIN IT.—Nothing can more disappoint a flower lover, than to realize, when too late, that the coming flowers are of poor seed, and of inferior color and material. Therefore, in order to raise beautiful pansies, it becomes necessary to procure only the very choicest seed, from experienced growers.

On or about September 15, get ground that is loamy and rich with well rotted cow manure or other good manures, and thoroughly mix with the earth to every sash, three by six feet, about two quarts of finely ground ammoniated bone or superphosphate of lime. This space is calculated to be large enough to raise not less than two thousand pansy plants. Nail together a box three feet wide and six long, and into this put the earth, seeing that good drainage is provided. This can be done by putting down first two or three wheel-barrow loads of corn stalks, or rubbish. Fasten the box to its place either by stakes driven along its sides, or putting feet at each corner when making it, and sinking them into the ground before putting in the earth. Now level off the ground, mark the rows where the seeds are to be sown, and then put in the seeds, covering them very lightly by sifting from a sieve earth that will not bake or harden, some of the same as the bed is made of. When sown and covered sprinkle with a fine rose watering can. Put glass over the box to protect the bed from heavy rain, and to assist in imparting warmth to the earth. Never allow the surface to get dry, as the seed might germinate, but the young plants be too feeble to break through the crust.

As soon as the plants appear, give them plenty of fresh air by taking off the sash on every day that it is not freezing too hard. Even young pansies may get frosted time and time again; it only serves to harden them for winter, and make robust plants for spring. Still it is

not advisable to let them freeze too much, as they are liable to be heaved. When severe weather comes, bank up around the box, and cover the glass at night with matting or boards. Pansies may remain snowed up two or three weeks without injury if care is taken to expose them gradually to the light, when warm weather comes again.

At the end of February or early in March the plants should be taken up and transplanted into other boxes, setting them about three inches apart each way and watering them with manure water at every favorable opportunity. They grow very rapidly in sunshine; and care must be taken not to keep the glass on too long, as the plants will be drawn up, and will become too slender. Covering with boards, even on freezing nights in March, is sufficient protection.

When time to set out-doors, remove the plants with as much earth adhering to them as possible, and plant in soil that is rich with manure, and will retain moisture. Plants in sunshine flower more profusely, are of more substance, and bloom longer than when planted in shade. Pansies never ought to get dry, so that a mulching of well rotted stable manure, of an inch or so deep, will assist them greatly, and they will require a great deal less watering and care when so treated. They can be kept over winter, and if boxed up and protected with glass, they will repay the little expense necessary with many lovely flowers at every warm spell.

Pansies sown in the manner described will produce plants that bloom the entire summer, but they must be kindly treated and watched in order to thrive and do well. Pinch off all seed pods as soon as they appear; work the ground between the plants, so that it remains loose and soft; and give the roots plenty of space in which to seek food. They will then do their best to repay one for all the care bestowed.

It is better to buy seed every year from some responsible seed firm; the seed you save is apt to degenerate and produce smaller flowers each season, while the new colors and markings are missed. In order to get pansies early in spring the seeds must be sown in a hot-bed in January or February, or in the house in boxes made purposely for them. The plants are not so robust as those wintered over, and they usually come in bloom considerably later. The seed sprouts more readily when the air is cool, and the earth retains moisture much longer in autumn than in spring time. Plants grown in houses or hot-beds require watering and transplanting while very young, as soon as they get their second or third leaf, otherwise they soon run up and make weak plants. By all means try fall sown seed for healthy, robust plants.—Willard Barringer, *Montgomery Co.*

Pansy Adaptability.—The general principle of pansy culture, modified by climate and soil, is substantially the same in all places. The pansy attains its greatest perfection in the cool, moist climate of Great Britain and neighboring countries. In pansy seed, the more expensive the better. Although you may grow thrifty plants and large blossoms, you can no more expect flowers of rich texture and fine markings from cheap seed than Jersey cream from a scrub cow.

Fill a box or flower-pot with some damp sifted soil. Smooth it over, and with the edge of a piece of quarter inch board make drills half an inch deep. Sow your seed thinly in these drills and level the surface of the soil, pressing it firmly. Then sprinkle on enough water to make the surface wet, but not muddy. If the water is poured in it will cut the soil and make the surface uneven. Cover with a piece of glass or board (the seeds do not need light until the shoots appear) to keep the moisture in, but do not allow this cover to rest on the soil. Set the box in a temperature of 60° to 70°; near the floor in an ordinary sitting room is about right. If the seeds are well watered when sowed they will not need sprinkling more than once or twice before the seed leaves appear, in 12 or 14 days. If the temperature is high enough to start them sooner the plants will be weak.

When the second leaves are well grown the plants are large enough to transplant; there are no side roots to bother and the plants will not be disturbed by the change. Transplant into boxes four inches deep and set the plants 2½ inches apart each way, in a soil of one-sixth sand, one-fourth loam and the rest well-rotted cow manure, sifted together. Thrust the plants in up to the seed leaves, pack the earth around the stems and water to settle the soil. Cover with glass, leaving space for air to enter, and as the strength of the plants depends upon slow growth, set to the light in a temperature constantly at about 60°; keep moderately damp.

In this latitude—44—seed sown about February 15 will produce plants large enough to blossom when the weather will allow them to be set in open ground. The time of sowing must be varied for localities farther south. The location for a pansy bed is the north side of a solitary tree, where it will have shade at noonday. If among many trees or protected by buildings the free passage of air is stopped, and the plants grow spindling or are inclined to rot. The soil should have a good dressing of rotted cow manure well worked in. During July and August pinch back the stems and let the plants have a partial rest. By doing this the plants will stool at the roots, and when the cool nights of September come will blossom profusely. If there is a choice plant in your collection, from which you wish to save seed, pinch out the leader of the stem and allow only one or two pods to go to seed on that plant. But saving seed, if continued for many seasons, does not pay, as the blossoms on the plants raised from such seed all bear a close resemblance to each other.

When the plants look well in fall it is a great temptation to try to winter them in the house. Plants thus treated become the prey of the aphis and red spider, and rarely amount to anything worth the trouble of taking them in.—Jane Nisbit, *Minnesota.*

A Northern Bed of Pansies.—The pansy is particular about only a few things, but those few it must

have. They are good seed, rich ground and plenty of water.

The beauty of a pansy depends on its form, texture, color and size, of which size is last. If a flower be circular, of a thick, velvety texture and of handsome color, even though it be small, there is hope that by careful cultivation it may become all that is desired; but if it be loose and uneven in shape, with the three smaller petals narrow and pointed so as to give the flower an elongated form, no amount of cultivation will make it perfect.

A light, mellow loam, well mixed with thoroughly decayed cow manure, is perhaps the best soil, but the pansy does not disdain any rich food. Success may be obtained with the aid of super-phosphate, with hen manure, in trenches between the rows and covered; or with liquid manure, made by pouring water over compost. Apply weekly, but care must be taken not to deluge the plants with too strong a decoction, else destruction may result. But in that event, the ground may be raked over and new plants set. Sprinkling weekly with a weak solution of nitrate of soda or of ammonia water—a teaspoonful of ammonia in a gallon of water—is also beneficial.

The pansy does best where it is shaded from the sun during the hottest part of the day. On the eastern side of a house or a high wall is perhaps as good a place as any, though the handsomest bed I ever had was under a large pear tree. The ground was rich enough to feed the tree and the pansies too, and although it was a very dry season—one of the most unfavorable for pansies—the ground did not dry up, owing to the partial shade. About half of the bed came under the branches of the tree, and the difference in the size of the flowers and growth of the plants in the two ends of it was marked.

For summer blooming, seeds may be started in March or about April 1st in this latitude (northern New England), in a hot-bed or a window box. Cover the seeds about their own depth and keep moist. A piece of cloth thrown over the box may hasten growth, but must be removed as soon as the plants start. Transplant once before removing to the open ground. They will begin blooming with hot weather, when no pansy can do its best. Then it is well to pick the buds as fast as they appear. This will make stronger plants, and as soon as the first cool days come they will be ready to burst into a profusion of bloom that will last until snow comes. If one does not wish to wait until fall for flowers, his best ally is water. Water the beds copiously every night, and perhaps early every morning too, if in a prolonged drouth, and the size of the blossoms will well repay you. For early spring blooming sow in late August or September. Pansies are hardy and will stand our cold northern winters with no other covering than leaves or a little brush to keep on the snow, and if a thaw comes in January or February it will be nothing unusual if a few pansy blossoms also appear, smaller than in summer it may be, but bright and courageous-looking.

The pansy has one great enemy—the pansy worm—a loathsome looking creature a little over half an inch long and of so near the same color and size as the flower stalk that he, in company with half a dozen of his cronies, will burrow at the centre of the plant and defy the sharpest eyes, unless you know just where to look for him. Hand picking is perhaps the surest remedy, supplemented with a firm pressure of the invader between the trowel and a rock, though repeated applications of white hellebore are discouraging to his worm-ship, and wood ashes have been known to rout him—and the plants too, if it is put on too lavishly! The plant is subject to the attacks of the cut worm and the grub of the June beetle, and here again a personal encounter with the enemy is the price of safety to the plants.

If the plants that have bloomed in early summer be cut back to within two inches of the ground they will branch out and form compact plants for autumn and the next spring.

Propagation by cutting is the surest way of perpetuating a favorite plant, and cuttings root very readily in cool weather.—Dora Lawrence, *Maine.*

Pansies Under the Snow.—About the year 1810 a young English lady began making a collection of wild violets of all kinds. Assisted by her father's gardener, she cross-fertilized them successfully, and from the seed of these plants originated our present strain of pansies. They were soon grown extensively in Germany, France and England. Finally American seedsmen began growing their own seed and found they could raise finer pansies from the home-grown than from the imported seed, and this of course greatly reduced the cost and has made this beautiful flower a universal favorite.

At one time there was a double pansy, but the strain has been lost. It was of no value except as a curiosity our single ones being much handsomer.

In the winter of 1883-'84 the snow in our locality covered the ground to a considerable depth until the middle of February. Then there came a complete breakup, and we enjoyed the luxury of a bouquet of fresh pansies from the bed in the garden. Of course the snow had kept the ground from freezing, and I have sometimes found a slight covering of straw, evergreen boughs or leaves beneficial in the same way. Our pansies were the wonder of all who saw them, for their immense size; and the sight of their bright faces was no very unusual thing during a mild time in winter. The plan of cultivation we followed was so simple a child could comprehend it.

The bed was situated on the north side of the house, where the sun never shone except in the long summer days at morning and evening. The ground was thus protected from frequent freezing and thawing in winter and from the excessive heat of summer. The soil is a clayey loam, fertilized with plenty of well rotted manure from the cow stable. The seed was sown in boxes about February 1st. The plants were transplanted into boxes and were ready for the beds as soon as the soil could be

worked. Plants so grown will blossom much better than when the seed is sown later, and it does not injure them in the least if they are moved after they begin to bloom. They should be set nine inches apart in rows, the rows being a foot apart. The plants will blossom all summer and until the ground is frozen hard or they are covered with snow. They are ready to begin again at the first breath of spring, and will remain in bloom some weeks, though the blossoms will not be so large as on young plants. Never expect very large blossoms through the heat of the summer. The pansy loves cool, moist weather. Allow the seed to ripen from a few of the handsomest and largest flowers, being careful to mark them so that you may make no mistake in gathering your seed. *Cut the blossoms freely.* If you allow much seed to ripen the plants will soon cease blooming; to have plenty you must use plenty.—E. L. B., *Tompkins Co., N. Y.*

## AUTUMN CARE OF ROSES.

E have cultivated roses in amateur fashion ever since I can remember. At first only the old fashioned June bloomers brightened our garden. A little later, while I was still a child, such hardy perpetuals as Giant of Battles and Prince Albert were added to the stock. Then Caroline Marniesse, a rose much less hardy, came, and in teaching ourselves how to keep that alive through the winter we learned to care for more tender varieties.

Roses have many enemies, but it is not nearly so difficult to succeed with them as many flower lovers suppose. Most insect pests yield to sprinklings of hellebore in water, or kerosene emulsion. Rose bugs are not very troublesome on a clay soil, and such a soil is well adapted to their needs.

We never take our roses from the ground to protect them, having learned that it can be done much more effectually where they stand. What is called an "open" winter is much more severe upon roses than is steady cold, even though it be below zero. Our method of protection for winter is to draw the earth up around the base of the plant for perhaps six inches. A quantity of leaves is then put over it and the whole is covered with bagasse, the refuse from an amber cane mill. Evergreen boughs are equally good over the leaves, and I have no doubt but that corn stalks might answer if there was no grain to draw mice.

There is a Perle des Jardins in our collection which is eight or nine years old, which has several times frozen off to the earth, but it always sprouts again and has never failed to yield a generous number of roses every season. The old Caroline Marniesse failed to come up at all one summer and we thought it entirely dead, but the next season it sent up a few shoots, and it is strong and vigorous now. It is not safe to remove all the covering from the bushes at once in spring, as a cold dry wind does them as much injury as a freeze. We throw the coarse litter from the top, remove the leaves and throw back the litter, leaving it till the branches have time to dry off and harden. Then all the covering is removed, the bushes are pruned, the earth leveled and cultivated and a generous coating of stable manure is worked into the soil.

Roses should not be covered till the approach of real winter. On that last day when the ground freezes a little all day, put them into their winter overcoats, and the chances are that their sleep will be sweet and their awakening joyous. We rarely lose more than one bush in a dozen, and that is not discouraging.

There are four roses in our garden which are sure to be replaced whenever one is lost. These are Princess Vera, Safrano, Papa Gontier and Catherine Mermet. Safrano is the least hardy of the four. Princess Vera and Catherine Merment have exquisite buds, and are very full and perfect when fully opened. Papa Gontier and Safrano have long, lovely buds, but the opened rose is semi-double. La France does not do well in our clay loam, and Madame Louis Henry, though exquisite, is but a shy bloomer.

Roses are not greatly injured by light frosts, and the ever-bloomers will yield a handfull of buds almost until snow flies.

S. A. Little.

# THE DELIGHTS OF A NEW JERSEY OAK BARREN.

IT WAS in the spring of the year that we first made the acquaintance of this rough upland swamp—if you can, imagine such an anomaly, overgrown with huckleberry and blackberry, wild rose and azalea, young oak and sumach. All were in their budding freshness of tender green, the last two being toned and tinted with crimsons almost as vivid as their autumn colorings. A few days later, the river just below was fringed with the blooming white dogwood and yellow sassafras; then, and all through early springtime, the whole was carpeted with anemones, dog-tooth violets and the lovely claytonia, or spring beauty, while later through the advancing season, it yielded Solomon's seal and prince's pine, ginseng and yellow hypoxis (the dainty yellow star-grass), and lovely azaleas in two shades of pink and white, known locally as "wild honeysuckle."

The woodland preacher, always on the lookout for the sermons to be found in the stones and the running brooks, invaded every quiet nook, and even crowded the more trodden paths; yet always modestly shaded by his satiny canopy of green and gold and red brown, who would dare familiarly to call him "Jack?"

For weeks a low-born cousin of the strawberry, having bright yellow starry flowers (known to the initiated as "five-finger," from its five-lobed leaves), elbowed and embraced everything near its own level. It was generally regarded as anything but an acquisition, being as great a trial to the owners of the soil as the lovely *Nepeta glechoma* lately "introduced" to the floral world, which said owners persist in anathematizing as a "miserable nuisance" which they refuse to recognize except as "Jill-run-over-the-ground."

At that season our tramping ground did not differ greatly from other partly wooded spots familiar to us, and after the season of spring flowers proper it was neglected for weeks, not being expected to longer furnish floral treasures. It was, therefore, with the sense of having discovered a mine of wealth that the enthusiast and myself became aware, one hot day in August, that this same unappreciated spot was wasting any amount of sweetness on the nominally musquito-laden air of New Jersey. We were black-berrying that day, and as we strayed along looking for a few nice berries wherewith to round up the already well-filled pails, the enthusiast, who was a little in advance, suddenly called out excitedly:

"Here is a new flower!" "New," be it said, meant, in our vernacular, different from those which are found in a certain portion of that blooming garden known as western New York.

It was a peculiar looking blossom, a trifle like clover, but blooming in heads which elongated as the lower blooms withered. Soon we found what appeared to be its counterpart, except that the color was pale yellow; but neither then nor since has our non-professional knowledge of botany enabled us to make out its true place and name. The leaves were linear and scattered thickly along the upright stem; the apparent flower occupied the position of an involucre, and the real flower was so tiny that our little glass could not fully disclose its characteristics.

A few moments after the discovery of these first disappointing specimens, the enthusiast was in a flutter again. "Oh! oh! here is a lovely white star-shaped flower something like phlox, except that it is prettier, and it is delightfully fragrant!" and so on.

Aroused at last to the possibilities of a New Jersey barren at midsummer, we wandered here and there, finding new treasures at every turn until our arms were loaded, and we could scarcely bring ourselves to allow any place to the berries which had been such an object of eager desire during the earlier hours of our ramble.

But having finally arrived at home with our spoils, we were soon deep in the mysteries of "stamens hypogynous," "calyx adherent," and the like, until chaos was at last mostly reduced to order. Our list included *Dasystoma pubescens* (the yellow fox-glove); two varieties of the starry centaury, *Sabbatia corymbosa* and *Sabbatia angularis*; *Lilium superbum*, or Turk's cap lily; *Veronica Virginiana*, or speedwell; *Verbascum Blattaria*, the moth mullein, a belated hypoxis, the yellow star-grass, and the purple gerardia, besides "Butter and Eggs," a yellow oxalis, a golden rod, an evening primrose and a Jewel-weed or "touch-me-not."

The pink and white sabbatias which so delighted us belong to the gentian family, and it is doubtful if their beauty is surpassed by that of any of their relatives, the true gentians. Plants of both of these and of the moth mullein were transferred to our garden. The latter is a not uncommon weed, but primrose-yellow florets blooming in spikes are none too common among our garden treasures, and this has the additional merit of blooming from midsummer until frost.

The yellow fox-glove is a real beauty, scarcely equaled in this respect by the pinky and white garden fox-glove, but it is rather fleeting, being of little value as a bouquet flower. Its fine pale gold coloring is seldom surpassed. Five, at least, of the above belong to the family of figworts, viz: moth mullein, butter and eggs, gerardia, speedwell and yellow fox-glove.

Even thus early the asterworts were beginning to assert themselves. One æsthetic pinkish-lavender flower

in huge corymbs showed plainly enough that it was a near relative of the common boneset, but we failed to trace it to its niche among the 9,000 members of this often tantalizing (to the botanist) family of compositæ.

Being now alive with curiosity as to the possibilities of a certain very small portion of the commonwealth of New Jersey, we set out a few weeks later on another search. The asterworts were in full glory, and the number of varieties of asters proper was so great that we gave them up in despair, but came home laden with our national flower in most of its thirty northern and eastern varieties, *as we supposed*. But, alas for "flowery" hopes! four-fifths of them traced to *Solidago altissima*, of which it is said that scarcely two of the plants look alike, so that, besides these, we felt sure of but four species: *S. cæsia*, *S. bicolor*, *S. nemoralis* and *S. lanceolata*. Of these, the most conspicuous and interesting two were *S. bicolor* and *S. cæsia*, the latter because its wand-like flexuous polished branches gave us our first conception of what a golden "rod" might be, and also because of its very large and brilliant flowers; the former on account of its being the only variety that is not yellow, its cream-colored flowers giving it the common name of "creamy golden rod."

The nabalus, or lion's foot, was everywhere present at this time, but with its small, thickly-corymbed heads hung down as if in timid deprecation, while every foot-fall gave forth the odor of pennyroyal, breathing incense for our triumphal progress. The enthusiast went fairly wild over great patches of the closed blue gentian (doomed always to remain in budded loveliness because of the joining folds between the petals, which prevent them from attaining the full-blown state), a trickster in the eyes of young botanists, who look in vain to see it open. But, although we searched long and faithfully, not a glimpse of the lovely fringed gentian rewarded us, and we came to the reluctant conclusion that it was not for us.

Here and there a spike of the delicate, twisted, creamy-white ladies' tresses tossed in the light breeze—spiranthes, in more formal parlance. They are members of the beautiful family of orchids, so large, but having so few representatives at the north, and they are as pretty in their way as many of the petted foreign darlings.

At other points on the banks of the same river—the "raging Rahway"—which washed the edge of our tramping ground, we found the scarlet cardinal-flower and the graceful white starry clematis; also monotropa in both its forms, viz.: the delicate white Indian pipe, and the somewhat similar, though clustered, pinky pine sap; the blue pickerel-weed (though unaccompanied by his queen, my lady pond-lily) and great bushes of the American senna, covered with clusters of gold-colored locust-like flowers.

Not the broad prairies of the west alone are studded with beautiful and interesting forms of plant life, but even the neglected waste places of the old east yield myriads of them to the quest of those who go about with open eyes.

C. S. Valentine.

# SOME ORCHIDS AT KEW.

Cœlogyne pandurata, though an orchid of many years standing is still very rare and is met with but in a few choice collections. It is one of the most striking orchids imaginable when seen in flower. I have known a plant for several years at the Royal Gardens, Kew, where as far as health and vigor goes, nothing better could possibly be desired; but alas, it would never reward our attentions by a single flower. The reason for this I cannot comprehend, the plant being, as before stated, in splendid health. It has recently been my luck to see a splendid specimen in flower at Mr. Sander's, and it is a charming sight. The flowers are produced from out of the new growth on a spike a foot or more in length, each spike bearing a dozen or more. The sepals and petals are about three inches in length and nearly an inch broad; they are of a rich olive green tint, lovely to behold. The lip is very fine, the ground color being similar to the other segments, with a profusion of sooty black markings over the surface, making a splendid contrast.

It should be grown in the East Indian orchid house, where there is plenty of heat and moisture. It is epiphytal, and the best mode to cultivate it seems to be on a raft or block of teakwood hung near the roof of the house, in which position the plant will obtain abundance of sunlight, this being necessary to ripen the growths and induce it to flower.

*Dendrobium MacCarthiæ*. A splendid specimen of this choice dendrobe recently flowered at Kew. Like most good things, we rarely meet with a large quantity of it, but the subject of this note was a sight not soon to be forgotten. *D. MacCarthiæ* is found in the forests of Ceylon, where it is known by the natives as the "May Flower," this being the season when it is at its beauty. It has long pendulous stems or pseudo-bulbs with a bright red epidermis. The flowers are produced opposite the leaves. They appear to be only partly open, owing to their flat appearance. The sepals are lanceolate and of a bright rosy color; the petals are much broader and of the same color; the lip is angular, pure white in the lower portion, beautifully spotted with tiny purple spots; the disc of the lip is adorned with a large purple blotch, the whole giving a very fine effect.

Great skill is required to grow this orchid well, as it is somewhat "miffy" and liable to sulk. The best mode of treatment seems to be that of growing it in a teak

basket in good peat fibre and a liberal supply of charcoal and sphagnum moss. Its resting period is during the months of October to March, during which time water should be entirely withheld.

*Odontoglossum excellens.* All the odontoglossums are well worthy of cultivation from the fact that they are easily grown in a cool house and produce some of the most lovely flowers. *O. excellens* is a natural hybrid between two of our best species; viz.: *O. triumphans* and *O. Pescatorei*, and shows the characters of both species in a very marked degree. This being a natural hybrid it is consequently very rare. It is said that there are only three plants of it in existence, Baron Schröder possessing perhaps the very finest. His plant was exhibited at the Royal Horticultural Society's show at the Temple, last year. The pseudo-bulbs and leaves resemble those of *O. triumphans.* The flowers are very handsome, sepals and petals being of a rich straw color and densely marked with crimson blotches. The sepals are three-quarters of an inch broad, while the petals are more than an inch. The sepals and petals carry the appearance of *O. triumphans*, while the lip is purely that of *O. Pescatorei* in different colors. When one of these plants is met with, and its form is good, one can rely on making a great deal of money from it, 50 and 100 guineas being the price for a plant. *O. excellens* will grow perfectly well when put under the same treatment as its congeners. In fact, the cooler the house in which it is grown can be kept, the better, as this gives the flowers more substance and better color; they will remain expanded one to three months.

*Epidendrum macrochilum*, var. *roseum.* Many of the epidendrums have homely flowers, but the subject of this note is a prominent exception and ranks amongst the very finest orchids now known. It is a plant very easy to cultivate and flowers freely. The flowers are produced on a spike which arises from between the two leaves out of the top of the bulb. Each spike bears eight or ten large handsome flowers. The sepals and petals are about two inches long and very wavy. In color they are of a rich crimson purple. The lip is three lobed, the two lateral lobes being small and curled up so as to entirely cover the column. The main or lower lobe is very handsome, being large and wavy, pretty rose in color, with three dark stripes on the front portion of the lip. This plant should be grown in a warm house, kept at a temperature of about 65°. The plants grow best when put in baskets and potted with a good compost of peat, with a few bits of charcoal added to keep the compost open. The plants will take a liberal supply of water all the year round, as they do not lose their foliage annually; a slight reduction should be made during the flowering period.

*Kew, England.* W. J. Bean.

# GLADIOLUS DEVELOPMENT.

IF THE object is flowers, then in cultivating gladioli we are sure of obtaining the largest amount of blooms for the longest period of time and the least work. If the object is variety of color and splendor of display, no other flowers can surpass these. Their only deficiency now is want of fragrance, but fragrance is coming; the skill of the hybridizer has already succeeded in introducing it into some of the more tender and delicate hybrids. All that is now necessary is to go a little further, and make the fragrance common to the genus, and then what? Why, we shall have the most splendid and popular cut-flowers in the world; flowers that may be kept two weeks in the house, and which instead of fading, grow more beautiful each day, I marvel at their slow introduction, for their cultivation is so simple; even the school children to whom I have often given bulbs succeed, and grow flowers as fine as any I can myself produce.

I sat down to write out a few notes, mentally jotted from time to time, as to peculiarities and tendencies under cultivation, in the hands of hybridizers in search of improvements. I have, according to the catalogues, about a dozen different species. One of these was obtained through reversion, but natural, common and immediate variations having been discarded, I find really, no more than four well defined species. Hybrids I fear have been classed as new species for speculative purposes. There seems a strong tendency towards constant deterioration, unless the conditions are made propitious, and then new seedlings frequently occur. Of course, crossing and hybridizing them seems necessary to keep up the pristine vigor, and yet Brenchleyensis and some other old varieties have, year by year, grown more vigorous than when I obtained them. Brenchleyensis seems to be a variety of a natural and well fixed species.

Gladioli present constant tendencies towards variations; in one seedling the cross petals coalesce and form and form a tube; the plants under natural conditions seem semi-aquatic; they pine and wither in the absence of rain. During two seasons when copious rains have fallen while the flower spikes were half grown and bearing the normal two rows of flower buds the stimulus of rain water has caused the spikes to double into four rows in their upper half, and in several instances the flowers have double petals, and sometimes I have observed the ordinary number of stamens doubled. There is also a tendency towards longer and wider petals or larger flowers, and also toward more intense variation in color.

For house and table decoration these cut-flowers have no equal in stateliness, endurance and beauty, and the bulbs are so cheap that these flowers may adorn the cot-

tage and palace alike ; and when fragrance shall be added, there will be none to surpass this genus.

It often adds to the beauty and interest of flowers to take into consideration the winged visitors to the flower beds. Gladioli beds attract the visits of the humming birds and bumble bees in an especial manner. I have counted at one time four different species of humming birds, which had alighted or were darting among the blooms. It seemed as if I had invited the splendors of the tropics to visit and surround my northern New York home. The bumble bees are frequent visitors, and are sometimes so enamored of their surroundings that they occupy the flowers as bed-rooms at night.

If one desires amusement, there is great fascination in hybridizing by hand and growing seedlings. It will not do to trust the bees to do our hybridizing. The most interest centers upon the opening flowers of the new seedlings. All, especially ladies, may indulge in this pastime with but slight expense or attention.

I have some decided views of the direction improvements in gladioli should take. Many floriculturists are striving after taller and more branching spikes. These are not what I am trying to develop. I want a single spike with the flowers all pointing to one side, so that when two or three spikes are placed in a vase every flower points outward. This makes a perfect show of the blooms ; none of them are crossed or hidden ; all are symmetrical. Then, many of our old sorts do not stand straight up, but lop over and form goose-necks. It is needless to say such spikes are spoiled ; they cannot be tied to a stake ; for as they grow they bulge to one side. The only way to huddle them is to use a rubber cord stretched from a stake taller than the spikes so that it will contract as the latter grow. The flowers are never so well developed upon branching, as upon single spikes ; the energies of the plant are wasted to develop spikes when it is flowers we are after.

*Jefferson Co., N. Y.* D. S. MARVIN.

# CLAY AND CALADIUMS.

TO SECURE a bed of caladiums worthy of notice the current impression is that it is necessary to start with very large "bulbs," and the writer was of this opinion until last summer, when an accident showed him it is possible to grow specimens just as grand, and have a bed quite as magnificent by starting with much smaller bulbs —yes, even with pips not larger than a lady's thumb.

As bulbs or corms of the size ordinarily planted cost at the florist's from 25 to 40 cents apiece, while the smaller bulblets or pips may be had for five cents or even less, my accident may benefit some readers by enabling them to have three or four caladiums the coming season, where last year they had but one. I would not lead any people into planting the smaller corms, however, unless they are willing to give them the liberal treatment necessary.

Success in growing the caladium depends upon just two things—an abundant stock of food and a copious and constant supply of water. The only difference between starting with large corms and small is, that in the former case this store of food is already potentially at hand inside the corm, while in the latter it is to be furnished from without, in the form of well decomposed manure. Bulbs stored with food do not imbibe much nutriment from the soil in making new growth, but depend mainly upon that on hand, requiring only a suitable supply of water to develop a vigorous growth. Larger bulbs or corms of the caladium, therefore, do have considerable advantage over small ones, unless the latter be given a soil rich in food material, together with an abundance of water. Supply these, and a good healthy bulblet has the same resources as a full grown one.

Last spring all the large corms of the caladium were sold and planted by our customers before we got a chance to think of ornamenting the back yard with a bed of these old favorites. So the writer found only bulblets with which to bring into reality his vision of a bed of caladiums worthy to be called Adam's Aprons. It seemed like a poor prospect, but we took a half dozen and went around to the back of the house where a man was spading up the bed, on which, according to instructions, he had previously dumped a big wheelbarrow of rotted cow manure. Here a poor prospect again confronted us. The spot selected was near a cistern, and the soil was nothing but the stiffest and yellowest kind of clay. It had simply to be chopped up, and then it was not as mellow as mold. But having determined on the bed, in openings among the clods were placed the six embryo caladiums. After covering them our hopes were not much above a foot high.

After they had appeared a few inches above the soil—which they did in a few days—it seemed as if every one about the house determined to drown that bed. Soapy water from wash basins was poured on it and frequent drenchings from the cistern continued throughout the summer.

A few days ago I was examining the bulbs of various kinds stored away, and came upon some of the caladiums, as fine as one could ask to see. They were 4½ to 5½ inches in diameter. These were the pips planted in the yellow clay ! As they were dug in the fall, the leaves stood about five feet high, with blades three feet or so long, while the group covered a circle about eight feet in diameter.

Soapy water and cow manure appeared to be food materials of the most suitable kind, while the open yellow clay made an excellent seed bed, remaining uniformly cool and moist. ERNEST WALKER.

# NELUMBIUMS AND NYMPHÆAS.

MY water plants started very early in spring and have made magnificent blooms, beginning on May 15. The large and elegant *Nymphæa alba candidissima* has been the first to show life and also to blossom. This is one of the free bloomers. It is full of flowers all the time. I measured leaves 16 inches in diameter and flowers 7 inches across. The center is rich yellow and the petals very broad and waxy white.

When only one variety is wanted, this should be taken into consideration before any other is bought. *N. tuberosa*, our own western lily, is also a rapid grower, very full and double, pure white, with a yellow center. Some admirers call it the finest of all white water lilies. It is a very lovely sight to see these delicious flowers first open. At about nine o'clock in the morning they expand and continually grow larger till about noon (according to the temperature) when they soon commence slowly to shut up again and go to sleep, about two or three in the afternoon. Water lilies and lotuses nearly all either closed in the day time or at night, and generally open and close for three or four days.

*N. odorata rosea* was about showing life at the same time as the two preceding. This is generally early in spring—usually in March. This lily has received much praise wherever introduced. It is sometimes called the Cape Cod lily. Like the rose called by any other name, it is just as pretty. People who visit my lily ponds call this a rapturously beautiful floral treasure. Its leaves are 12 to 15 inches across, and single flowers fill the inside of a man's hat. It is a very free bloomer and endures transplanting and rough usage extraordinarily well.

*N. odorata* is our own sweet-scented water lily. It is also a lily whose praises can never be too highly sung. I planted a small tuber from one pond into another this spring and it has roots, and now (July 10), four large beautiful buds in all stages of expansion. It is almost as large, leaves and flowers, as the Cape Cod lily, and snowy white.

*N. odorata minor* is much like *odorata*, only smaller. One of my ponds is almost entirely covered with it. Bees have a pleasant time on the inside of the flowers, and extract a large amount of honey from them. Hundreds of them are open almost all the time, and these busy creatures makes use of them nearly all summer.

*Limnanthemum nymphæoides*, Floating-heart, is now in its fullest glory. It is not as pretty as our lilies, but its curiously formed flowers, rich yellow color and lace-like petals are all blended in such a way as to make it a lovely companion for its more royal namesake.

*Nuphar advena* is of the lily kind, but bears only a partially developed yellow flower, something like the yolk of a large egg. It has large leaves, which sometimes stand out of the water. Mud lily is one of its names, and splatter dock another.

*N. Devoniensis*, *N. dentata* and *N. rubra* are three tender and night-blooming lilies. They are cultivated mostly in hot-houses from seeds or tubers left over from the preceding summer and then transferred to shallow ponds. I generally put some good strong plants in a shallow place, and when the warm nights come they soon spread over a large area.

*N. Devoniensis* and *N. rubra* are pink and red, and *N. dentata* is white, something like *N. alba candidissima*, but larger. This spring I planted some blue water lilies from seed, and they are doing well.

*N. Zanzibarensis* is highly praised by some of our principal florists. Lincoln Park, Chicago, and Central Park, New York, as well as many public and private ponds make fine displays of the last named tropical plants. I expect my *N. Zanzibarensis* to bloom in August. This blooms during the day; the other three during the night.

*Pontederia crassipes major*, or water hyacinth, is a curious water plant, and makes a good show all summer.

*Azolla Caroliniana*, or floating moss, is very pretty when grown in the shade, and grows reddish when exposed to the full glare of the sun.

*Pistia stratiotes*, or water lettuce, is also found in my ponds. These bear no flowers, but are very useful for carp and other fish ponds, forming a complete carpet bed for places not taken up by the hardy and tender water plants.

*Zizania aquatica*, or wild rice, is coming up for the second time this summer, as I mowed off, dried it and have made hay of the first crop. It is greedily devoured by all kinds of cattle, either green or in a cured state. It is found in our fish ponds and is highly recommended by fish culturists as very necessary for German carp. The seed falls in the water, where it is appropriated by the fish. I have often noticed that carp are constantly nosing and hunting for food under the leaves of lilies and floating moss, and among the reed stems of wild rice.

After all, the nelumbiums, or sacred lotuses, are the most unique, grand and wonderful floral attractions I have in all my aquatic collection. They show life a little latter than the hardy nymphæas, such as the larger white European (candidissima) lily, and our own tuberosa; but when they have commenced to grow and show leaves, they make such a rapid display among the other plants that the latter sink into utter insignificance. New leaves and flower buds are constantly shooting up, and there is no end to bloom and blossom.

*N. speciosum* is a large flowered variety, and has done

exceedingly well with me for years. It is pink and comes from Egypt, where it was held in sacred memory.

*N. striatum* is a very beautiful lotus from India. It is pure white, with crimson spots irregularly splashed here and there over the entire flower.

*N. roseum* comes from China, is darker than speciosum and a free bloomer; it can be placed among the finest flowers in the world, and would always be considered a queen among them. All lotuses are delightfully fragrant—something like anise, both in leaf and flower.

*N. Kermesinum* has a color somewhat resembling the Cape Cod lily or *N. devoniensis*, and is at present rare and much sought after. This lotus was brought from Japan and is now thoroughly acclimated in America.

*N. album grandiflorum* is a pure white variety, and has received unstinted praise in my collection.

*N. luteum* is a yellow American variety, and not unlike the others except in color.

All these lotuses are interesting to all who can appreciate a beautiful thing when they see it. They have many curious peculiarities; for instance, in one variety it looks as if boiling water were constantly bubbling up from the leaves which lie flat on the water. If a little rain or other kind of water is left on the leaves where the sun shines at midday, air bubbles rise up all the time. I suppose the phenomenon is due to the heat of the sun's rays producing an effect like that caused by water poured on a hot stove, The cause has not been explained, to my knowledge, and I would be glad to get information on the subject. It seems that the roots penetrate deeper at the approach of winter, as if nature would provide against frost. Are plants gifted with instinct like animals?

To enumerate and distinguish the best and most popular water plants would be no easy task, for all are fine. The hardy lilies are preferable for those who are not disposed to bestow much care on their collections. The four named first in this article are all very hardy, and none can be finer. If only one were desired, I would select *Nymphæa alba candidissima* for white; *N. odorata rosea* for pink, and *N. Marliceæ chromatella* for yellow. These are all good, the best that can be had. For a lotus, it would be equally difficult to say which is the best. Take anyone and you will be delighted.

All the lilies and lotuses, as well as a great many other water plants, not here mentioned, are doing so well with me and are so necessary in my fish ponds, that had they no flowers or any other charms to attract and please the eye, I would place them where they are as food for fish and an excellent spawning bed where the latter could deposit their eggs.

*Berks Co. Pa.*, S. H. Fegely.

# AGAIN THE FENCE.

TWENTY-FIVE years ago Cazenovia had some seven miles of street fence, a large part of it costly and elaborate. The cost averaged at least $1,000 per mile; annual deterioration, say one-fourteenth—half a mile. Annual renewal, apart from painting and repairs, $500.

Credit side.—Twenty street cows, of keen and eager character, that would lift a gate, break a fence or toss a child with neatness and despatch. The wayside grass was fed into the earth, but weeds were mighty and many. The sidewalks were highly enriched, and the language of those who strolled by night was extremely pronounced. No vine or tree could grow near the highway, while hedges were unknown. It cost the community $25 a year to fence for each street cow.

A good estray law was passed in New York State, and your correspondent first enforced it, with the expected result of curses and threats; but the law eventually won, and now there is hardly a fence in the village. The weeds have gone before the lawn mower, and the highways are bordered with fair sod. Some lawns have a simple chain, with a partial screen of blooming shrubs; many have perfect hedges, others no barrier; yet, complaints are not heard of trespass or mischief. Grain fields are open to the highways, and the losses of years would not be a sum equal to the cost of simply setting up fences every month. Flower baskets are in the open grounds and even in the streets, and now we are taking in part of the business streets and replacing an excess of dusty, heated highway with bands of sod and baskets of plants, so that business men can stand in their shop doors and enjoy well-kept grass and flowers.

The "business parts" of villages are quite too much neglected, despite the fact that a large proportion of the population pass the entire day in and about the shops. Probably no single change has marked out as much of beauty, safety and public refinement as shutting up the refractory animals that once were forced to forage or starve, with an ample chance to do both. Here, cows are no longer dogged or stoned, but are halter-broken and quiet at their tether pins, and are beautiful objects on large lawns.

The high fences that were welcome screens for tramps and burglars, that challenged every active boy to feats of lofty tumbling, and gave endless opportunity to the bill-poster, are gone *for good*, and with them heaps of fence-corner refuse—accumulations of years, dating from the discarded hoop-skirt of the past, to the more recent frameworks of fashion that will not burn up or go down the drain pipes. These deposits of broken china, old boxes, stove pipes, obsolete vegetables and obvious bones were scenes of discordant dog fights and cat controversies, while far more seriously were they to be feared as breeding spots for diphtheria and typhoid. They were the delight of the omnivorous rat, the prowling grounds

of the nocturnal but still too evident *Mephitis Americana*, and well-devised incubators of myriad flies and mosquitoes.

A common idea of "cleaning up" is to throw it over the fence. "Out of sight, out of mind." But no less dangerous are the deadly deposits that mold under the shade and protection of the high fence. Sanitary science, æsthetic taste and neighborly courtesy should unite in the crusade against the fence that goes to the ground, preventing the wholesome sweep of the scythe, harboring weeds and vermin, and checking disinfectant currents of air; and next, all should unite in desiring humane restraint for the big dog that frescoes piazza floors, invades flower beds disastrously, and causes more anxiety and irritation than the old-time foraging hen.

Civilization has reached a point when no *person* will tear up decorative plants or commit a nuisance on handsome private property, but by strange anomaly, thousands assume such privileges for their dogs, and resent with animosity the most delicate hint that some peculiar habits of our canine friends (not to mention hydrophobia) may be annoying, alarming and disagreeable to persons who are still the best and most considerate neighbors. The principle, "love me, love my dog," has been quite too much presumed upon, as the records of "dog cases" show, and the rambling canine is to-day the main reason for fencing gardens, lawns and semi-detached homes. Therefore, let common sense step in to eliminate worthless curs.

*Madison Co., N. Y.* L. W. LEDYARD.

# SEED GROWING AS A BUSINESS.

THERE are so many essential things in producing and maintaining a high quality in seeds, that it is necessary to give undivided attention to their production. This fact makes seed growing a business or occupation by itself, which includes planting, cultivating, harvesting, warehousing and selling to the dealer.

According to my experience in the business, it should be divided into two branches:

First. The growing and harvesting of the crop.

Second. The furnishing of the stock seed and the warehousing when harvested.

There are several reasons for thus dividing the business. The land owner is looking for a crop that will pay him best; he has the land and is ready to perform his part of the labor. But to venture on new and untried crops is an experiment that few will make; there is the seed to be bought from which to produce the crop, and until it has grown he does not know whether it is true to name or not. There is experience needed from the first that, while simple, is yet necessary, and few are disposed to risk the year's income on untried crops.

But place in his possession the assurance that the crop from the seed furnished will be accepted at a fixed price, and that such experience as he may lack will be given, and he can feel almost as certain of success the first year as he does of his wheat, or corn, or potato crop.

Another feature: In handling a farm properly there must be a rotation of crops. A field devoted to a crop of seed beans may next be wanted for wheat; another is unsuitable for beans but is just the place for cabbage, while a neighbor will have one ready for beans

The warehouseman handles and distributes the stock seeds, overlooks the growth of the crops, receives and cleans them when harvested. It is coöperation that makes possible what cannot otherwise be accomplished.

During the past 16 years I have grown at a profit sweet corn, wax beans, tomato, cucumber, radish, melon, squash, onion, parsnip, cabbage and turnip seed. Several others may be grown here, and I am led to believe there are few localities where so many kinds may be grown in such perfection for seed purposes. Onions, parsnips, carrots and beets may be wintered over with more safety in California than here, and large quantities of those and lettuce seeds are grown there. Still, my experience is, these seeds grown in Michigan give better results than California grown. We cannot now compete in price on cucumber, melon and squash seed with those grown in Kansas, Nebraska and Oklahoma, but those grown here are earlier and more desirable. Among the kinds of seeds that will pay best here are some varieties of sweet corn, garden beans, tomato, radish, cabbage and turnip.

One general rule should govern all attempts at commercial seed growing, viz.: Grow the crop for seed purposes and for nothing else; if any incidental advantages may be had, so much the better—for instance, in growing a crop of corn, we have the fodder. If it is desired to grow vegetables for market, as tomatoes, or cabbage, or corn, use them for that purpose; but if grown for seed, let the crop be used for seed only.

Crops want cultivation in time; the right kind of cultivation and at the right time. I have seen crops damaged by neglect; I have seen others damaged by too much cultivation or at the wrong time.

Among the advantages to be derived from this industry are a greater variety of paying crops to select from in planting our greatly diversified soils, and a home market which is more satisfactory than a distant one. Seed growing is not a fancy and brilliant affair, notwithstanding the beautiful pictures and wonderful descriptions—almost Munchausen like—in seed catalogues; neither is it a royal road to fortune; but it is an occupation that must flourish and continue so long as seeds are used, and when understood aright is both pleasant and profitable—*E. M. Haven, before the South Haven and Casco (Michigan) Pomological Society.*

# TOMATOES UNDER GLASS.

EXPERIMENTS AT THE CORNELL UNIVERSITY EXPERIMENT STATION.

THE WINTER forcing of tomatoes is little understood by gardeners, yet it is a promising industry for the vicinity of the larger cities. Winter tomatoes find a ready sale at 40 to 80 cents a pound. The crop demands a high temperature, an abundance of sunlight, and great care in the growing, but the profits, under good management, are correspondingly high.

A light and tight house is essential, high enough to allow of training the plants. Our preference is a house having a two-thirds span and the ridge eleven feet from the ground; twenty feet wide and built upon a sharp slope. It follows the lay of the land, running nearly east and west. A north and south house would be preferable, probably, because of the more even distribution of light. The framework is unusually light; the glass 14x24 inches. Our second choice is a house like the first, except that the ridge is two feet lower. We also grow a late spring crop in a pea and lettuce house.

The importance of direct and strong sunlight was well illustrated in our lightest house last winter. At one end is a low building which shaded a part of the plants after half-past two or three o'clock. The plants within three or four feet of this building bore no fruits whatever, although strong and vigorous. At six and seven feet away some fruits were borne, but it was not until some fifteen or twenty feet from the building that a full crop was obtained. During the middle of winter the north bench, in our house, produces no more than half as much fruit, even in an unequal-spanned house, as those in direct sunlight. The plants in partial shade grow as well and as large as those in full sun, and they often blossom well, but the fruit does not set. The proper temperature is 60° to 65° at night and ten degrees higher for dull days. On bright days it may be allowed to run higher, although we always wish to ventilate at 75°, but a temperature of 90° or even 100° can do no harm. Until fruit begins to set, the atmosphere should be kept moist, especially on bright days, but the setting of the fruit is hindered by a humid atmosphere.

We grow the plants in rich garden loam with a fourth or fifth of its bulk of well rotted manure, and when the plants begin to bear, liquid manure is applied every week, or a top-dressing of manure is given. This may seem extravagant fertilizing; but in house culture the roots are confined in a small space and they have iittle chance to search for food. We find this heavy manuring essential.

August 9 gave plants fit for transplanting early in September. These were planted in permanent quarters October 15, and the first fruits were obtained December 28. They continued in bearing until near the end of February, when they were trained for a second crop. Plants started November 10 were transplanted into 4-inch pots December 8, and from these pots into permanent quarters February 25. The first fruits were picked May 6, and May 12 the first market picking was obtained. The second lot grew more slowly than the first one, because of the short and dull days of midwinter.

I prefer to grow tomatoes over brisk bottom heat. The plants may be grown in shallow beds upon the benches, or in boxes or in pots. I prefer 18-inch-square boxes, although we have had good success in beds. The illustration on page 550 will give some idea of the arrangement of our tomato house. The return pipes lie close upon the ground and are covered with a low platform or bench, made of 3-inch slats with inch spaces between them. The boxes are placed ten inches or a foot apart, and four plants are set in each of those, which are eighteen inches square. We have grown them in 10-inch-square boxes and also in 10-inch pots, but these dry out so quickly that we do not like them. Our boxes are a foot deep. One or two narrow cracks are left in the bottom. A good layer of potsherds or clinkers is placed in the bottom for drainage, and the box is then filled two-thirds full of soil. When the fruit begins to set, the box is nearly filled with rich soil and manure. The object of not filling the box at first is to confine the roots in a smaller space and therefore to hasten fruitfulness—perhaps an imaginary advantage—bnt more particularly to allow of an additional stimulus to be given the plant at fruiting time.

The plants must be trained. For midwinter, when it is necessary to economize sunlight, I prefer to train plants to a single stem. Strong flax cord, the size of wool twine, is used for support. A single strand runs perpendicularly from each plant to a horizontal wire or rafter extending lengthwise the house under the roof. The plant is secured loosely to this support at intervals of a foot or so by means of some broad and soft cord, as bass or raffia. All side shoots are pinched off as they appear, and the leader is "stopped" or pinched off as soon as it reaches the glass, or sometimes when fruits begin to form. In houses of sufficient height, I like to train the plants fully six feet high. In midwinter it may be necessary to cut away some of the older leaves, or to cut them in two near the middle, in order to let in light. As the fruit sets, the leaves near the base of the plant begin to die and should be picked off. As soon as the fruit becomes heavy the largest clusters will need to be held up. A sling of raffia is caught over a joint of the plant and is passed under the middle of the cluster. Upon very strong vines the clusters sometimes "break" or push out a shoot from the end. This shoot should be cut off. Tomatoes upon clusters where this

abnormal shoot was allowed to grow were generally smaller and more irregular than upon clipped shoots.

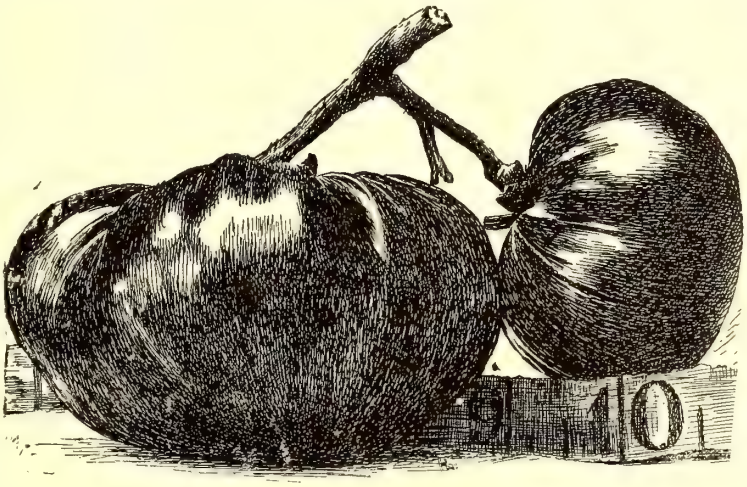
During all the early growth the atmosphere may be kept moist, particularly in sunny days, when it is customary to wet down the walks. Care must be taken in watering. It is best to soak the soil pretty thoroughly at each watering, yet it should not be drenched. Careless watering usually leaves the surface wet while the under soil remains dry. This must be avoided. In midwinter we water our plants thoroughly about twice a week, giving no water directly to them between times. If the red spider should attack the plants the atmosphere must be moist, and in bad attacks the foliage should be syringed. Every care should be taken to keep the plants free from the spider, for the pest cannot well be overcome after the fruit begins to set, when the house should be kept dry. If fungi begin to attack the plants, however, the atmosphere will probably need to be kept drier.

When the flowers begin to appear the atmosphere must be kept dry during the brigter part of the day in order to facilitate pollination. The pollen is discharged most profusely in dry sunny days. In the short dull days of midwinter some artificial aid must be given the flowers to enable them to set. I am strongly of the opinion that it will pay the commercial grower to transfer the pollen by hand during midwinter. At that season the flowers are most likely to fail and the product is the most valuable. The most expeditious and satisfactory method which I know is to knock the pollen from the flowers, catching it in a spoon, watch glass, or other receptacle, and then to dip the stigmas of the same or other flowers into it. There is a time in the life of the flower when the pollen falls out readily, if the atmosphere is dry enough to hold dust. This is when the flower is fully expanded and somewhat past its prime. The flower is tapped lightly with a lead pencil, and the light yellow powder falls out freely. C. J. Pennock, a Cornell graduate, grows winter tomatoes for market, and writes me as follows: "During the short days of winter I pollinate carefully every day, and I consider the operation necessary. I use a light piece of wood about sixteen inches long and one-half inch square, one end of which has a slight saucer-like depression. This stick is held in the left hand with the depression under the blossom to be pollinated. Another light stick or reed

View in Tomato House. Plants Three Months Old, Trained on Strings.

is used to tap the blossom and shake out the pollen, the end of the pistil being pressed into the accumulated pollen in the depression at the same time. I have tried jarring the plants and have seen a brush used, but do not consider either as good as the above method."

In my earliest experiences I was impressed with the fact that indoor tomatoes are smaller than those grown out of doors, and the midwinter fruits are usually smaller than those produced in late spring. There is also a marked tendency in house tomatoes to be one-sided. I finally came to feel that this irregularity was often due to irregular or insufficient pollination. My former assistant, W. M. Munson, pollinated two fruits upon the same cluster with pollen from one source, but in one flower very little pollen was used and it was applied upon one side of the stigma only, while the other flower received an abundance of pollen over the whole surface of the stigma. The result is shown in the cut on this page.



THE EFFECTS OF POLLINATION.

The large fruit received the more pollen and it is fully four times as large as the other, which received the small amount. Moreover, the large fruit was practically symmetrical, while the small one was one-sided. This experiment has been repeated several times with substantially the same results. The flowers, of course, were emasculated in the bud and were securely covered with bags to prevent any interference.

The crop from the one or two or three trained shoots of house tomatoes does not exhaust the vitality of the plant; consequently when the crop is well along, one or two new shoots may be trained out from near the base of the plant to produce a second crop. If the plant is carrying a load of fruit when these second shoots are being trained, liquid manure should be given once or twice a week, or a fresh mulch of old manure may be added. In the dark days of midwinter it is better to delay starting them until the fruit from the first crop is nearly all full grown. But in late February and March the new shoots may be allowed to become three or four feet long before the old shoots are cut down. Of course much will depend upon the distance at which the plants are set, the lightness of the house and the fertility of the soil.

Any statement of the yield per plant of house tomatoes is utterly valueless unless the method of training is given. The yield from two-stemmed plants will be twice as great as that from single-stem training, and the yield from double cropping of one plant will be from two to four times as much as from a single crop; and much will depend upon the time of year. The true way to estimate yield is by the amount of floor space covered.

In our experience we obtain from 1½ pounds to 2 pounds per stem (or plant) in midwinter and about twice as much in spring, or an average of 3 pounds or more for the season. This amount is produced on 1½ square feet of space. Mr. Pennock obtains from 8 pounds to 10 pounds to the plant for the season, but his plants cover 5 square feet. The practical results of the two systems are therefore about the same—about 2 pounds to the square foot; but the box system has some advantages in ease of manipulation, and the plants are so numerous that the loss of one is not so serious as in the other case.

We have forced Dwarf Champion, Lorillard, Ignotum, Ithaca, Golden Queen, Golden Sunrise, Volunteer and Beauty, and we are now growing Potato Leaf. Of these, the Dwarf Champion is least satisfactory.

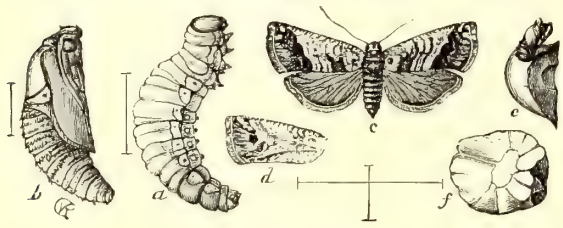
The tomatoes are usually marketed in small splint baskets holding from four to ten pounds of fruit. Each fruit is wrapped in tissue paper, and if to be shipped by rail the baskets should be lined with rolled cotton. In midwinter our fruits average from 1¾ ounce to 2 ounces each, but in late March and April the average will rise to three ounces and more. In May, well pollinated fruits often weigh seven or eight ounces. The weight of the best fruits is often increased by cutting off the smallest and most irregular ones.—*L. H. Bailey*, in June *Bulletin, Cornell University*.

# MEXICAN JUMPING BEANS

AND THE PLANT UPON WHICH THEY ARE PRODUCED.

SOME YEARS ago I gave some account* of the insect *Carpocapsa saltitans* (Westwood), and the manner in which it produces the motions of the well-known Mexican Jumping Seed, or "Devil's Bean." The particular euphorbiaceous plant upon which these seeds occur was not then known or determined. The poisonous nature of the plant, and the fact that it is used by the Indians to poison their arrow points, has long been known, and, in fact, the plant is known to the Mexicans as the Arrow Weed (*Yerba de flecha*).

The shrub was described to me in a letter from Mr. G. W. Barnes, then president of the San Diego Society of Natural History, in 1874, as small, branchy, from four to five feet in height, bearing in June and July, seeds, a pod containing from three to five. The leaf was said to resemble that of garambullo, being ½ inch in length and ¼ inch in width, a little more or less; the bark ash colored, and the leaf perfectly green during all seasons.




CARPOCAPSA SALTITANS.

*a*, larva; *b*, pupa; *c*, imago—enlarged, hair-lines showing natural size; *d*, front wing of pale var.; *e*, seed, natural size with empty pupa skin; *f*, same, showing hole of exit.—(After Riley.)

Seeds were borne only once in two years. In a later letter he stated that, according to his information, it grew only in the region of Alamos, in Sonora; that it is called Brincador (Jumper) and the seeds "Brincaderos." Westwood, in his original description of *Carpocapsa saltitans*, states that the plant is known by the Mexicans as colliguaja, and Professor E. P. Cox informed me some years ago that the shrub has a wood something like the hazel or whahoo, and that the leaf is like a broad and short willow leaf. He confirmed the statements as to its poisonous character and its use to poison arrow-heads, and said that a stick of the shrub, when used to stir the "penola" of the natives (ground corn meal parched), purges. M. P. Chrétien, of the French Entomological Society, in a recent letter referred to his own rearing of it, and to the plant as a Mexican euphorbiaceous plant by the name of *Colliguaja odorifera* (Moline), of which *Croton colliguaja* (Sprengel) is a synonym. This letter was still on my desk when J. M. Rose, of the Botanical Division, brought me specimens of plants which had recently been collected by Dr. Edw. Palmer, who, with the plants sent specimens of the capsules, thus rendering it quite certain that the "Jumping Bean" occurs on this particular plant. It turns out to be undescribed, and has been finally referred to the genus sebastiania, and Mr. Rose intends to describe it as *S. Palmeri*. Naturally, as in so many euphorbiaceous seeds, each seed pod splits into two parts in opening, but when infested with the carpocapsa larva, the silk lining which the latter spins prevents the seed from dehiscing. The general aspect of the leaf is not unlike that of a broad-leaved willow, the length varying from 1 to 3 inches, and the width from about ½ to 1¼ inches. Bentham and Hooker give *Colliguaja odorifera* as from South America, and I can find no record of its occurring in Mexico. Comparison of the specimens in the Department Herbarium shows that, while evidently closely allied, colliguaja is quite distinct from sebastiania, which fact renders it rather remarkable that the name given by the Mexicans to the plant should be identical with that adopted for the genus of a South American plant, and the inference may properly be drawn, that this name is applied by the inhabitants indifferently to various ephorbiaceous species which occur, whether in Mexico or south of the equator. If colliguaja does occur in Mexico, and is also a host of *Carpocapsa saltitans*, it may be readily distinguished from the species of sebastiania, here mentioned, by its small thickish leaves, which are strongly glandular-toothed; the male flowers form long, slender spikes, with very many stamens; the capsule (seed pod) is described as nearly one inch broad.*

A closely allied species of Sebastiania coming from the same localities and also yet undescribed (but which Mr. Watson intends to describe as *Sebastiania Pringlei*) and which has previously referred to the genus gymnanthes, also shows evidence of being infested with Carpocapsa, and indeed my friend, M. Eugène Dugès, of Guanajuato, Mexico, has reared the moth from the capsules of this particular species.†

* In the Transactions of the St. Louis Academy of Science for December, 1875, Vol. III, page CXLI.

* Professor Watson informs me, since the above was written, that the name *Colliguay*, so far as he has been able to learn, is the Chilian name for several Euphorbiaceous species which constutite the genus *Colliguaja* of Moline. It is not a native Mexican word, but has probably been introduced into Mexico by the Spaniards from Chili. He confirms the statement that the Chilian genus is not found in Mexico, hence M. Chretien's reference of his plant to it was probably due simply to the similarity of the popular name.

† I have received from Professor Sereno Watson, of Cambridge, Mass., an interesting communication accompanied with capsules of *Sebastiana bilocularis* and specimens of the moths bred therefrom. An examination of these shows them to be of a species very much smaller than *Carpocapsa saltitans* and to belong to another genus (Grapholitha) in the same family. It may be known as *Grapholitha sebastianiæ*, by which name I will, in the near future, characterise it.

There is, therefore, good evidence that the insect causing the motions of the bean developes in the capsules of at least two different species of the genus sebastiania, if not in those of other clcsely allied genera. The plants differ not only in the general appearance and foliage, but in the inflorescence and seed, and the following synopsis, prepared by Mr. Rose, will serve to distinguish those here considered :


THE PLANT OF THE "MEXICAN JUMPING BEAN."

*a*, Twig of *Sebastiania Palmeri*. *b*, Seed, enlarged. *c*, Seed, natural size. *d*, Ovary with style. *e*, Involucre. *f*, Staminate bract of *S. Pringlei*, enlarged. *g*, Leaf and staminate bract, natural size.

SEBASTIANIA. A large genus of euphorbiaceae, of some 40 species, confined mostly to South America ; mostly shrubs, rarely herbs ; leaves alternate, entire or slightly toothed ; flowers monœcious, the male flowers forming slender terminal spikes, at the base of which are usually two or three female flowers ; female flowers with small bract-like calyx, three to five parted ; fruit capsule, globular or three-lobed ; the capsule separates in age into three cocci, each of which contains one seed.

*Sebastiania bilocularis*, Watson (Proc. Amer. Acad. XX, 374, 1885). A shrub one to two feet high with upright, slender branches, glabrous and with light gray bark ; leaves linear-oblong or narrowly lanceolate, one to two inches long, obtuse to acuminate, abruptly cuneate at base, obscurely glandular-

toothed; ovary two-celled, with two stout revolute stigmas; capsule broadly ovate, acute, bi-coccous, about five lines long, seed sub-globose, three lines broad. It grows in dry water-courses on the hills and mountains of northwestern Sonora and has been reported from lower California.

*Sebastiania Palmeri* (Rose n. sp. ined.). A loose growing shrub, five to eight feet or even sometimes ten feet high, glabrous, with reddish bark; leaves narrowly-lanceolate to lanceolate, two and one-half to four inches long, slightly dentate, ovary three-celled, with three spreading slightly united styles; capsule oval obtuse, three-celled, three lines in diameter. Collected in various places in the mountains about Almos, Sonora, by Dr. Palmer in 1890.

*Sebastiania Pringlei* (Watson n. sp. ined.). A small shrub with spreading branches and brownish bark; leaves lanceolate one to three inches long, acuminate, obtuse at base, minutely toothed; ovary three-celled, with spreading slightly united styles. Collected by Pringle in San Luis Potosi in 1890, and previously on the Alamos river, in Sonora, by Professor José Ramirez.

It is difficult to say which of the species Mr. Barnes referred to in his letter, but the reference to the seed is somewhat misleading, and the reference to the pod containing from three to five seeds is also somewhat ambiguous and doubtless erroneous. Each of the carpels contains one seed, which, when the fruit is young, in all probability fills up the entire space, and the young carpocapsa larva doubtless hatches from an egg laid externally on the capsule, and penetrates the same while it is yet quite young, eating into the true seed very much as in the case of the larva of the common pea-weevil. The plant described by Professor Cox, whom I have quoted, corresponds fairly well with *S. Pringlei*. Dr. Palmer found that *S. Palmeri* was limited in its distribution to certain cañons about Alamos. He states that it is known as the *Palo de la flecha, cuero de las simellas brincaderos* (Arrow tree, which produces the jumping bean). The plant exudes a good deal of milky juice, which is what the Indians use on their arrow-heads. He found the plant in several places, but it is recorded that the jumping "beans" are found only in an arroya (bed of dry water course) near Alamos. It is not easy to obtain infested capsules, because boys are always on the lookout for them and gather them for sale, as they find a ready market. He describes the shrub as a loose-growing plant, five to eight inches high, and the wood very hard, the milky juice readily crystallizing into a clear, white, brittle substance.

C. V. Riley.

*U. S. Department of Agriculture.*

## NOTES FROM A WOMAN'S GARDEN—SEPTEMBER.

THOUGH the weather is delightful, the sky never bluer, the grass fresh and green, and many flowering plants seemingly in full glory, it takes only a glance around the garden to realize that summer has almost gone and the season of autumn is fast approaching. Much of the corn has been cut and stacked, and that still growing is beginning to look rather pale and yellow. The early beans are ripe and dry. There are more seed cucumbers than green ones to be seen. Melons are ripening fast, also grapes and pears. The squashes and pumpkins are rapidly taking on their golden hue. The currant bushes show here and there a yellow leaf. The season of maturing, ripening, has surely come.

During the bright autumnal days there is much fruit to be gathered; it is not well to let any lie on the ground. As far as possible, keep it from falling; once bruised, it will soon decay. There are generally heavy frosts before the end of September, and all the fruit except winter apples and pears should be gathered this month. Keep tomatoes picked closely; by covering the plants frosty nights their season can be prolonged a little.

In the first hoeing of the garden many ground-cherry plants were left just where they had happened to come up, very often between the rows of corn. Now the ground near them is covered with the queer husked fruit, which falls as soon or even before it is ripe. This is gathered daily, and spread out in shallow trays to ripen and dry. It makes a delicious preserve for winter use, and the fruit will keep many weeks uncooked, growing sweeter as it dries.

Old Levi carefully spreads the cucumber seeds on a board, letting them dry a few days, then hangs the board up in the barn for the winter; when needed, the seed has only to be scraped off with a knife. Levi is much attached to this board, which he has used for many years for this purpose. Once, not noticing that it was other than a common board, nor observing the hole made at one end to hang it up by, I was guilty of taking this cherished board to use for a walk across a flower-bed.

"Wall, now," said Levi in a sorrowful tone, "if you haint been and got my cucumber board! I think that's a leetle too bad."

Every year, in spite of close picking, the frost spoils many of the lima beans. The season is hardly long enough for them. One of my neighbors, when feeling sure of a severe frost, pulls up the beans, poles and all, and puts them into the cool cellar, and the beans keep fresh for several days.

Although it is better done earlier, it is not too late any time this month to set out strawberry plants; they

will usually get well rooted before the ground freezes. This is a good time, too, to give the strawberry bed a final weeding. If done carefully, it is a work requiring both much time and patience, but will bring its reward.

As soon as practicable, we northern folk gather the watermelons and place them in a sunny spot near the house to finish ripening, covering them cold nights. I find this is the only *sure* way of reserving the melons for home consumption. It is strange what a peculiar temptation a fair ripe melon holds for some people, especially for those who toil not, and those who are of "Afric's sunny clime."

Keep the garden "cleared up" as you go along; leave nothing decaying on the ground—refuse fruit and vegetables, cabbage leaves, turnip tops—to attract flies and pollute the air.

Keep everything "picked up," as the housekeepers say, and your garden will never look untidy or neglected, but always attractive and interesting.

*Plymouth Co., Mass.* M. E. VIGNERON.

## NORTH CAROLINA TOMATOES.

E CONFESS that tomato culture in this part of North Carolina is a puzzle to us. Here we are in the latter half of July and on plants raised from seed sown in January, transplanted and forwarded under glass, and hardened off in cold frames, we have had only here and there a ripe fruit! A bushel basket would hold, to-day, all the home grown tomatoes in the Raleigh markets and provision stores combined. In fact, during two summers and part of the third, which I have spent in Raleigh, I have never seen a *bushel* of tomatoes offered for sale. They are sold by the dozen all summer through. This season is particularly unusual. The daily downpour of torrents of rain has kept the vines growing with wonderful vigor, but no ripe fruit. Last year our early plants gave us ripe fruit May 25, and plenty in early half of June. Then came a sudden dry spell with intense heat, and cooked the whole. Plants from seed sown in June came on and made a fine crop in autumn. The problem of midsummer and August tomatoes is a serious one here. Last week, in Baltimore, I saw the market stalls piled high with splendid tomatoes produced in the adjoining county, while here, hundreds of miles south, they are selling rough, knotty, half ripe and cooked fruit in strawberry *boxes*. Fifty miles west of us great crops of magnificent tomatoes are grown and canned, furnishing the best canned tomatoes in the market, and all through the mountain country of North Carolina the tomatoes are superb. But here about the capital city fresh tomatoes in midsummer are a luxury hard to get and hard to grow. The fall crop from plants just set will doubtless be good, but the market growers about Raleigh do not seem to have paid much attention to these, and the market is never supplied.

How to circumvent the climate and get good tomatoes in July and August is a problem that is yet to be solved. At present, *first class* tomotoes in summer are practically unknown in Raleigh.

W. F. MASSEY.

# SOUTHERN HORTICULTURE—II.

NOT ALL GOLD—WORK AND BRAINS AS NECESSARY AS IN THE NORTH—CUCUMBERS UNDER GLASS—TOMATOES UNDER CLOTH—IRRIGATION.

AN ACCOUNT OF AN EDITORIAL JOURNEY.

LORIDA, the land of the orange and eternal bloom, has been written of until the budding minds of young America have received the impression that the state horticulturally would be of little value without these two things. But the Florida of which I write is the state of other fruits and of vegetables grown for home and northern markets.

Florida is full of promise, and when its inflated land valuations and wonderfully told visions of a land overflowing with milk and honey, shall have reached their level by the action of common sense, she will rest on a foundation sufficiently strong to hold the weight of a solid and prosperous commonwealth.

To the mind of the average northern consumer of Floridian products, fruit and vegetable growers in that section are money-kings, and made so by the enormous profits lying between the cost of production and the price to the consumer. But this profit is largely chimerical, as the grower abundantly testifies. As a matter of fact, the difference of profit between products of Florida (which can be grown north) shipped to northern markets, and those grown north for home markets, is simply the difference which goes with the natural advantages of the section in climate. And, in too many cases, this difference of profit is consumed by rapacious commission men and transportation companies. I was shown several bills of returns for products shipped to New York, of early vegetables, where the grower did not receive the cost of his packages.

All this goes to show that our brothers of Florida are not able to sit idly by and gather gold. Success then is gained by the same methods as elsewhere, and has for its strongest foundation energy and perseverence.

I was much interested in the efforts of Thomas H. Hastings, at Merryfield, Florida, some nine miles from St. Augustine, in growing vegetables for both home and northern markets. His success is worthy of record from the fact that he has utilized land generally considered as almost if not quite worthless for gardening. The name given to the area of land operated by Mr. Hastings—"Prairie Garden Sub-Irrigating Farm," excites curiosity, and the results of examination shows the correctness of the principle on which the place was established and is being worked. I regret that owing to perverseness of the kodak I am unable to illustrate the many noteworthy things at which I took a "snap-shot."

Mr. Hastings is making a specialty of cucumbers grown under glass for the half dozen large hotels in St. Augustine. His "cuke" house is 156 feet long by 22 feet wide, and the seeds are planted on raised benches. As the vines grow they are trained to wire netting, so that the "cukes" hang down. He had used no artificial heat up to the time I visited him; the water from his wells supplying the need in the manner described by Mr. Hastings. "If there is a continuous cold spell I flood the basin in the bottom of the house (this basin is about two feet deep and runs under each bench) with water from a four-inch artesian well which runs at a temperature of 79 degrees. I keep this stream running through the house at night, which keeps the house warmer by 20 degrees than it is outside. The water is four feet below the surface that sustains the vines, and this keeps the earth moist and the air warm."

English varieties are grown exclusively; Duke of Edinburgh, Lord Kenyon's Favorite, and Telegraph being the favorite sorts. Last winter the first cucumbers were cut on January 17 and continued till the last of March. The varieties used grow to an enormous length, some of them 30 inches long. I saw three specimens yet on the vines May 1, measuring respectively 18, 22 and 23 inches. The prices realized range from $6 a dozen early in the season to $2.50 toward the close, and no difficulty is experienced in selling all he can grow. The varieties named are seedless and of most delicious flavor, appealing to the palates of the wealthy people who winter at the palatial St. Augustine hotels. In April the cucumber vines give place to cantaloupes from which a handsome revenue is obtained.

Tomatoes are another hobby with Mr. Hastings, and he is turning it into money rapidly and apparently with ease. Five rows of frames, five feet high at the highest point and averaging 150 feet in length, yield crops which mean money every time. Of course it would be out of the question to cover this area with glass, so waterproof cloth is used, which, being fastened to immense rollers is rolled down over the plants on frosty nights. At the foundation of these industries and the 40 odd acres in potatoes, cabbages and other vegetables is the system of sub-irrigation.

In brief, a four-inch artesian well, 239 feet deep and with a volume arising with such force that it is easily carried to the top floors of the house fifty feet distant, is the chief factor in the scheme. The irrigating is done

by means of ditches on one side of the large field, from which trenches are dug in the desired directions. By damming up the trenches leading to the plots which do not require water, plots that do are thoroughly moistured by means of the flow of water in the trenches passing through the clay subsoil which underlies the surface soil a foot below. The trenches are allowed to fill with water until on a level with the surface, when the flow is stopped.

This prairie garden is divided into plots of different lengths, but each about 20 feet wide, having a trench on either side and at the ends for the purpose of irrigating. The whole system is as perfect as can be, and while nothing more nor less than the well-known plan of irrigating, its advantage is the utilization of the clay subsoil as a conductor of water. One familiar with the cost of tile used for irrigating purposes can easily imagine the saving by the process here described. Mr. Hastings is a firm believer in the possibilities of rice culture by his natural process of irrigation, and is rapidly turning his fields into rice. As fast as the vegetables are taken off the ground, rice is sown, and by the irrigation process makes a good growth. When there on May 1, I saw several small plots of about an acre each which looked full as well as that sown in the rice sections of South Carolina.

On this nearly flat prairie farm, which had been covered for years until August, 1890, with pine trees, are grown nearly all the vegetables that can be profitably marketed. The one possible drawback to the system so far as I could see was the extreme wetness of the soil when it rained. Unlike most people in the southern states, Mr. Hastings prefers the dry weather to even an occasional rain.

I venture the prediction that in less that five years, the sections of Florida similar to Mr. Hastings' farm will be covered with prairie farms which will approach in money making capacity the now famous orange groves of the state.

GEO. R. KNAPP.

# THE BAHAMA ISLANDS.

AT A meeting of the Massachusetts Horticultural Society, Colonel Wilson gave an interesting account of a trip to the Bahama Islands. These, which lie off the southeastern Coast of Florida, 1,050 miles from New York, must no be confounded with the Bermuda Islands, which are situated about 600 miles to the east of Charleston, S. C., and 900 miles from New York. The Bahamas are about 600 in number, though only about 17 are inhabited, a great many being merely small rocky islets. Their population is abont 40,000, of whom 14,000 live in Nassau, the capital, situated on the island of New Providence, and the lively headquarters of blockade runners during the late civil war. The islands, which have an estimated area of about 3,000 square miles, extend for about 600 miles north-west and south-east, and are very flat, long and narrow, formed of calcareous rock with a light sandy soil, where there is any. Though there are no running streams, there are numerous springs. The temperature is very equable, ranging between 70° and 82° in winter, when most Americans visit them for the sake of their health, the climate being very salubrious and beneficial to consumptives. The rainfall is equally distributed, and averages about 2½ inches per month. The islands are dependencies of the British empire, and the government is administered by a governor and an executive council of nine members, with a representative council of 28 members. Of the population about one-sixth are white, intelligent for the most part, and well educated; while the negro majority present a great variety in color, intelligence and industry, though generally willing to work for moderate wages. Indeed, the price of casual labor is only 50 cents a day, while permanent labor can be obtained for a much lower figure.

The principal vegetation on the islands is acacia, which is found in great variety. The royal palm, too, forms a stately tree, while the banyan grows to perfection in the eastern part of the group. The cocoanut thrives as well as in any part of the world, and bears in four years from the seed, and then fruits perennially, a frond extending every month, with a cluster of flowers at the base, which produce from 40 to 60 nuts. The growth continues during the whole year, and at all times the whole gamut from flower to fruit can be seen on the same tree, so that every day the owner can pick fruits which sell for three cents a piece.

Pine-apples are among the chief exports of the islands, though they are chiefly grown on the island of Elenthesa. The red soil only will produce a profitable crop, hence the area fit for the fruit is limited, and suitable land costs from $80 to $100 per acre. There are over 50 varieties of the pine-apple, but the red or Cuban is preferred for size and quality. The plants, biennial shrubs, are propagated by means of suckers, produced freely by most varieties, or by the crowns, which are less desirable than suckers, not producing fruit so soon. They are planted in August, and some varieties bear fruit 18 months after the suckers have rooted. The season begins in May, and from 800 to 1,500 is the product per acre. Formerly,

after the land had been cropped for three years, it was allowed to grow up to bushes and shrub; but now, by the aid of fertilizers, continuous crops are produced. Large numbers of pine-apples are canned for export, negro laborers being exclusively employed. They have to pare 100 pine-apples to earn three cents, and 4,000 is a day's work.

The production of sisal hemp is a new industry, encouraged by the authorities to afford employment to the laborers where pine-apple cannot be grown. The plant from which this is produced (*Agave Mexicana*) has always grown there as a noxious and persistent weed, but it has only been utilized for economic purposes within the last few years. From 400 to 500 plants can be set on an acre, and they will grow higher than a tall man can reach. The produce is about 800 to 1,000 pounds of hemp per acre. The leaves of the plants are cut off and passed through a machine which crushes them and scrapes off the pulp, the fiber amounting to about four per cent. of the weight of the leaves. Large companies were at first formed to conduct the business, and some acquired as much as 20,000 acres apiece. Now the government will sell no more land in large tracts; but 10 acres can be purchased by individuals for $10, to be paid from the first crop. This is by far the most promising industry of the islands.

Maize, yams, sweet potatoes, limes and lemons are also produced in considerable quantities for export, and oranges of superior quality were formerly one of the staple products of the islands, not though at present. Among the other exports, salt, mahogany, lignum vitæ and sponges hold the chief place. The sponge trade amounts to $300,000 a year, and the wages of the sponge collectors average about $75 per annum.

## THE MALIGNED BLACKBERRY.

"I DON'T like yer tame blackberries. They're too sour—take too much sugar and set yer teeth all on edge. Haint half so good as Betsy and I picks down in the woodlot." This is surely a common opinion of the garden blackberry, and yet nothing can be farther from the truth. It is all a question of cultivation and ripeness, particularly of ripeness. The man who buys his blackberries at the store never knew what a good blackberry is. And, in truth, I fear that few people who grow them ever half appreciate them. It is the worst of mistakes to suppose that blackness is a sign of ripeness in blackberries. The only sign is softness. When the berries fall into your hands as you touch the cluster, they are ripe. Then they have no core, no acid, no feeling of seediness. They dissolve in your mouth and give out an aroma which can be likened to nothing else among fruits. At this stage they are to my taste the *par excellence* of our small fruits. Nothing from the garden is half so warm and fragrant and luscious, and nothing calls to my mind so many associations of fields and woodlands. It is *the* fruit of summer, rich and spicy with the fullness of the season. Eat them when they are ripe, soft and fresh from the bushes, without sugar or milk, either on the table or in the field, and tell me if the raspberry or the strawberry is half so good!

Well grown, ripe and juicy blackberries will dispel this common fiction that the wild berry is better than the tame one. I once shared in the belief, but although I have long known better, it was not until this summer that every doubt was irrevocably driven from my mind. On a bright and drowsy July day I took a long tramp through tangles which I had known as a boy, and there again I picked the long and drooping berries in the shade of sweet birches and sassafras. Yes, they were delicious, and of course I picked only the ripe ones; but the berries in my garden are far better! Never such berries grew in copses as those which hang upon the rows of Early Chester and Ancient Briton and Agawam!

L. H. Bailey.


IN THE Northern States all growth in trees and shrubs appears to stop about the middle of August. The pear and apple trees no longer increase in height. Every growing shoot is tipped at the end by a round pointed bud called the "terminal bud," and, while the garden is full of plants that seem to be growing rapidly, the trees already feel the approach of winter. This month is the ripening month, and the soft, succulent, green growth now "ripens" and turns to wood. In the more southern states this ripening period may be delayed, yet it as surely comes even in late midsummer. If there are pear, cherry, apple or other trees in the home lot, look at them carefully, and it will be found that every young twig is capped by its terminal bud, and already the green shoots change color and grow hard and woody. This change begins at the lower end of the shoots, and extends upward till all the stem is dark, hard and stiff. The buds at the sides of the shoot are covered with hard shiny scales, the leaf stems turn yellow, the leaves themselves change color and already begin to fall.

The grand procession of the seasons is passing before us. We see now, from day to day, the preparation for the long sleep and rest of winter. The fruit trees, the grapes, the currants and the blackberries and raspberries ripen their wood, and the sap in their veins flows slower and slower, and finally, within the next six weeks, seems to stop completely.

If a stem or cane of a grape vine is cut in the spring or early summer there is a free flow of sap from the cut made in the cane. The plant "bleeds" and loses a part of its very life blood and is greatly injured. If the cut is severe it may soon die. When in the middle of August the growth ceases the flow of sap diminishes, and by this time, or when the wood is ripening, has nearly stopped. When all the wood is brown and hard the vines may be cut anywhere and the stem will remain dry and unharmed. Here is the key to the home lot work for this month. We can now cut, trim and shape our trees, bushes and vines. Now is the time to replant and rearrange the home lot both to make room for new plants and to arrange the old ones to the best advantage. We may start first with

THE CURRANT,

Because it is the first thing to complete its growth and drop its leaves. If your currant bushes are young and small the matter is easy and hopeful. If they are very old, of irregular shape, perhaps matted with grass and weeds that have grown up between the stems, the work is less encouraging. A yearling bush (growth of one season) has only one straight stem, say two feet long, with lateral buds at the sides and a terminal bud at the top. Now if you cut off (use a sharp knife and cut with an upward stroke close above a bud) six inches from the top, it is plain the last bud left takes the place of the terminal bud, and the new shoot that will next year grow out of this bud will form the top or leading shoot of the bush. The top bud always makes the strongest and most vigorous shoot. In the currant from three to six of the buds send out shoots in a group or crown about the terminal shoot. In this way the head or bush is formed, and it is plain that wherever you cut this stem now, there the future head or bush will be formed. A short cut, or none at all, will, next year and ever after, give a high bush or a tall stem. Cut the stem shorter and you will have a shorter bush, placed nearer to the ground, and of a more compact or closer shape. This is the key to this entire art of

TRIMMING OR TRAINING SHRUBS AND TREES

by pruning. Leave the first stem of a young tree or bush untouched and next year the terminal bud and the half dozen buds close below it will grow, forming new shoots or branches. This head or group of branches will be at the top of the stem, and all the buds below it will fail to make shoots and will produce only leaves. Thus with the knife you may control now the future shape of the bush or tree. In future years all growth in trees is controlled in precisely the same way. Leave the ripened shoots of this year untouched and next year's growth will be long, straggling and probably misshapen. Ever after, the tree will keep the habit you now impress

upon it—long, thin and irregular ; or short, compact and of symmetrical shape. Study your trees and shrubs ; see how the branches and twigs are placed. See if they grow into the tree or cross each other ; see if all turn outward towards the light and air. Which do you think the best and most beautiful ? Remember that now is the time to study these matters and to use your knife with judgment and care. Observe this ; a short cut makes a high thin head; a long cut places the future head lower and makes it more compact and of a better shape. Lastly, in all trees and shrubs more than a year old make the cut just above one of the lateral buds that points outward away from the center of the tree. This top shoot will grow in the direction in which the bud now points, and this growth must be outward or towards the light.

### NOW IS THE DAY

For this work. As soon as the leaves fall, trimming and training may be done, and it is far better to do it now than to leave it till spring, when other matters will demand your attention. It can be done at any time through the winter. In the home lot *now* is the accepted hour.

These currants once more : If the bushes are large and full of old or misshapen stems, use the knife freely and take out the older stems in the middle and all stems that cross each other or that grow towards the center of the bush. If there are many tall shoots, cut them back (at a bud pointing out), and if weeds and grass choke the plant, dig and pull out one now, before the weeds die down into the ground. Make the ground clean and loose about the bush and then spade it up for two feet on each side and leave the ground rough for the winter. Where the bushes are in rows a good plan is to put the plow in your Planet Jr. and throw a couple of furrows against the bushes on each side. There are people who say a currant bush will grow anywhere, and that it needs no attention. It will survive under absolute neglect, but you can be sure of one thing, that it will pay to do all here suggested, for no plant ever put in a home lot pays better than the currant; no plant makes a more liberal return for generous treatment.

Our arrow at the head of this department does fly straight. Currants picked fresh in the morning and served on the table ten minutes later are unlike any currants in any store. If you have never eaten such you will have a new pleasure, and you will pass your plate for more. That's right. Two "helpings" of such fruit are quite in order. It may seem a long look ahead from the leafless bushes to-day to the table next July, but it will pay. Let them alone now, save trouble to-day, and if you go without next July you will have only yourself to thank. A little healthful exercise in the open air to-day—a splendid, refreshing breakfast of most healthful fruit next summer. Of course it will pay ! With the first cool nights of September come

### THE FIRST HINTS OF FROST.

The home lot is in full harvest. The melon, tomato and cucumber vines are in full growth. They give no hint of approaching winter, because they are far away from home. They go right on, apparently expecting the long season of their native lands. The frost will cut them down in full vigor here, and we need not consider their future. Onr aim now is simply to prolong their lives just as long as possible, to save them from these early frosts. A cool night now may leave your tomato vines black in the morning, and yet there may be two weeks of fine growing weather to follow. Carry them over this one cool night and they may continue to ripen more fruit for half a month to come. Many people think it is just as well to let the vines die and to pinch off the half ripened fruit and to ripen it artificially in the sun. It is possible to make a half green tomato turn soft and red in a sunny window, but this is not the real ripening of the fruit on its native stem. It is far better, therefore, to save the vine from an early frost than to try to ripen the fruit after its mother plant is dead. Orphans are often failures.

### REAL WEATHER SIGNS.

These September days are warm. How tell that there will be hoar frost before the next sunrise ? Two ways. Read the papers for the weather indications, and look at the sky and the wind. A clear sky with a fresh north wind that dies out at sunset, leaving clear starlight, means a cool night. The heat of the earth is free to radiate off into the air, and everything parts with its heat. In other words, a still, clear sky means a falling temperature all night, and before sunrise it may drop to frost figures, and your tomatoes, melons and late cucumbers are dead. On the other hand a cloudy night is relatively a warm night. Clouds are the blankets drawn over the earth to keep it warm.

When the sunset indicates a cool night spread cloths or even sheets of wrapping paper or old newspapers over the plants. The cold does not descend upon the plants. The heat rises and escapes. Under a clear, still sky it escapes upward all night long. It is the absence of heat that means cold,

and everything that checks or stops upward radiation keeps the heat back and saves the plants from a chill. The piece of paper spread over a plant acts as an inverted umbrella to keep the heat down and thus bathe the plant in warm air. A very slight protection will prevent this upward radiation and carry a sensitive plant like the tomato over a cold night, thus prolonging its usefulness for a week or more.

HAPPY HARVEST TIME.

September is the harvest month of the home lot. The last crops are now ripening, and naturally enough there is a feeling that all the good things sent from the garden to the table should be repeated next year. Why not pick out some of these tomatoes, melons, cucumbers or noble ears of sweet corn and save the seed for next year? There is no reason why you may not. It is merely a question whether it is best for you to do so. As a general rule, people who have home lots are employed or engaged in some other business, and time has to be considered. It may be cheaper for you to buy seeds than to save them. The seedsmen, as a class, are more careful, more accurate in their selection of varieties, and certainly quite as honest as we who buy their seeds. In some instances they can and do produce seeds far cheaper, and sell them too, for a lower price than we could save them. It is therefore generally best to buy seeds rather than to try and save them. On the other hand, you may have some very choice variety that you wish to keep; you may not mind the few moments' easy work in extracting, drying and packing the seeds of fruits or vegetables in your own garden. It is best, however, to save only corn, tomato, squash, melons, cucumbers, pumpkins, peas and beans. The seeds of onions and the roots, beets, etc,, celery, spinach, etc., are rather more difficult to gather, and it is best to buy them. If you do have a tomato you wish to save, select the largest, finest and ripest fruit, cut it open, and take out the seeds and wash them in water. The fruit can be easily rubbed or washed out, leaving the seeds floating in the water. By a little care they can be strained out and should then be spread on sheets of paper in the sun and air to dry. When dry, rub them together to separate them and put in sealed envelopes, carefully marked with the date of gathering (year) and the name of the variety. Melon, squash, cucumber and pumpkin seeds can be cleaned and dried in the same way. Corn may be simply hung up in the ear till dry and kept safe from mice. Peas and beans should be fully ripened, dried and then shelled. Of course, this means a little trouble and some care that no mistakes be made in names of the varieties. Thousands of owners of little home lots all over the country do save their own seeds, and in many cases it is a good plan to do so. At the same time, it is not best to save the seeds of any one variety year after year. In time the seeds become feeble, and it is best to try new seeds from plants growing in another place. This is particularly true of potatoes; new roots from another kind of soil grow better than those that are, in a sense, too much at home. Home staying people often become narrow. Perhaps plants, too, like a change of scene and soil.

# The Editor's Outlook.

*BETTER DESCRIPTIONS.* WHO has not read descriptions that do not describe so that the people they were intended for can understand; descriptions written by intelligent people, perfectly lucid and clear to themselves, but absolutely obscure to the seeker after information, because of their unfortunate language? The average patent office specification is a good model of this class—the writer has struggled through many of them, and the only thing remaining generally is the stock phase "substantially as described and for the purpose indicated." Now these are just right for their purpose, but the inventor who depended on popular appreciation of such descriptions to sell his machinery would be apt to be disappointed. Plain, clear, terse descriptions are needed to effect sales; and it has often been noted that a man who knows nothing at all of an article can describe it better than the adept, because he must do it from the point of ignorance, and as he acquires the information, he can dispense it so as to enlighten others who are like himself.

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*EASY READING.* WE are moved to these reflections by reading two articles in a current periodical. Both are good; the one works over a popular subject in a lively manner, but clear above the heads of the readers of the magazine because of the profuse use of technical terms and other methods of expression. As a "patent-office specification" article, in a technical magazine, it would be all right, but for popular information (which is the aim of the periodical in question) it is a brilliant failure. The other article is a model. Its directions and descriptions are terse, clear and easy of comprehension by anyone who can read English. The obscure points are lighted up by the words necessary, and the reader, even though he be well informed on the subject treated of, leaves the article with a sense of satisfaction. This same principle now makes a great factor in modern advertising, by entrusting the writing of announcements intended to attract trade to men who are skilled in describing, though having no previous knowledge of the subjects handled.

Now we want to provide the readers of THE AMERICAN GARDEN with just this kind of horticultural food. We want them to find out in these pages what they want to know, in language they can understand. And we want our friends who know something especially well, to tell about it in "words of one syllable," metaphorically; to explain so that seekers for knowledge may be satisfied with concrete information of easy comprehension. Shall we have help in this work for the largest good of horticulture? Our Home Lot department is a new start in this direction, and we propose to follow it with like helpful matter from time to time.

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*FENCES, ROADS AND PROGRESS.* A JOURNEY in a glorious stretch of country in northern Virginia this summer shows that the "no fence" agitation has not yet crossed the Potomac, at least at that point! All sorts of unnecessary fences there; stone, zig-zag, "snake" fences, and all the modifications. And with the fences poor highways, even with the material for good roads present as obstructions *in* the road. With the fences and poor roads, trifling crops, slack cultivation, and no fruit, all marching hand in hand. Take away the fences, and the roads seem to naturally improve and then the crops, while fruit growing comes along. Here was a notable sample, too, of the evils of the system of "working out" road taxes, a relic of barbarism. A farmer was "mending" the road by throwing into it, hit or miss, sods, stones, weeds or anything excavated from a shallow excuse for a gutter on one side. These clods and rocks were not broken up, save as the long suffering public did it in travel; but the most of the soil portion speedily arrived at the condition of dust, of which four or five inches already covered the road. Let us fight the fences, and collaterally help the whole country-side to a better life and a substantial progress. This same condition exists only in less degree all over the country, but happily improving in hundreds, perhaps thousands of localities.

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*WILD GARDEN LESSONS.* NO gardens made by man with nature's aid are more beautiful than many that nature creates, without the assistance of art, in wood and meadow. My daily journey lies along the border of the famous New Jersey marshes, and as the season changes from April to November, we gaze and marvel at the wondrous

transformations from dull brown and gray monotony to an exquisite blending of all the countless greens in nature's laboratory, interspersed with points and splashes of color, as the spring flowers appear. As summer advances, the greens deepen with the growth of vast areas of sedges and tall rushes, which undulate and wave and billow in the wind like the ocean in a brisk gale; and again the wide expanse is as still as a lake among the hills on a July day. Now, in August, the color points have multiplied a thousand-fold. On the drier land, among the low grasses, sedges and shrubs, there are great orange-colored masses of day lily, than which nothing is more effective in a partially shaded wild garden where there is plenty of moisture. Scattered, it is pretty; in masses, magnificent. The tall meadow rue is everywhere, and beautiful both in flower and foliage. The way in which this groups itself, sometimes in the semblance of solid bushes six feet across, is a lesson for landscape artists. Flaming wands of cardinal flower stand guard by brookside and rivulet (the children say as beacons for fairy fleets); and in every break, oasis or island in the sea of giant rushes, the splendid *Hibiscus moscheutos*, of stout stem and thrifty foliage, flaunts its pink banner-like blooms in safe defiance of envious garden beauties that may seek to vie with it in effective coloring. Only recently has this fine plant appeared in gardens, but it flourishes even in dry soil. Of the convolvulus, milk weeds, asters and golden rods, countless in numbers, gorgeous in color, effective and beautiful always, we have no room to speak, but among them, and close beside, are scores that fill these mighty wild gardens with interest and deserve attention of the cultivator who seeks beauty, hardiness and vigor.

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*UNREASONABLE PROFITS FOR NUTS.*

THE worst thing that can happen to the industry of nut culture, aside from no culture, is the inconsiderate claim of unreasonable profits. A writer in a popular periodical says of the almond: "Bearing trees average about 20 pounds each, which, at 30 cents a pound, would amount to at least $1,000 an acre. The trees grow readily from nuts, if planted when fresh." This item is copied freely into the country press, and the possibilities are that great mischief may ensue; for the truth is, that the area of territory where the soft-shell almond will do well in the United States is very limited, (and the hard-shell almond is no better than a peach-stone, and will be found altogether unprofitable to the American fruit grower.) Except on the Pacific coast, and in the extreme south-western portion of the United States, the almond blossoms are caught by untimely frosts, and its culture has been a failure.

Or take such an item as this, which has appeared in more than one paper: "A good average for a Spanish chestnut throughout its prime is $25 yearly." Well, we would say it was a good average for an orchard of any fruit! While the author of the item doesn't say that each tree will give such annual yield, yet such statements in journals usually careful of their expressions arouse hopes in the planter that can never be realized. Or take this expression. "One grower in Florida has now a grove of 4,000 pecan trees six years old. When they begin to bear, their product will be worth $100,000 yearly at wholesale —a figure which certainly makes tobacco raising and orange growing seem far less tempting." Well, well, well! If this expression has any saving grace, it is in the enormity of its size. Being so beyond the ordinary, it would seem that no reader would attempt to swallow it. If nature has such sums in hiding for each planter of pecans, surely capital has more cause for complaint against Alliance men than Alliance men have against capital, because they haven't gone to work getting such amounts out of nature and thus add to the sum of human happiness!

Perhaps the author of the item is like an editor, who, some years since, maintained that *his* paper never made a misstatement. Being caught in an editorial where he had made the county expenses to read $100,000 when the item should have been $10,000, he facetiously retorted the next week: "We take *naught* from the statement and insist it is correct!"

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*A NEW SUBSTITUTION.*

FOR some years THE AMERICAN GARDEN and *The Rural New-Yorker*, with several other journals which have the courage of their convictions, have fought against the evil of substitution with varying success. The many years work led by the American Pomological Society has resulted in the gradual dying out and almost extinction of substitution among the nurserymen. Unfortunately, some among the florists and seedsmen are not educated up to a realization of the enormity of giving the purchaser something different from what he pays for. During the past few weeks these gentry must have been highly entertained by the discussion in the daily press concerning substitution by druggists. In this case the evil consists simply

in inducing the purchaser who wants Pond's Extract to buy Smith's preparation instead, simply because Smith puts up his own brand, and so, of course, makes a much bigger profit on it than that on which a handsome fortune is yearly spent in advertising. We regret that the reason for this campaign of the daily press seems to be to curry favor with their advertisers, as much as to break up a reprehensible practice. Substitution in seeds and plants is incoarmpably more unjust and wicked, and is close to being criminal, because in these things the substitutionist, without argument or reason, keeps the purchaser's money and sends him something that he does not want, too often with the false label of the thing really wanted. Yes, this is criminal in its essence, and deserves to be dealt with accordingly. Where are the doughty legislators who will frame a law for the proper punishment of this new class of criminals?

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*TEACH THE BOYS.*

THE farm schools, or, rather, farms without schools, in connection with reformatory institutions are common features of the American reformatory system. Recently we have seen developed a grade higher in the Burnham Industrial Farm, where boys of more or less badness are taught the ways of respectability and morality, and, incidentally, farming. Now, here comes a California paper, an organ of the Roman Catholic church, jubilantly announcing the planting of an orchard and vineyard at a boys' orphan asylum in that state, and vigorously recommending the development of the idea to such an extent that these orphan asylums should, in fact, become farm and garden schools. Here not only would the little ones be sheltered and taught the lore of books, but also be trained in useful employments. It is an excellent idea, for if these children could be trained to become skilled workmen, they would not only be a benefit to their future employers, but would be kept out of the cities, be sure of a good living and, perhaps, in time become employers themselves. The paper mentioned suggests not only fruit growing and farming in the broad sense, but also dairying and preserving of fruits for the girls; for the boys, the harder work of the farm, the garden, the field and stables, care of animals, floriculture, seed raising, etc. The writer takes a sensible view in that his plan especially provides for the practical training of these boys and girls as skilled workmen and workwomen to take the place of the ignorant and degraded Chinese and Italians who now largely monopolize labor of this character, and they monopolize it simply because of the lack of trained labor. He concludes with this: "It is the duty of us Catholics to train boys and girls for the farm, garden and factory, as well as for the convent and monastery. The opportunity is ours. Who are the rich Catholics who will set the ball rolling?" We wish the enterprise all success, and trust that it may have many imitators among other Christian sects who seek to save the children for good and useful lives.

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*WILD GARDENS.*

THERE ARE wild gardens and wild gardens. One that we saw the other day was a garden full of wild weeds; even the drives and paths were encroached upon by the general weediness. Passing the place a week later, the transformation astonished me. It was another "before and after" case. The "before" view was full of newness, crudity and—weeds. In the "after" there was sharp evidence that the master had sent the old John about his business and that a new John had stepped into alleged gardener's shoes. And how those same shoes must have been hustled about that little place in the interim! The weeds had all disappeared. There was a spic-and-spanness about the whole establishment. Pretty climbers about the verandas and porches seemed to feel the new influence; all were fresh and thrifty, not a straggler among them. Paths and drives seemed newly laid, so smooth and neat were they. Trees and shrubs no longer wore a disconsolate air bred from neglect, but bore themselves jauntily in the light wind, nodding joyously to every passer-by. In place of the former ragged and seedy lawn here was now a pleasant green carpet, clean and refreshing to the eye, velvet to the foot. Beds and borders, roses, cannas and caladiums, hollyhocks and sunflowers; pansies and geraniums—in the "before" time dejected and ageing fast—had in this "after" life become as maidens restored to their lovers, fresh, sweet and youthful again. The first seen wild garden possessed a wildness that none of us want, and which no good gardener will permit or long endure.


*** The American Garden *stands for simplicity, good taste and correctness in names of varieties. In general botanical nomenclature it follows Bentham and Hooker and Nicholson's Dictionary of Gardening. In the names of fruits, it adopts the catalogue of the American Pomological Society, and in vegetables the Horticulturists' revision in Annals of Horticulture. In florists' plants, it follows the determinations of the Nomenclature committee of the Society of American Florists. It opposes trinomial nomenclature, and therefore places a comma or the abbreviation* var. *between the specific and varietal names. It uses capital initials for all specific and varietal Latin names which are derived from proper nouns.*

The California raisin crop of 1891 is estimated at 800,000 boxes, the same as last year.

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Acres of pecans will be planted this winter in Jackson county, Florida, writes a correspondent.

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On account of the improved facilities for selling fruits at auction, and the continuance, not to say increased sales by that method, we judge that the method must be a satisfactory one.

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New York, probably, never before had so many melons at one time as during the glut of the past summer, and it is morally certain there never before was such a large proportion of inferior ones.

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Dewberries.—I desire information concerning the origin and merits of the various cultivated dewberries. I especially desire histories of the Bartell, Mammoth, Windom and General Grant.—L. H. Bailey, *Ithaca, N. Y.*

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Don't forget the great chrysanthemum exhibition at Madison Square Garden, New York, November 2 to 8. The superb hall—finest for the purpose in America—and the $6,50 in premiums ought to call forth the finest exhibition Gotham has ever known.

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Pomelos.—Messrs. Reasoner, of Manatee, Florida, have set 700 royal pomelos, which is perhaps the sweetest variety. They are budded on the rough lemon stock. It will flourish on all kinds of soil high or low, hammock or pine—and its remarkable vigor brings the buds into bearing very early.

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The programme of the Southern California Horticultural Society's October exhibition makes an Easterner's mouth water, for all the savory fruits in the catalogues are provided for; the fruits of north, east, south, and west—and it is a chrysanthemum show at the same time. Nuts, vegetables and ornamental plants come in as a matter of course. What a country! What a state!

It is Estimated that in New York city the quantity of huckleberries sold is ten times that of any other berry. Dried huckleberries, in winter time, always bring fair prices. The demand for fresh and dried in all large cities, especially for restaurant purposes, is constantly enlarging on account of their value for making pies. More dried ones could be sold than have been heretofore furnished.

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Pearl Gooseberry.—A. M. Smith, of St. Catherines, Ontario, sends us a fine lot of the fruit of this variety. Stems, foliage and fruit were all fresh and healthy. Quality excellent; large size; mild sub-acid; skin tender. The Pearl is a seedling from the Houghton, crossed with Ashton's Seedling. Mr. Smith and other Canadian authorities describe the Pearl as being entirely free from mildew, and highly prolific.

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The importance of packages for fruits adapted to existing conditions was well illustrated by some grapes shipped from the south during the recent heated term. They were packed in fancy, five-pound paste-board boxes, several of these being packed closely in a wooden box. They would have been excellent for shipping northern grapes in cool weather, but the lack of ventilation rendered them unfit for safe carriage of fruit a long distance in hot weather, and the grapes were worthless upon arrival.

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A New Peach.—In getting notes for my report on peaches for the Department of Agriculture I came across a seedling peach on the place of Mrs. Jane T. Faut, an enterprising and successful fruit grower. The tree is a strong, healthy grower, very productive; fruit large, handsome, and a cling. I have just seen a specimen that weighed seven ounces, and was nine inches in circumference. Our markets are now glutted with small peaches, but certainly such a peach as this seedling would find a ready sale.—Julius Schnadelbach, *Ala.*

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Growth of Truck Farming.—The government census office issues statistics on the truck farming of the country as distinguished from market gardening by rea-

son of their location distant from the markets in which their products are sold. Upwards of $100,000,000 is invested in the industry, the production being $76,500,000, realized from 534,440 acres of land. The work engages 216,765 men, 9,264 women and 14,874 children, in addition to 75,868 horses and mules, and the use of nearly $9,000,000 worth of agricultural implements.

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KELSEY PLUM A GOOD SHIPPER.—I received yesterday by mail from Ocean Springs, Miss., in a wooden box containing cacti, a Kelsey plum which weighed 150 grammes, in a perfectly sound and fresh condition. There was only this single plum in the box, but I think the fruit could be shipped in quantities even to San Jose, which is more trying than a shipment to Europe, as one can see from the condition in which boxes generally arrive here by mail. It seems that they must withstand a good deal in the passage! Fortunately, we have a good administration of the foreign mail department now.—C. WERCHLE, *San Jose, Costa Rico, July 30.*

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ANY ONE familiar with the methods employed to secure and maintain the extravagantly high prices of Niagara grapes in this market at the time the vineyard boom was being worked, will not be surprised at the comparatively low prices for which they sold last year, and those for which they are now selling. Some of those who were induced to put out extensive vineyards are liable to be sadly disappointed. The condition in which many of them arrive from the south denotes either serious defects in the variety or in the manner of handling and packing. They fall far short of meeting the requirements for a first-class table grape in this market.

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BAGGING TOMATOES—ANOTHER R. N.-Y. DISCOVERY.—Tomatoes bagged at the Rural grounds just after the fruit had well set ripened at least ten days earlier than the rest, being as much improved in appearance as grapes are improved by the same treatment. It is further worthy of note that the bagged specimens *ripen about the stem perfectly*. That grapes should be somewhat retarded in ripening by bagging, and tomatoes advanced, is not easily explained. If, during other seasons as well as the present, it should appear that the ripening of tomatoes may be hastened by a week or ten days in this way, it will prove a valuable discovery, since it is very easy to bag the tomatoes at a trifling cost.

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MASSACHUSETTS HORTICULTURAL SOCIETY.—At the meeting of the society, July 11, 1891, the Gardeners' and Florists' club of Boston offered the following prizes: For the annual exhibition of plants and flowers, September 1 to 4: For the best mantel decoration, $100; second prize, $50. For the annual Chrysanthemum show, November 3 to 6: For the best ten vases of chrysanthemums, of ten named varieties, ten long stemmed blooms of one variety in each vase, $75; second prize, $50. This offer was accepted, and it was voted that the prizes be awarded by judges specially appointed for that purpose from outside of Boston; that the articles be designated by numbers, and that no names of contributors be placed on them until after the prizes have been awarded. Address, Patrick Norton, Horticultural Hall, Boston.

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HIGH GRADE PRODUCTS MEAN LOW COST TRANSPORTATION.—"There may be good cause for complaint against freight rates," says O. C. Knox in the Florida *Farm and Fruit-Grower* "but can we not remedy this evil by closer attention to varieties and by taking care that nothing but the very finest selected fruit is shipped, and that packed with the best of care? Freight charges are just the same on second quality as on first. While many this year have had good crops, their returns have been little or nothing. From nineteen trees we picked about forty bushels, and only three crates, sold for less than $6 per half-bushel crate. These were packed in trays of common lath, made to fill the crate, and each peach nicely wrapped in orange wraps. Shipping in this way gives the fruit a chance to ripen on the tree; it colors up much finer and is better every way. We had reports from some packages that opened well after being a whole week packed. Eight crates, shipped June 17 and 18, sold for $48; freight charges $11.60; commission, $4.80—$16.40—leaving a net return of $31.60, or $7.90 a bushel net."

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A MODEL FARM FOR EMIGRANTS.—Many parties who, like myself, were raised in other lands have something to learn. Soil, climate and surroundings are all new to us; and I am looking for thousands of emigrants from Europe to settle in the southland in the near future. One English company has just purchased 22,000 acres of land at this point, and another 156,000 acres in an adjoining county. They are to be settled from England and Germany. I have taken charge of lands belonging to these parties, and am preparing it for an experiment farm, to show emigrants what can be grown here. The company also offer to donate 500 acres to the state for similar purposes. They will also give alternate 40-acre blocks to actual settlers on their lands. I am looking for help in starting the farm from several stations in the south, and particularly from the R. K. farms in Texas, which have been used for the same purpose. I shall plant the pecan, English walnut, etc., on quite a large scale. We have narrow, but rich, creek and river bottoms that I think will grow them to perfection, and I believe they will prove valuable. I shall also plant about 12 acres in southern varieties of apples.—THOMAS BRIGDEN, *Walker Co., Ala.*

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REFRIGERATOR SYSTEM TRIED IN ARKANSAS.—Our

strawberry season closed May 28, being prolonged the longest of any season since the fruit industry was inaugurated in this section. This was brought about by the refrigerator system introduced by the A. R. T. Co. While the refrigerator system has not been a success financially to the grower this season, for many reasons, it is evident the experiment will result finally to the good of the fruit industry in Missouri, Arkansas, West Tennessee and Kentucky, by a thorough organization of the growers, and placing the disposal of the shipments under the general management of one head.

The Arkansas Fruit Growers' and Shippers' Union met in special meeting at Beebe, Arkansas, Saturday, June 13, and resolved to call a convention of growers, embracing Arkansas, Missouri, West Tennessee and Kentucky, to meet at Columbus, Kentucky, on the 6th of October next, to organize an Interstate Fruit Growers Association, It is hoped that the growers in each state will see that wide awake fruit men will be sent to that convention, to perfect some kind of an organization that will relieve the fruit grower from the iron grasp of the express companies.

Owing to excessive rains and hot sun, early peaches and tomatoes are rotting badly. The cotton boll worm has ruined several plantations of tomatoes.—A. G. BLAKE, *Judsonia, Arkansas.*

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AMERICAN POMOLOGICAL SOCIETY.—This greatest of existing horticultural societies will hold its 33d biennial session at the Agricultural Department, Washington, September 22 to 24, by special invitation of Secretary Rusk. A cordial invitation is extended "to all horticultural, pomological, agricultural and other kindred associations in the United States and British Provinces to send delegations as large as they may deem expedient, and also to all persons interested in the pursuit of pomology to attend the convention.

"Aside from the advantages which must be derived from the assembling of the foremost pomologists of America, this will be a rare opportunity to become mutually acquainted, and strengthen the bonds of friendship which exist to such a remarkable degree among men engaged in a pursuit which has proven such a wonderful factor as an educator of the people, and wealth-producer, To the unselfish and zealous work of the members of this society is mainly due the magnitude of the present fruit-producing interests, which can further be promoted by the union of all our progressive men, that the result of their deliberations may be brought prominently before our people and foreign nations.

"The catalogue of fruits published by the society includes every state and territory and the English dominions of America, and is replete with reliable information as to the various fruits adapted for cultivation in the various localities.

"The perfecting of this catalogue has been the great work of this society, but it is as yet incomplete, because of the rapid strides made in localities which have of late years developed wonderful producing resources. The object of the society is to revise the lists, fill the blanks now existing, and add whatever may prove of value to its aims."

The hotel headquarters will be the famous Ebbitt House, 14th and F streets, which has granted a special rate of $2.50 per day. Notice of rooms wanted should be sent in advance. Most of the railroads have agreed to a 1⅓ rate for excursion tickets.

Interesting exhibits of fruits are expected.

The essays and discussions on the programme include the following:

Chemistry of Peach Yellows, Erwin F. Smith, U. S. Department of Agriculture; Correlation of Quality in Fruits, L. H. Bailey; Cross Fertilization, C. E. Bessey, Neb.; Immediate Effects of Cross Fertilization as Affecting Quality and Commercial value of Citrus Fruits, Lyman Phelps, Fla.; Fruit Districts, Geologically and Climatically Considered. E, S. Goff, Experiment Station, Wisconsin; Heredity and Environment in Originating New Fruits, Thomas Meehan; Horticulture at the Experiment Stations, J. S. Newman; Pear Blight and Climate Influences, G. F. B. Leighton, Va.; Physiological Effects of Pruning, L. R. Taft, Agricultural College, Michigan; Recent Advances in Dealing with Insects Affecting Fruits, C. V. Riley, U. S. Dept. Agriculture; Recent Progress in the Treatment of Diseases of Pomaceous Fruits, B. F. Galloway, U. S. Dept. Agriculture; Section vs. Whole Roots in Propagating the Apple, J. L. Budd, Ia.; Some Local Pomological Problems, Chas. W. Garfield, Mich., What are the Possibilities of Originating a Class of Pear Trees Exempt from Blight, T. J. Burrill, Illinois; Apple Growing Commercially Considered, F. Wellhouse, Kan.; Commercial Peach Growing. J. F. Taylor, Mich.; Berry Culture, Profits and Failures in Georgia, Samuel Hape, Ga.; New and Promising Small Fruits, J. T. Lovett, N. J.; How to Make Small Fruit Culture Pay, J. H. Hale, Conn.; Does the Spraying of Orchards with Insecticides Pay? C. M. Weed, College of Agriculture, N. H.; General Fruit Growing, G. C. Brackett, Kan.; Fruit Notes from a Canadian Standpoint, L. Woolverton, Ontario; Foreign Grape Culture in Middle Florida, H. von Luttichau, Fla.; Olive Growing and Manufacture of Oil, Frank Kimball, Cal.; Novelties in Pomology, H. E. VanDeman, U. S. Dept. of Agriculture; Pomology in the 11th Census, Mortimer Whitehead, U. S. Dept. of Agriculture; Pruning for Citrous and other Fruits for Florida, D. W. Adams, Fla.; Results of Recent Experiments with Small Fruits, T. T. Lyon; Pomological Resources of North Carolina, W. F. Massey, College of Agriculture, N. C.; Small Fruit Growing in Eastern and Middle North Carolina, J. Van Lindley, N. C.; The Grapes of Middle Virginia, Henry L. Lyman, Va,; Fruits of Western North Carolina, H. S. Williams, Fla.

For complete programme and other particulars address P. J. Berckmans, Augusta Ga,; T. T. Lyon, South Haven, Mich.; B. G. Brackett, Denmark, Iowa; Benj. G. Smith, Cambridge, Mass.

# FOREIGN NOTES.

MANY WOMEN GARDENERS near London seem to be very successful.

THE CHRYSANTHEMUM Mrs. Alpheus Hardy is now gaining in favor in France.—*L'Illustration Horticole.*

A MONUMENT to the memory of Benedict Roezl, the celebrated botanist, is to be erected in the botanical gardens at Prague.

AUSTRALIAN FORESTS.—The timber in western Australia has been valued at $500,000,000 by Prof. Brown, the well-known authority on Australian forests.

PERFUME FARMING IN AUSTRALIA.—A Royal Commission has been at work in Victoria for some time, and their report shows that the soil and climate of the colony are adapted to the successful culture of plants yielding fragrant essential oils.—*Gardeners' Magazine.*

TUBEROUS BEGONIAS.—If tuberous begonias are planted in a soil composed of two parts manure composted with turf, and one part well-rotted leaf-mould, an enormous quantity of very large flowers will be produced. The tubers produced will also be much larger than those grown in the ordinary way.—*Revue de l'Horticulture Belge.*

AGRICULTURE AND FORESTRY are to receive special attention in the Durham College of Science, Newcastle-on-Tyne. The college has acquired 15 acres of land at Gosforth for the purpose of an experiment station, and it is hoped that smaller stations will be established throughout the district.—*The Gardeners' Magazine.*

AGRICULTURAL SCHOOLS.—Several agricultural schools are to be established in the northern part of France. They are to be under the direction of M. Duplessis, who will conduct them on the same plan as those existing in the southern part of the republic. The propagation of plants and the culture of the grape will be leading features in the schools.—*Revue Horticole.*

CUCUMBER, LOCKIE'S PERFECTION.—This variety was grown under the same conditions as the old Telegraph, and was the first to produce fruit fit to cut. The plants were equally vigorous and prolific as those of the Telegraph, and the fruits were much handsomer. They are of medium length, perfectly formed, and of a rich green color.—*The Garden.*

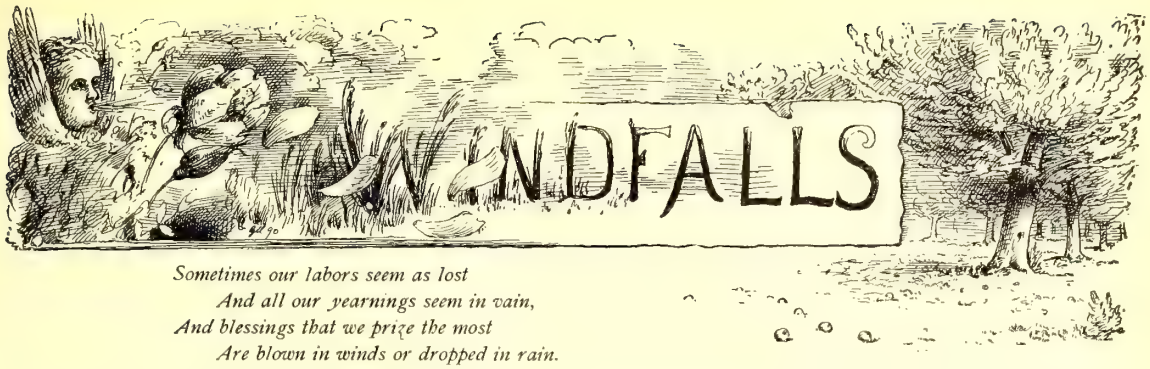
FRUITS IN SOUTH AUSTRALIA.—The order of importance of south Australian fruits varies slightly in periods of years. Until the last few years, I considered the apple our most important fruit, but the number produced has gradually decreased, on account of that terrible pest, the fusicladium. The other fruits we grow are grapes, apricots, pears, peaches, oranges, lemons, quinces, plums, cherries, loquats, raspberries, gooseberries, strawberries, currants, almonds, figs, walnuts, chestnuts, limes, nectarines, mulberries, pomegranates, olives, guavas and hazel nuts. These are mostly produced in large quantities, and generally equal the fruits of the same kinds and varieties grown in any part of the world.—JOHN F. PASCOE, in *Kew Bulletin.*

CHINESE PRIMROSES.—A cross has been made between *Primula chinensis*, var. *fimbriata filicifolia* and *P. chinensis*, var. *cristata*. The leaves of the new form are very regular in form, and have short, stout petioles. The flowers are large, firm, finely fringed, and so wavy that they appear very much like fringed petunia blossoms. The habit of the plant is compact and robust.—*Gartenflora.*

NEW ROSE, "MRS. PAUL" (Bourbon).—This new rose, raised by Messrs. Paul & Son, bids fair to become a favorite. All the points which characterize a good rose seem to be embodied in it. It is deliciously scented (an exception in the class), though its perfume is not so powerful as in some older kinds. In color it is a delicate satiny pink, the blossom being above the average size, full, and of fine substance. The outer petals reflex, whilst the center remains close and compact. The growth of the plant is robust, and the foliage a deep green.—*The Garden.*

FRUIT FROM WESTERN AUSTRALIA.—What is understood to be the first consignment of fruit and vegetables received in England from western Australia has just been exhibited in London. It was sent over from Perth by Mr. Bond, of the Midland Railway Co. of that colony, as a proof that the country is capable of being made one of the great means of supplying the market here with such articles. In this object he is, to a large extent, successful. Among the specimens are apples, pears, pomegranates, onions and potatoes, besides red and white maize; and all of them are sufficiently remarkable for size and quality, to show that the climate and soil of west Australia are favorable to their cultivation.—*The Garden.*

CHINESE CABBAGES.—These are probably all varieties of *Brassica sinensis*, which has been reduced under *B. campestris* by Forbes and Hernsley in their *Index Floræ sinensis*. The cabbage is very popular in China, and the natives consume more of it than of all other vegetables put together. Vilmorin-Andrieux & Co., of Paris, say that Europeans also find the Chinese cabbage good, and of easier digestion than the cabbage of the west. The form known as Pe-tsai resembles a cos lettuce when in perfection, and forms a close head, or sometimes merely a cluster of semi-erect leaves of a light green color, and which taper to the base. Being an annual it soon comes to perfection, and might be grown to advantage in this country.—*The Gardening World.*




*Sometimes our labors seem as lost*
*And all our yearnings seem in vain,*
*And blessings that we prize the most*
*Are blown in winds or dropped in rain.*

**Indiana Apples.**—Forty years ago, I made my first visit to Indiana. I selected a bushel of Maiden Blush apples and sent them to Mr. Hooker, of Rochester, New York, as a specimen of Indiana fruit. He wrote me that they were the finest specimens of apples he had ever seen; yet they were no finer than many other varieties grown here at that time. No defects on them; the moth of England was unknown, and even the curculio was a stranger. Our fruit to-day is not so good. Lately however, owing to spraying, I have seen some fruit almost as fine as in those old days. Indiana is an apple and pear region; safer I think from the late frosts in spring than Ohio or western New York. Nearly all kinds of fruit do well here. Of late years I have noticed a falling off in the number of our insect enemies, due partially, I think, to a parasitic enemy and to the increase of birds. I even dare to say that much is due to the English sparrow. This poor bird has been maligned and legislated against with very little reason, while some other birds, like the robin, that never was known to do a good act, have even passed into verse as "good." Our people are awakening to the fact that Indiana can raise apple and fruits of all kinds. She knows that such crops as she used to raise will be better pay than hog and hominy. The whole country needs to raise more fruit, fruit of all kinds. They want to cultivate, prune and take care of their orchards, and, if needs be, spray and encourage every possible means of keeping in subjection our insect enemies.—A. C. BATES, *Indiana.*

**The Apple in Missouri.**—The unprecedented success of the apple crop in Missouri in 1890, aroused an interest in the cultivation of this fruit that bids fair to bring about such an immense industry in this line as will open the eyes of fruit growers abroad. There have been orchards of thousands of trees planted all over the state, within a year. As to varieties, Ben Davis still seems to hold the lead. While only third rate in quality, its handsome size, productiveness and health of tree seem to make it the most profitable. Some tell me that there are other trees that bring them in more money. Ben Davis, Willow Twig, Jonathan and Jennetting are still largely planted, but of late there are others that are promising to take the place of some of these. I must not omit Winesap—it should be have been included in the list.

The Missouri Pippin is a favorite with many; the only fault found in it is its early and too abundant bearing; hence the trees are short lived. This is a mistake, as by the proper thinning out of the fruit this fault would be removed. The York Imperial is gaining favor and will be extensively planted. Gano is a most beautiful apple, and is popular, Babbit (the western Baldwin) is coming to the front, as also Clayton and Mammoth Black-twig. The fact is, we have a host of valuable varieties out here that are destined to make their mark. For summer and fall, the Rambo, Maiden's Blush, Grimes Golden and Yellow Bellflower, are all favorites. The man who brings out an apple equal to Ben Davis in all other respects but with the quality of Jonathan or Grimes Golden, will be a public benefactor.

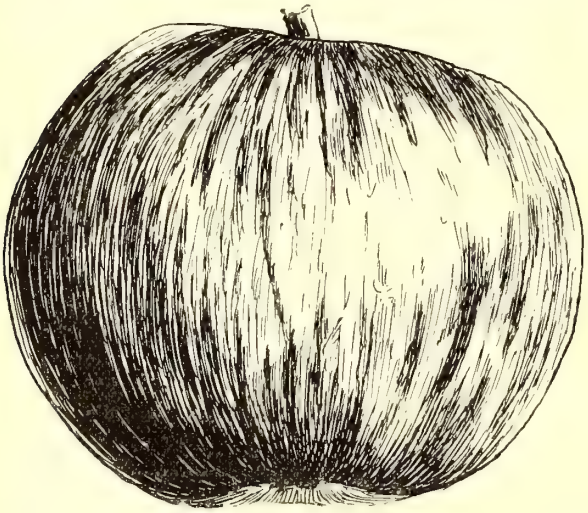
As to cultivation and training, there is more in this than all else. Train a tree from its youth up, with low heads to protect the trunks from the hot sun in summer, as well as in winter when the wood is frozen; constant cultivation, but not so deep as to mutilate roots, with proper thinning of the fruit when trees are overloaded, and there will be no off year, as it is called. My opinion is that if an apple orchard is constantly kept clean, we would have but little trouble with the codlin moth. Where cultivation is abandoned, seed to clover; mow this three times in a season, letting all lay on the ground.

The spraying with arsenites has proven a success against the worms in apples. Here on my place, they did not trouble us much until within a few years, but now we will have to resort to spraying. The crop in this region is not more than one-fourth of what it was last year.—S. MILLER, *Bluffton, Mo.*

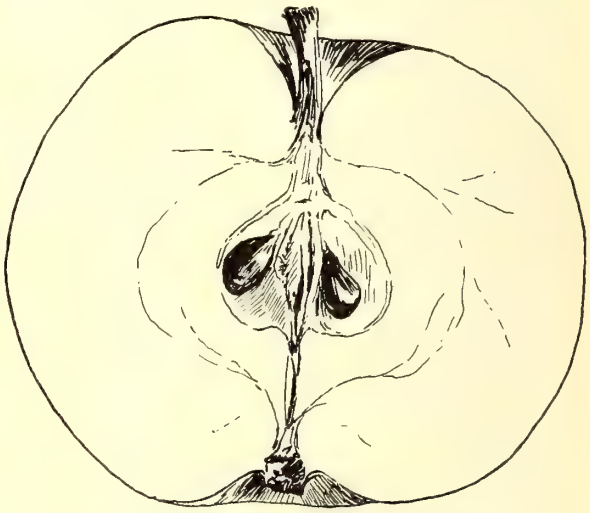
**Strawberry Fertilizers South.**—It is claimed by Mr. Julius Schnadelbach, of Grand Bay, Ala., that acid phosphate is a bad thing to use on strawberries. "No bad effect is noticed while the weather remains dry, but after the first good rain the plants begin to lose their leaves. They burn up. If the weather is dry again, they recover, only to be blasted again. It is the caustic lime in the acid phosphate that is the cause of this. Lime should never be applied to strawberries. Ground bone should be used, and I have no doubt that the untreated soft phosphate of Florida is equally as good. Kainit is also to be let alone, but does not always have a bad effect. Some varieties are affected more than others; this I found out by experimenting.

The Bessie, Cloud and Hoffman, after awhile, fully recovered and made a fair crop in the order named. Alabama, Stevens, Neunan and all others did not get over the bad effects, and some finally died. After many years' experience, I find that cotton seed meal is about the best and safest manure to use on strawberries."

**Early Norfolk Apples.**—I send you by express a small box of apples whose excellence entitles them to a place in the pomological world. The Early Norfolk (see illustration) originated at Norfolk in 1877, being a sport from the Early Margarette. The fruit is medium to large in size; flat; color, yellow ground, striped and blotched with red, nearly covering the surface; stem short, calyx closed. The skin is firm and the flesh white, with a pleasant sub-acid flavor. It is a very productive variety, maturing July 1 to 15. The tree is vigorous, healthy, of spreading habit, and grows to a large size in 15 years time. This apple, for long shipments to reach early markets, has no equal. It is a grand acquisition to our



EARLY NORFOLK APPLE.



CROSS SECTION OF EARLY NORFOLK.

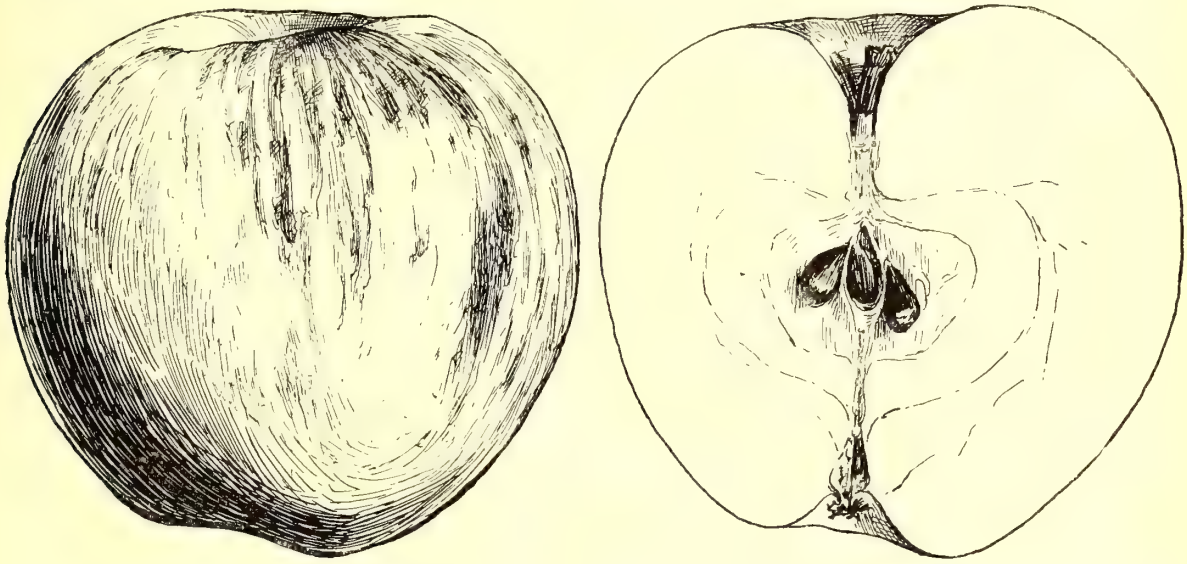
list of extra early sorts. I am growing this and the Fourth-of-July, described below, in an orchard of 1,200 trees and 100 varieties, including 40 as experimental sorts, among them being several of the new Russian apples.—J. L. B.

**Fourth-of-July Apple.**—This variety is the most valuable extra early apple that I know of. It was sent to the eastern shore of Maryland by Charles Downing in 1876. I brought 50 trees from there in 1879. This lot comprised the entire nursery stock at that time, and, so far as I know, were the only ones ever sent south; nor have I ever seen it listed by nurserymen, and none that I have talked with seem to have heard of it. From the description one might be lead to think it the Large Summer Queen, but it is quite different from that sort grown in the same orchard. The Fourth-of-July (see illustration on opposite page) is oblong-conic in form; color, yellow ground, heavily striped with red. Flesh light cream color and of a crisp, sub-acid flavor; stem short, calyx closed. The tree is upright, strong, vigorous and healthy. It surpasses the Red Astrachan in growth in 10 years time during which the two have been in my orchard. It is a very productive variety, alternating with a heavy crop and a light one yearly.—J. L. BABCOCK, *Bay Shore Vineyards, Va.*

**Mistakes in Packing.**—Perhaps not one-third of the farmers of Michigan who pack their own apples, use the legal (flour) size of barrel. Let us see how it pays. The apple crop of 1889 was a large one, probably larger than in any other state, and proved to be the financial salvation of Michigan farmers. It was also one of the very best years to learn facts regarding the trade. During that summer and fall, I made it a point to learn, as nearly as possible, what the difference in price was between the full standard barrel and the "snide," in Chicago. I found the range of prices for the season to be $1.25 to $3.50 per barrel, and by inquiring at different times, and of a number of dealers, I found that the amount of difference in fruit amounted to a little less than one-half a bushel, and the difference in the selling price was from 50 to 75 cents per barrel, or an average of 60 cents per barrel, after paying a slightly increased cost on the barrel. Or, in short, the Michigan grower received $1.20 per bushel for all the extra apples required to pack full standard barrels. And further, it is the large barrel that sells promptly, while the small barrel often suffers loss, in the case of a glut, by rotting down. This makes the difference still larger. The shippers in the city are the largest and best buyers, and they always want a large barrel with ten hoops, and are willing to pay for it.

The same rule applies to the whole line of small fruits. As the case in common use is supposed to hold 16 quarts, but in reality holds only 14 to 14½ quarts, we frequently hear men state that they do not represent them as quarts, but only as 16 boxes. Such statements are unworthy and suspicious, and we should ex-

pect the same man to ease his conscience from any little dishonorable act by the plea that he had not promised not to do it. Our package manufacturers come in for a share of the blame, as they have, to a certain extent, aided in the deception by manufacturing the "snide" package. They will say that they cannot control the people's wishes in the matter, and they are in the business to make anything the people want. That is, to a certain extent, true, but the best information we can get is to the effect that nearly every change in the size or style of package is first made by the manufacturer, and offered for our adoption, even without a demand, and we all know they are constantly making changes in the style and form of packages; and one idea seems to run through all the work, and that is to make them a little scant measure. The majority of our farmers seem to think that a barrel is a barrel, even if it is not more than two-thirds grown, and the same idea prevails in regard to a quart box.



FOURTH-OF-JULY APPLE; FROM NORFOLK, VA.

Appeals have been made time and again to the honesty and good sense of our growers to discontinue the use of such packages, and the practice of "stuffing," or dishonest packing, but so far it has accomplished but little. It pays to be honest in fruit growing and packing, for the slightest trickery is detected instantly by the shrewd buyer, and he promptly knocks off enough from the price to protect himself; the grower has to stand it. —*R. Morrill, before West Michigan Fruit Growers.*

**Green Mountain Grape.**—Mr. Dubois, in his criticism of the above grape, (page 393) is rather severe, and not very fair, considering he has not had any experience with it. True, he says he saw the fruit, but he does not inform us if he tasted it. He finds fault in that it did not look like a hot-house grape. Having grown and fruited the grape in question, I can assure Mr. Dubois that in looks there is a decided resemblance to the old white Sweet Water. Its greatest recommendation, however, and a very important one in comparison with any other out-door grape (that I am acquainted with), is the entire absence of that tough pulp so common to almost all of our native grapes. A three year old vine with me last year had 14 bunches, of medium size and very compact, quite the reverse of straggling, as Mr. Dubois asserts those were he saw. Berries medium, color pale pea green and of a peculiar but very pleasant delicious flavor. The vine is a good grower, and free from mildew so far, and so hardy that scarcely an inch of the tips of the vines were injured last winter, although the thermometer went several times below zero. I have no interest whatever in lauding this grape; I merely state facts for the benefit of others. Whatever its name may be I can assure the would-be purchaser that it is a good and very early grape, and when once known is sure to be appreciated and largely planted by careful growers.—JOHN DALLAS, *Fairfield Co., Conn.*

**Cutting out Old Raspberry Canes.**—Although rather late, I have been cutting out the old bearing canes from my raspberries. This should have been done right after the the last picking, some two weeks ago, so that the new growth would have plenty of room. My "caps" are the Progress, Earhart and Palmer. The young growth is quite rank, with branches extending over the whole six feet allotted them, showing that they need more space between rows so as to have room to prune properly and give room for fall cultivation. It is thought that removing the old canes leaves the new growth more exposed to the action of the wind, by which they are liable to be broken off and destroyed. Some growers think that the leaf of the old canes has much to do in the growth of the young canes that are to bear fruit the following season. To look at my young canes now one would thnik they have all the leaves that they

need without the assistance of the old canes, which from their faded looks show they have already performed their function by maturing the crop of berries just gathered.

I believe that if the raspberries have received the proper attention, and a sufficient supply of manure has been applied, all these objections will be removed. If the young canes are nipped as soon as they are two and a half feet high, they will begin to spread and grow stocky. Perhaps it is best to nip the bud out at two feet high, for they will run up some after they are nipped. By so doing and checking the top the roots become larger and stronger and the top branches out more. Then as soon as the fruiting canes are done with their burden, cut them all out. This cutting out of the old canes throws all the strength and vigor of the roots into the young canes, so that by winter they are strong and quite stocky, more able to withstand the winds and less liable to be blown down.

Where the young canes are not nipped until they are grown it may be best to defer removing the old canes until spring, for in this case the young canes are slender and will not stand much wind. They are not so well matured cannot withstand cold so well, and will need protection. By removing the old canes and burning them, there are many noxious insects in various stages destroyed that would otherwise live over winter.—T. D. BAIRD, *Ky.*

**Green Mountain (Winchell) Grape.**—A grape called Winchell was sent to us this year, with the statement that it is the same grape that has been sent out as Green Mountain. We planted it alongside the Green Mountain received last year. So far, it differs widely in the appearance of its foliage from the Green Mountain.—*W. F. Massey, N. C. Experiment Station*, in *Garden and Forest.*

**Japan Plums in Connecticut.**—I have a few specimens of the Satsuma or Blood Plum this year already (July 21) fully ripe, but much smaller than I expected they would be, the largest being only one inch in diameter. I have trees loaded with fruit of Ogon and Abundance, also a single specimen of Masu (one of the new Japanese sorts).—NORMAN S. PLATT, *Cheshire, Conn.*

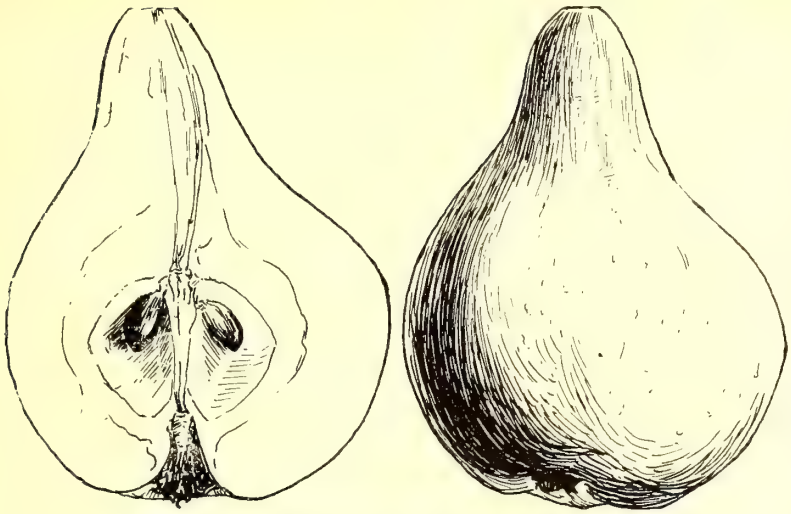
**From the Arkansas Valley.**—From time immemorial there has been much said and written about the kings, emperors and other potentates in gorgeous palaces. But magnificent structures erected by the laboring classes, where they can exhibit their rich products in right royal style, is a much more modern theme, fraught with far more beneficial results to mankind and marking an epoch of a broader civilization. A palace erected mainly for the display of a single product, as of ice, corn, coal or blue grass, we acknowledge is an object of great importance. But the mineral palace opened at Pueblo, Colorado, July 4, is several steps in advance of all that have preceded it. If a facsimile of this gorgeous exhibit could be shown at the great Columbian Fair at Chicago in '93, it would prove an attraction of no little importance.

The exterior is not so elegant or imposing as some, but the interior is rich in decorative art, and would require a Raphael to properly describe its large and brilliant domes. The display of minerals is tastefully arranged, and is said to be the most extensive exhibit of the kind known.

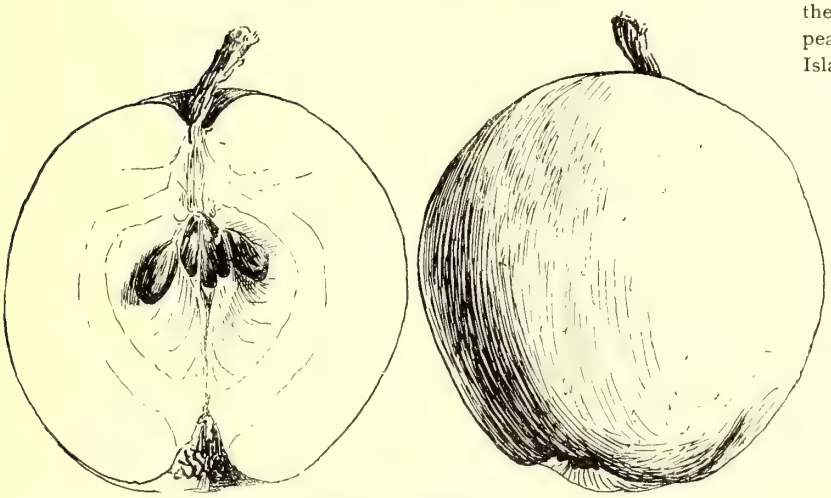
Your correspondent has exhibited fruits and flowers for years, at an agricultural fair, in what was, a short time previous to the exhibit, an old, rough boarded horse stable with no repairs, except a little decorating by the superintendent of the fruit and flower department. This in a state where cash enough had been extravagantly expended in the erection of gorgeous palaces of somewhat doubtful utility, to have built a magnificent horticultural palace of unquestionable usefulness. What we want—and I doubt not what every reader of THE AMERICAN GARDEN would be glad to see—is a beautiful horticultural palace in every state in this glorious union, in honor of the first and foremost occupation ever instituted for man by an allwise Creator.—SAM BUCUS.

**Old Trees in Central and Southern Europe.**—There seems to be no foundation for the popular belief in the existence of oaks and lindens a thousand years old. An oak of 600 years is at least as rare a thing as a man of 100 years, and that a tree of this species ever attained the age of 800 years is doubted by experts in forestry. The most long-lived of German trees are the pines, firs and allied species, which live 500 or 600 years or even longer. The oak appears to exceed other deciduous trees in longevity. The oldest known specimen is an evergreen oak (steineiche) 410 years old. The oldest of other oaks are 315 and 320 years old and already hollow and decayed. The most celebrated of historic lindens is at Neustadt on the Rocher in Wurtemberg. Its trunk, which is 12½ feet in diameter at the base, divides at the height of about six feet into seven branches which lie horizontally, supported by more than a hundred artificial props of wood and stone. The trunk, which is quite hollow, is also strengthened by an internal pillar of stone. The age of this tree has been estimated at about 700 years; it is referred to in an old song written in 1408. The maximum age of the beech, elm, ash and maple is about 300 years. The slow growth of the yew points to a still greater age than that of even the pines, but the period of 2,000 years which is sometimes assigned to this tree is probably in excess of the truth.

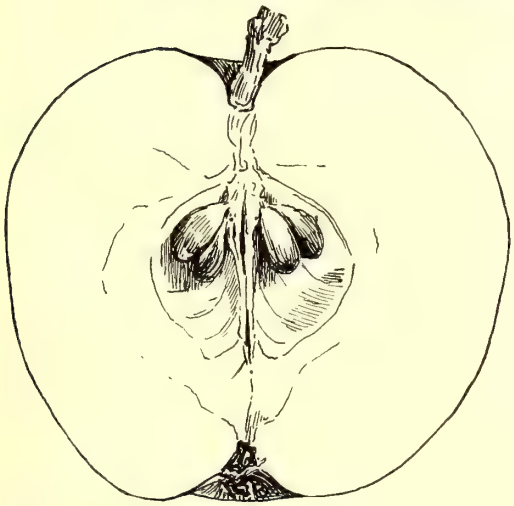
The trees of the Mediterranean region are not as a rule more long-lived than those of the north. The largest of the famous Algerian cedars, which are popularly supposed to be a thousand years old, has a diameter of 6½ feet and 460 annual rings. The cedars of Lebanon are not much older. On the other hand, there are olive-trees near Palermo which are known to date from the time of the Saracens, and are therefore more than 800 years old. As the olive sprouts persistently when cut down it is not imposible that the roots, at least, of the olive trees of Gethsemane date from the time of Christ, or that those in the olive-groves on Mt. Ilissus were planted in the palmy days of ancient Athens. —L. B. FLETCHER, *Ulster Co., N. Y.*



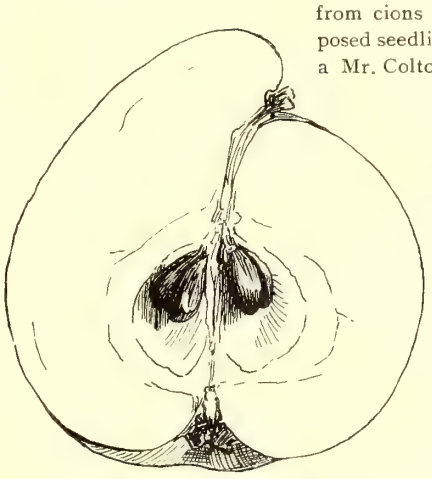
PEAR-SHAPED SPORT OF THE EARLY COLTON APPLE.



QUINCE-LIKE SPECIMEN OF EARLY COLTON APPLE.



EARLY COLTON—CROSS SECTION OF NORMAL FORM.



CROSS SECTION OF EARLY COLTON SPORT.

**The Colton Apple.**—A little while ago we received some curious apples from N. S. Platt, of New Haven Co., Conn., who described them as sports of the Colton. One of the specimens looked as if it might have been a hybrid with the quince. Another was distinctly pear-shaped, while a third had a slight tendency to oblongation at the stem end. Mr. Platt mentions that a Belle Lucrative pear tree stood about 100 feet away, and that it blossomed freely; but we hardly suppose that Mr. Platt thought the pear tree had any special influence upon the shape of these specimens! It was a curious coincidence, however, that about the same time we received a pear-shaped fruit from Rhode Island, which the sender described as a pear-apple, being the product of a Lawrence pear grafted upon a Williams apple stock (?). Whatever the cause may be, we deem the Colton specimen interesting enough for an illustration. The normal specimen is also shown among the illustrations, for comparison. The Colton is comparatively a new apple, at least to the horticultural world at large, though it is said to have been known in Franklin Co., Massachusetts, for many years, the present stock having been produced from cions taken from a supposed seedling on the place of a Mr. Colton in the town of Rowe, where it has been called Early Colton for some fifty years. Frank Ford, of Ravenna, Ohio, who has been propagating the variety, says he has never known it to sport in the manner described by Mr. Platt. Mr. Ford says the apple is the best early variety in his sec-

tion, and describes it as extremely hardy in northern New Hampshire, and in Minnesota and Wisconsin; also that it yields abundantly, and has borne a large crop every year ever since he first knew it in his childhood. From the specimens received, we judge it to be a good shipper; as described by Mr. Ford, it is of good appearance and excellent quality. The flesh is white, juicy, of fine texture, and possesses a pleasant sub-acid flavor.

**Normand Yellow Plum.** — On page 501, August GARDEN, we gave some account of plums grown by J. L. Normand of Louisiana Among those mentioned was the Normand's Yellow, which was also illustrated, but as

no direct reference was made to the cut we reproduce it herewith. The description follows: "The Normand Yellow is a fruit of medium to large size, very firm and meaty, with a small free pit, and a very delicious flavor. The color is a clear golden yellow. We are strongly impressed with the variety."

Mr. Normand now writes us that "the Normand Yellow, Japan and the Bailey Japan plums bloom in central Louisiana at the same time as the Wild Goose plum. I find it different from any of the thirty varieties I have on my experimental grounds, ripening just after the true Sweet Botan and a little before the Burbank, thus filling a gap which gives us an unbroken succession of plums from the middle of May to September. The tree is of symmetrical shape and a fine grower; leaves somewhat like the Kelsey, a little broader, and as to prolificness, it bears too much for its own good."

**California Fruits** are not bringing the high prices of the past few years, and it was not to be expected that they would. Their boom was sprung upon us at a season of comparative fruit famine in the east, and, as they have a foot-hold, large quantities are still being shipped and sold. Whether present prices will prove remunerative to the shippers remains to be seen. The fruits will sell ahead of most of the eastern fruit on account of more attractive appearance, and the superior methods of grading and packing employed by our Pacific coast brethren.

**A Big Sunflower.**—We have a sunflower which we think is exceptionally large. It is 13 feet 6½ inches high, has 45 blossoms, and some of the leaves measure 1 foot 8 inches in length and 1 foot 9 inches in width.—W. C. B., *Phila.*

**The Legend of the Mignonette.**

In the garden grew a flower;
Humbly trailing it was found,
Bent by clustered petals downward
To the damp, cool, shady ground.

Day by day the master spied it,
In its neutral tinted dress,
Called it dull and hateful blossom,
Vowed to ever love it less.

"For," spake he, "'tis never laden
With the halo of perfume;
'Tis a soulless flower, growing
Where bright roses fair should bloom.

"'Tis a weed that mars the garden,
Plant me flowers, rich and rare."
Thus he bade the keeper spade it
From his pathway everywhere.

As he spoke, a light supernal
Filled each corner of the place,
And the master looked and trembled
At the glory of a face,

Smiling sadly down upon him,
With a look that seemed to say,
"Give this modest little creature
Of God's making leave to stay."

It was Mary—virgin mother!
Like the morning, chaste and pure;
Crowned with holy rays from heaven,
That his eyes could scarce endure.

Low toward it she inclined her,
Till her lips had touched the plant,
Breathing full upon its petals,
Swaying on the mossy slant.

And the air grew faint with odors
Sweeter than Arabian spice;
Then the sainted Mary vanished;
She had kissed the blossom thrice.

Since that time, in all the garden
Grows no sweeter thing as yet,
Than the lovely heaven-born flower,
Than the fragrant mignonette.

—EFFIE DOUGLASS PUTNAM.

**A Bed of Bulbs.**—It is not too late to plant a bed of bulbs until the ground is frozen so hard as to be impenetrable, though October is no doubt the best time to put them out. It is sometimes desirable to use a plot which has been planted to some other flower, and one naturally prefers to wait until frost has robbed that of its beauty. I have had great pleasure from a bed of mixed bulbs, and I wish this letter might induce some other amateur to try the plan.

There should be tall late lilies, a few early lilies and some tall tulips in the center, if it is a round bed. Then more tulips with hyacinths and narcissus planted between them, all of the taller varieties. Near the edge intersperse dwarf tulips and hyacinths with scillas and snowdrops and crocuses planted here and there among them. A crocus bulb at intervals all over the bed will make the display of flowers begin early. Go to the woods and get blood-root (*Sanguinaria canadensis*) and dicentra in the two varieties *D. cucullaria* and *D. canadensis*, and plants of hepatica. Put the hepaticas around the bed for a border and put the others in at random

with their cousins of the garden. If you wait till late to put out the bed, give it a covering of hemlock boughs, and when you remove them in spring sprinkle mignonette or pansy or poppy seed thinly all over the bed and you will have pleasure in that plot of earth all summer. If you manure the bed it is best to leave the lilies out, as they are often killed by too much fertilizing.—S. A. LITTLE, *N. Y.*

**A Climbing Currant.**—Growing in the garden of a neighbor is a veritable climbing currant. The plant was found when quite small growing in a thicket, and was taken up and set in a kitchen garden. After a while its climbing proclivities were made manifest, some three or four years ago, and it was then transplanted to a position beside the house and trained up like any other climber, as shown in the illustration. When the photograph was taken it measured 11 feet 8 inches in height. The photograph was taken in autumn, and by July 12th following the plant measured 12 feet 8 inches, showing a new growth of 15 inches in one season. On July 12th there seemed to be fully a bushel of fruit upon the plant. The quality is not equalled by anything I ever saw, even Fay's Prolific suffering by contrast. Has any other reader seen a tendency to climb in any member of the currant family? —A. H. GODDARD, *Chautauqua Co., N. Y.*

CLIMBING CURRANT.

**Carpenteria Californica.**—This was named in honor of Judge Carpenter of Louisiana. It is a deciduous shrub, with beautiful white flowers that look like the Cherokee rose. A native of the Sierra Nevada mountains, King's river, Fresno county; brought to notice by General Fremont and very little cultivated. It is known, however, in England, to which country it was carried some 50 years ago by English botanists. The flower is not entirely scentless, as described by Professor Green in his botany, but has a slight pink perfume. The height of the shrub after growing some 10 or 12 years in the University of California grounds is about five feet. And I presume as the native home of the shrub is in the Sierras, it will be hardy in the eastern states. It is worthy of cultivation.—EMIL KELLNER, *California.*

**Popinac or Acacia Farnesiana.**—I read the discussion on the popinac some time back, and add my quota to the general fund. It is identical in bloom and foliage with the wesachu of Texas; in the western part of the state it makes immense trees. In South Carolina, where I first saw it, I have seen it growing out of doors as far north as Columbia, but it blooms in the fall and the bean or seed pod does not have time to ripen before frost, In the lower part of the state the seed pod ripens abundantly. The popinac is also indigenous to Florida. Here in Texas it does not bloom in the fall as in South Carolina, but in the spring. There is one in bloom here now (May). I do not think it blooms regularly in the fall, but many species that bloom in spring in other climates blossom here in the spring and fall or late summer; for instance, *Amaryllis Johnsonii* blooms in this way. The very dry summers of Texas produced this change, I presume, in the popinac. It died down during the drouth and put up too late to bloom in the fall, and the mild winters made it a spring bloomer. Dahlias and many other flowers I have seen die down here in a dry season, and sprout up and bloom again in autumn. Almost every year Irish potatoes make a volunteer crop in the same way, and a fine fall crop can be made by drying the smallest unmatured potatoes in the shade and then replanting them in August before the rains that come almost unfailingly in that month. We have many lessons from nature, and by copying her methods we can have spring flowers and vegetables in autumn.—MRS. H. K. W., *Bryan, Texas.*

**Fragrant Single Violets.**—On page 364, THE AMERICAN GARDEN, the statement is made: "All the cultivated violets have, hitherto, without exception, been double. Single violets, until this discovery of Mr. Cumming's, have been without perfume," etc.

This is a mistake. In this section is cultivated a single violet, both blue and white, whose fragrance cannot be excelled by any double violet which ever grew. I know whereof I write, because I am a New Englander, and was familiar with the double violet before I came south to live. To show you how very fragrant these single violets are, I will tell you that early in the winter I passed by my violet bed and the perfume attracted my attention ("the time of violets was not yet"). I searched and found four blooms. I brought them into my room, which is quite large, 17x22, and upon my husband's return, as he stepped over the threshold, he asked: "Have you violets in the room?" They are

very free bloomers. I have picked a three-pint pan full at one time from a bed 1½x10 feet.

Like the Israelites of old, not satisfied with the good things around me, I have longed for the violets of my youth, and again and again I have bought them and failed to make them live over the summer. I think they ought to be as tenacious of life as their single relatives. —Mrs E. B. Strout, *Conecut Co., Ala.*

**Do Some Plants See?**—Lady Boughey, Miss Thornewill and maids, of England, registered at the Richelieu yesterday, and went out to the stock yards before the ink of their names had dried. Lady Boughey is a prepossessing, amiable lady. She has been travelling around the world, and is especially devoted to botany. Talking about her pet subject she said:

"Do you know that plants can see? Well, they can. Darwin in his book on plants ventures an opinion that plants have eyes, and I have proved to my own satisfaction that he is correct. When in Japan, a few weeks ago, I was sitting under a shady tree looking at a bright convolvulus. Its tendrils were leaning in a direction opposite to me. While dreaming I was startled to see that they were turning toward my tree. I remained quiet. In an hour the tendrils had all turned so they faced me. This was early. After breakfast I told Miss Thornewill of my discovery, and we went out in the yard to further inspect the plants and their movements. To my disgust the tendrils had turned their backs upon my tree. We got a little stick and placed it a foot from the nearest branch of the plant. In a quarter of an hour the tendrils began to squirm. The upper tendrils bent down and the side ones curled their tiny necks until they reached the stick. In two hours they had completely entwined it. It was on the side away from the light and if the plants had not the faculty of sight they never would have seen the stick and moved toward it."—*Chicago Herald.*

**A Nation of Farm Gardeners.**—France is preeminently the land of small farms, some of them being only a few perches in area. The law of compulsory division in inheritance favors this subdivision; but the chief evil complained of is that, through successive family subdivisions, each man's total property consists of small plots scattered here and there, and the reform desired is not any interference with the present law of succession, but an enactment to facilitate exchange and consolidation of plots, so as to give each cultivator his whole property within one boundary. In France there are 2,000,000 properties under 12 acres, 1,000,000 between 12 and 15, and only 150,000 above 100. Of the whole population of about 38,000,000, 1,750,000 cultivate their own land with their own hands; 850,000 cultivate the land as tenants, and 57,000 cultivate by hired labor. There are about 875,000 hired farm laborers. The above figures represeent merely the heads of the families. All the members able to do so often work in the fields or patches.

**Our Insect Enemies.**—We have to resort to various means to cope with our insect enemies. I think one good plan in the case of the apple maggot is to have some of the varieties, that they infest the worst, grow in the poultry yard or cow pasture where they will be immediately eaten, or if that is not convenient, have them in different places to attract the flies from better fruit, and keep them well gathered up and fed out green or cooked so as to destroy as many as we can.—David Putnam, *N. H.*

**A Mountain Visitor.**—The accompanying sketch is made from one of three branches sent me during the past summer when in the neighborhood of Asheville, N. C., with the question, "What is this?" No one seemed to know the plant, and an old man of ninety years told me that he had seen it a year ago for the first

Pyrularia Oleifera.

time. He had not noticed any bloom, but gathered some of the fruit to show me. I take it to be the oil-nut, pyrularia, but would be glad for further information. Is the plant of any use, or should it be exterminated before it has established itself in its new field? The books to which I have access give no assistance on this point.—"L," *Charleston, S. C.*

# THE QUESTION BOX.

☞ *It is the privilege of subscribers to ask us any questions about gardening in any department. All will be answered by specialists..*

* * * *If answers are desired by mail, stamps for return postage should be enclosed.*

* * * *Readers are invited to answer briefly any questions in the Box, whenever their experience leads to a different conclusion than the printed replies.*

43. **Manure for Pansies.**—M. I. S.—Horse manure, if thoroughly well rotted, is perhaps the best.

44. **Flower Bed Arrangement.**—M. I. S.—Plant pansies in rows, groups or irregularly, to suit your taste. We prefer to group each variety by itself, likewise as to colors.

45. **Names for Manure.**—S.—The terms stable manure andbarn yard manure are synonymous, and applied to all such material as collects around the barn or stable. For use in gardens it should always be well rotted and not allowed to heat.

46. **When to Start Cuttings.**—M.—Pelargoniums or geraniums may be started in August. The season for propagation of house plants is at different times of the year, depending on the variety to be propagated. We refer you to Professor Bailey's "The Nursery Book" for full particulars.

47. **Books for Beginners.**—M.—Gray's "Lessons in Botany" is one of the best. For methods of propagation you should have Bailey's "The Nursery Book." Bailey's "Horticulturist's Rule Book" has thousands of rules and recipes for garden operations.

48. **Pruning a Rose.**—Mrs. G. A. W., *California*—We do not know of any book that illustrates rose pruning that would be of any use. The best description of the process we have seen is in the little book by H. B. Ellwanger, which we condense: "Practical experience alone will enable one to determine just what to do in each individual case. Use a hooked blade pruning knife and a pair of pruning shears. Use the pruning knife whereever a smooth cut is desired. All roses from the open ground should be pruned before planting or immediately after. Plants set as they come from the nurseries cannot thrive. The shock from transplanting must be met by a shortening of both shoots and roots. Not only should all bruised roots be pruned and cut away from the sound part, but also those large ones that are not injured to induce putting forth small fibrous roots. The cut in pruning should be nearly horizontal, to make the exposed surface as small as possible. It is generally preferred to cut from the inside and see that the top bud which is left points outward. If the plant bleeds, smear the cnt with wax, etc. A coating of mud will often answer. Growing roses are pruned both early in the spring and in autumn. We prefer spring, but then it must be done early before the sap pushes toward the upper buds to prevent bleeding. The objects of pruning are symmetry in the formation of the flower buds, to secure which this rule must be observed; namely, plants of delicate habit and weak growth requires severe pruning; those of vigorous growth are closely pruned, but the branches well thinned out. If varieties of vigorous growth are closly pruned, a great growth ensues and few flowers. Summer pruning is also desirable with many varieties of hybrid perpetuals. As soon as the June blossoming is over they should be pruned, in order to induce the formation of flower buds later in the season."

49. **How to Cut off a Rose.**—Mrs. W.—You may always cut back to the first bud below the peduncle of the flower without injury to the plant, because the long stems are preferable for bouquets. If durability is not an object the short stem flowers may as well only be cut according to their length, in order to save the bush.

50. **To Encourage Growth.**—Ross—A stout bush or many shooted stool may best be had in roses and other shrubs by liberal fertilizing of the soil with well-rotted compost if the soil is poor, and by cutting back the larger canes to within a foot or so of the ground.

51. **Retinosporas.**—J. H. H.—The specimens received are filifera and filicoides. These are carefully described in "Gardens of Newport" in July GARDEN, but so closely resemble each other that only close inspection reveals the differences.

52. **Sweet Brier Seeds.**—Kindly instruct me how to make them grow. I never have succeeded.—*M. L. R.*

Try Mr. Carman's method with other roses. Plant the seeds this fall in boxes filled with soil. Expose out-doors and let them freeze and thaw till February. Put under cover in sunlight in a temperature of about 60°, or over; water very moderately. They may begin to vegetate—"come up"—about March, 15.

53. **Hardy Peaches.**—Can you give me a list and state which stand at the head in this respect?—*C. G. A., Maine.*

In Michigan, the veteran authority, T. T. Lyon, reports them as follows, in order as named for hardiness of fruit buds: Hill's Chili, Keyport, *Lewis, *Kalamazoo, Golden Drop, and among the very early ones, Hale and Rivers.

54. **Irrigation of Strawberries.**—How can we water or irrigate a half acre of strawberries so as to save a crop in a protracted drouth?—*H. C. G.*

55. **Ardesia Crenulata.**—Please tell me about it. Is the fruit of any use?—*Mc. K.*

Ardisias belong to the order Myrsineæ a large genus of evergreens, both trees and shrubs. *A. crenulata* came from Mexico in the early part of the century. It likes a temperature of not lower than 50° in winter. A high temperature favors scale and other insect pests. The flowers are small, reddish, in terminal panicles, and the berries numerous and coral-like. They are very pretty, though useful only for decorative purposes.

56. **Grape Leaf Rollers.**—J. B.—The leaves are rolled by the well-known "grape-vine leaf roller" (*Desmia maculalis*). The caterpillar may usually be found in

*Local.

the rolled leaf. The remedy is, pick off and burn the affected leaves. This is seldom a very destructive enemy.

57. **Transplanting Onions.** — Mr. Greiner's new method of growing onions consists mainly in sowing early in a cold frame and when the bulbs are about one-fourth inch in diameter they are "pulled" and transplanted in rows eight inches apart and three inches apart in the rows. This is one of the best of methods, but I find that it has been in vogue for many years among Maryland market gardeners. They plant seed about the middle of March in out-door *rich* beds, and form other beds about eight feet wide and as long as desired, in which the sets are transplanted about three by eight inches, as stated above. The Silver Skin variety is mostly used.—T. L. B.

ANS.—The "New Onion Culture," with or without modifications, has been practiced by a few solitary growers for years, mostly for growing bunch onions, and in England for growing exhibition bulbs, but it has not been known to the general public. I only claim that I have *re*-invented and systematized this plan. That it has been practiced more generally in Maryland is news to me. In fact I do not understand this Maryland plan told by T. L. B. Why sow seed in open ground as late as middle of March, and then transplant? I would rather sow where wanted, and not bother about transplanting. Neither would I have rows in permanent beds *eight inches* apart. I want no less than twelve. Neither would I use the Silver Skin for this purpose; it is no good, except to be grown from sets for bunching. It almost looks to me that T. L. B. refers to the old method of raising bunch onions from sets. If so, it has nothing in common with my "New Onion Culture."—T. GREINER.

58. **Green Cabbage Worm.**—J. N. L.—This is the larvæ of the cabbage butterfly (*Pieris rapæ*) and makes two broods a year. Remedies are (1) Pyrethrum or Buhach: (2) hot water at a temperature of from 140 to 160 degrees, applied in a fine spray through a force pump; (3) a strong lye wash made of one-fourth pound potash to three gallons of water, sprinkled on with a brush. These insect remedies are best described in the Horticulturist's Rule Book; price, 50 cents.

59. **Swiss Chard** or **Silver Beat.**—J. N. L.—This is grown for the tops only, both as an ornamental plant and for cooking as "greens."

60. **Apricots Dropping.**—A fine 12-year old apricot tree has borne regularly since its first fruitage. This season, after reaching the size of small hickory nuts, the fruit dropped off. I have dug around the roots carefully and found them sound, but the body of the tree up to the first forks is bleeding profusely and coated with gum far in excess of anything I have heretofore seen. The foliage is full and rich. Any suggestions as to what will restore the trunk to a healthy condition will be appreciated by—*Jefferson Co., Ky.*

ANS.—The bleeding of the trunk probably has nothing to do with the falling of the fruit, which is evidently caused by the curculio. An examination of the fruit will probably show the larvæ inside. Various theories are given for the bleeding or gumming which is common to apricots, plums, cherries and peaches, and is variously attributed to wet soil, severe or untimely pruning, violent changes from heat to cold, the work of insects, etc. As a remedy, some recommend that the diseased bark be shaved off, the gum removed and the surface allowed to dry up, after which a coating of grafting wax or shellac is applied.

61. **Pecans from Seed.**—Will pecans raised from seed produce nuts like the seed?—*Subscriber.*

ANS.—Trees having tap roots, like the walnut, pecan, etc., always reproduce their kind. The tree from which I got my seed pecans had another tree some 50 yards away from it which planted from the seed, and reproduced and does reproduce the identical pecan planted,—F. A. SWINDEN, *Texas.*

62. **East Indian Plants.**—Inquirer.—A choice collection of bulbs and tubers of ornamental plants, of orchids, tropical ferns, palms, etc., are offered by J. P. WILLIAM & BROS., *Heneratgoda, Ceylon.*

**Puddling.**—What does "puddling" of plants mean?—W. H. C.

ANS.—When setting plants, provide yourself with a pan, pail or tub of muddy water, or watery mud. Dip the roots of the plants into the liquid and then set them in the ground. That is one way; a better is to carefully arrange the roots in the cavity, throw in a little soil and then fill the hole with water and fine soil, literally "puddling" the plant. A little stable manure in the water helps.

**Pecans in Missouri.**—Will pecans thrive in the neighborhood of St. Louis? How can I make my three acres pay 15 miles from the city market? The soil is too rich for water-melons and sweet potatoes. How about onions? The winters are uncertain and changeable.—*Subscriber.*

**Black Walnuts.**—W. H.—The Black walnut is indigenous in central New York. The most successful way of growing trees is to plant the nuts, as soon as gathered, where the trees are to grow. Trees have a long tap root and transplanting is liable to injure them. They may, however, be transplanted if great care is taken. The nuts may be placed in sand when gathered instead of being planted at once, and planted in spring, or the trees may be purchased of nurserymen.

**Moving Mature Plants.**—H. — Most hardy perennial garden plants may be moved safely in autumn after the leaves have dropped. Prune or cut the tops back vigorously a few weeks before removal. Take up with all the roots possible and transfer carefully to the new position. A correspondent of *Gardening* moves clematises a long distance by setting in a half-cask in rich loam; then setting cask and all in the cavity in the new location, knocking off the hoops and removing the staves and bottom, and filling in with soil simultaneously. A thorough if somewhat expensive method.

VITIS CHAMPINI, FROM TEXAS.

The two upper clusters are De Grasset and the lower one Barnes.

# The American Garden.

*Vol. XII.* *OCTOBER, 1891.* *No. 10.*

## THE WOLF AND THE GARDEN.

HOW THE OTHERS "HALF LIVE."

THE want of strength and the constant state of "half-health" that is characteristic of the very poor, springs from "half living." The wolf is too much around the tenement house door in our great cities. The working girl is often anæmic; bread, weak tea and canned goods keep her constantly just under "concert pitch." She needs more nutritious food, more fruit and more vegetables. When sickness comes she cannot stand it, and pays for poor living by not living at all. The pity of poverty in cities is the dreadful shortness of human lives. They die too soon—particularly the children. Stale food—not enough food—and the Potter's field follows quickly!

Not long ago a lady, on charitable thoughts intent, visited a poor family in a manufacturing village, and in her Dorcas basket carried ripe tomatoes and sweet corn fresh from her own bountiful garden. She had thought that the family might be glad for a little help in this way. She was surprised to find, on reaching the house, that in the back yard grew as fine corn and tomatoes as in her own garden. Poor as the family might be, they did not suffer for food. The garden was full of it. The family had practically lived on it for several weeks, and would do so for many weeks to come. The woman, with remarkable tact, accepted the gift with pleasure, and praised the appearance of the tomatoes by saying they were better than any in her own patch.

The lady then investigated the homes of the poorer people in the neighborhood, and found that there was really not one person in the place suffering for food. Every home had a garden, and these gardens helped to keep the wolf away. She gave away no more vegetables, for the reason that not a soul in the place wanted any—every family had their own and to spare. Further search in another part of the town showed a population living actually in a country place in flats. Here there was real poverty. Here anæmic faces were painfully plenty. Here the factory girl lived, like her city sister, on bread, tea, stale vegetables, ham and sausage. The flats covered all the ground. The sweet and generous earth was murdered to satisfy a landlord greedy for rents.

The garden is the poor man's staff. Amateur gardeners may wail over the cost of their gardens and may repeat the old story of the milk that cost more than champagne, but the little patch in the poor man's yard is a sure ban against the wolf. The generous earth, fed by fertilizers that are produced on the place, cared for in hours otherwise idle, does pay, because it returns a profit directly to the poor man's table. There is no semi-starvation when the home is backed (literally "backed") by a garden.

It is said that the European peasant laborer, on reaching a rural town in the United States, spends the first month in eating and sleeping. The generous living of this country is such a surprise to his poor stomach that it seems as if he could not eat enough, as if he never slept so well. After a while he gets accustomed to white bread and butter, the abounding fruit and the variety of vegetables. If he stays in the big cities, America is to him only another poverty-fed Europe.

There is really no absolute poverty in this country outside the cities. Every house has a garden. The wolf may howl about the country home, but he cannot leap over the garden wall!

# POSSIBILITIES OF OUR NATIVE GRAPES.

RECORDS OF PROGRESS AND INDICATIONS FOR THE FUTURE—AN ATTRACTIVE FIELD.

PERHAPS no fruit has yielded so quickly to the attention of the cultivator as our native fox grape of the east. Within half a century it has given us grapes of sufficient merit to extend grape-growing as a pleasant and profitable pursuit over almost every portion of our great country. Yet there are other species just as promising, and which are bound to contribute largely to the horticulture of the near future. Some of them have already come into prominence as parents of good varieties, but even these must be better known. In fact, the old fox grape itself will no doubt yield before another quarter century varieties more valuable than any we now cultivate. The opportunity for profitable and pleasant work which shall combine science and practice is great in our native grapes, and the material is everywhere at hand. It is strange that so few seize the opportunity.

It is largely through crossing that distinct advances are to be made, for here we can blend the peculiarities of two or more parents. Not all the results of crossing are good, but there are enough prizes to encourage the experimenter. I shall attempt in this article to recount some of the progress in the development of our native grapes. I shall not attempt to make any exhaustive account, but enough can be given within my limit to suggest the most probable directions of success. Much of the writing upon the improvement of native fruits is general in its character, and sometimes fanciful; and I have therefore thought it best, even at the risk of being tiresome, to present a somewhat statistical outline of my subject.

THE FOX GRAPE (*Vitis Labrusca*) extends along the sea-board as far west as the Alleghenies from New England to Carolina. This was the first native grape of the United States extensively planted in vineyard (at Vevay, Indiana) after the extensive and universal failures with vinifera vines in the Atlantic and Mississippi valley regions.

The Concord is the leading commercial representative of this species, and yet its introduction dates only from early in the fifties. Worden and Moore's Early are two of its well-known children. The following list of pure Concord offspring shows what vitality inheres in this variety:

| | |
|---|---|
| Atavite | Concord seedling, T. V. Munson, Tex. |
| Black Hawk | " S. Miller, Mo. |
| Balsiger's No. 2 | Concord seedling, J. Balsiger, Mo. |
| " No. 32 | " " " |
| John Burr | " Kan. |
| Cottage | " E. W. Bull. |
| Colerain | " D. Bunsly, Ohio. |
| Cambridge | " F. Houghton, Mass. |
| Denison | Moore's Earlye sedling, T. V. Munson, Tex. |
| Eaton | Concord seedling, G. Eaton, Mass. |
| Eva | " S. Miller, Mo. |
| Esther | Concord grand-child, E. W. Bull. |
| Golden | Concord seedling, T. Valle, Mo. |
| Gov. Ireland | Moore's Early seedling, T. V. Munson, Tex. |
| Grayson | " " " " " |
| Hayes, T. B. | Concord seedling J. B. Moore, Mass. |
| Linden | " T. B. Miner, N. J. |
| Lady | " S. Imlay, Ohio. |
| Modena | " A. J. Caywood. |
| Moore's Early | " J. B. Moore, Mass. |
| McDonald | " A. McDonald, Mich. |
| Macedonia | " S. Miller, Mo. |
| Mason | " B. Mason, Ill. |
| New Haven | " J. Valle, Mo. |
| Paxton | " F. F. Merceron, Pa. |
| Pocklington | " J. Pocklington, N. Y. |
| Rochland | " Ellwanger & Berry, |
| Favorite | " N. Y. |
| Rockwood | Concord grand-child, E. W. Bull. |
| Storm King | Concord sport, E. P. Roe, N. Y. |
| Victoria | Concord seedling, T. B. Miner. |
| Worden | " S. Worden, N. Y. |
| White Ann Arbor | " C. H. Woodruff, Mich. |
| Young America | " S. Miller, Mo. |

Numerous other seedlings of Concord have been produced, not named here, and it is remarkable that only one of all these is anything like a fair competitor—the Worden. But the obtaining of white grapes of finer quality, and much earlier and later varieties, as pure seedlings of Concord, shows its wonderful capacity for variation. How much of this capacity comes from reversion toward ancient ancestors, which entered the composition of Concord blood before Mr. Bull sought it out of wild nature, and how much comes from new circumstances of soil, climate, culture, etc., no one can tell. It would seem, however, that the best material of the Concord "lode" has been mined, and further production of pure Concord seedlings is a waste of time.

As a parent in hybrids, Concord also has played a prominent part, as the following clearly shows:

| | |
|---|---|
| Adelaide | Concord* × Musc. Hamburg, Ricketts. |
| Black Defiance | Concord × Bk. St. Peters, Underhill. |
| Black Eagle | " × Vinifera, " " |
| Brighton | " × D. Hamburg, J. Moore. |
| Conqueror | " × Riparia (?) A. Moore, N. J. |
| Conelva | " × Elvira, T. V. Munson. |
| Campbell | Seedling of Triumph, " " |
| Concord-Chasselas | G. W. Campbell, O. |
| " Muscat | " " " |
| Diamond | Concord × Iona, J. Moore. |
| El Dorado | Concord × Allen's Hybrid, Ricketts. |

* The pistillate or female parent is always mentioned first.

| | | |
|---|---|---|
| Gov. Ross | Seedling of Triumph, | Munson. |
| Highland | Seed'g of Triumph × Jura Muscat | " |
| Irving | " " × White Frontignan, | Underhill. |
| Jefferson | " " × Iona, | Ricketts. |
| Lady Washington | " × Allen's Hybrid, | " |
| Mansfield | " × Iona, | C. G. Pringle. |
| Niagara | " × Cassady, | H. & C., N. Y. |
| Planet | Concord × B. Muscat., | Ricketts. |
| Senasqua | " × Blk. Prince, | S. Underhill. |
| Triumph | Concord × Chass. Musquè., | Campbell. |
| Wylie's No. 8 | " × Bowood Muscat., | P. Wylie, S. C. |
| Wylie's Gill (Gill Wylie) | Concord × Vinifera, | " " |

Most of these Concord hybrids are of excellent quality and grand appearance, and many of them very successful in many localities; but where foreign blood has been used, mildew and rot attack them more or less. But by the application of the Bordeaux mixture these diseases can be greatly held in check, and these almost as good as best vinifera can be grown in open ground east of the Rocky mountains south of 36° to 40° latitude. Now by uniting the best of these large-berried, large-clustered hybrids with the finest native riparias of the north-west for those regions, and with the rot-proof rupestris, solonis, Lincecumii and æstivalis of the south, great advancement may be made toward fine table-grapes, as well as for wine, in those regions, with vines thoroughly adapted to the various localities. But for the dry western and south-western regions, the Labrusca blood is not adapted for vigor and long life, as that species is not native west of the Allegheny mountains and has been developed in and suited to a moist climate, quite the opposite from that of the west. Better families of grapes for the west would undoubtedly spring from the best selections of the north-western *V. riparia* and *V. bicolor*, of *V. Lincecumii*, *V. rupestris*, *V. Solonis*, *V. Doaniana*, *V. Champini*, *V. Berlandieri* and *V. cinerea* of the south-west, intermingled with each other, and the *V. Bourquiniana* varieties, such as Herbemont, Le Noir, etc., which are eminently dry-climate grapes.

In this connection it is interesting to study the Hartford Prolific family, for this old variety is also *Vitis Labrusca*. The Ives is probably a seedling of the Hartford. The following list is suggestive:

| | | |
|---|---|---|
| Early Victor | Seedling of Ives (?) | J. Burr, Kansas. |
| Empire State | Hartford × (?) | Ricketts, N. Y. |
| Framingham | Seed'g of Hartford, | |
| Ives | Seed'g of Hartford (?) | H. Ives, O. |
| Janesville | Seed'g of Hartford × Clinton, | |
| North America | Seed'g of Hartford (?) | |
| Purple Bloom | " " | Dr. Culbert, N. Y. |
| Rentz | Seed's of Ives, | S. Rentz, Ohio. |
| Seneca | Seed'g of Hartford, | Simpson, N. Y. |
| Telegraph | " " | Christine, Pa. |
| Whitehall | " " (?) | G. Goodale, N. Y. |
| White Muscat, of Newburg | Hybrid of Hartford × Iona, | D. W. A. Culbert, N. Y. |

From the above, it appears that Hartford does not give rise in its seedlings to anything much superior to itself, nor to variations in color and season, as does the Concord. Neither has it been a favorite on which to hybridize other blood. The Ives Seedling is the most valuable of the lot.

OTHER LABRUSCA HYBRIDS.—Though Catawba, Clinton, Eumelan and Isabella are generally considered purely of a single specific blood each (Catawba and Isabella as Labrusca, Clinton as riparia, and Eumelan as æstivalis), a careful analysis of them and their pure seedlings quite certainly reveals that Catawba, Eumelan and Isabella contain vinifera blood, and that Clinton is Labrusca mixed with riparia. Each of these is the parent of a good sized family, but I note only the Catawba family:

| | | |
|---|---|---|
| Aletha | Lab. × Vin. (?) Reported as Catawba Seed'g; doubtful. | Ottawa, Ill. |
| Anna | Catawba seed'g, | E. Hasbrouck, N. Y. |
| Berks | " | Pa. |
| Bird's Egg | " | Discarded. |
| Catawba | Lab. × Vin. (?) | Maj. J. Adlum, N. C. |
| Clover Street Red | Diana > Hamburg, | J. Moore, N. Y. |
| Clover Street Black | " " " | " |
| Diana Hamburg | " " " | " |
| Detroit | Catawba seed'g, | Mich. |
| Don Juan | Diana × ? | Ricketts. |
| Diana | Catawba seed'g, | D. Crehone, Mass. |
| Excelsior | Iona × Vinifera, | Ricketts. |
| Hine | Catawba Seed'g, | J. Brown, O. |
| Imperial | Iona × Muscat., | S. Ricketts, N. Y (Seedless). |
| Iona | Catawba seedling, | Dr. C. W. Grant, N. Y. |

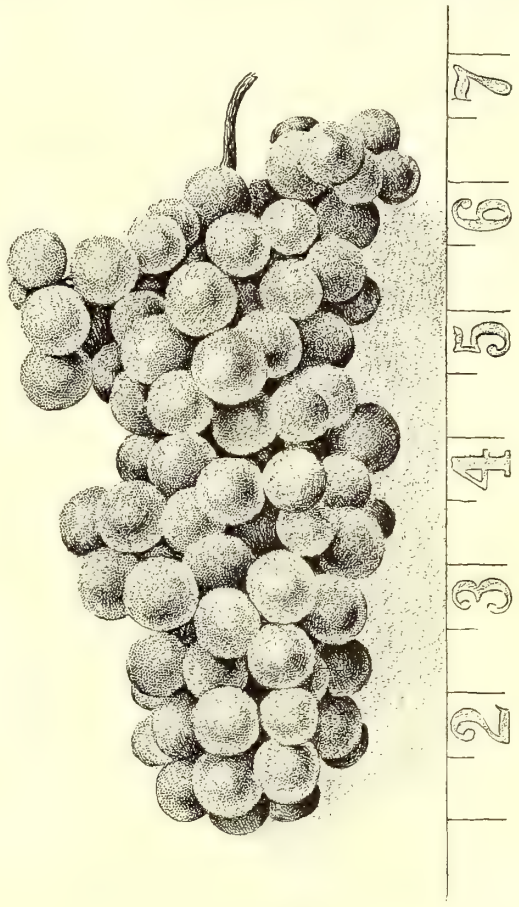


FIG. 1. ONDERDONK.

(Probably the same as now known in California so favorably as Thompson's Seedless Raisin Grape, which was received from New York unnamed, with other vines.)

| | | |
|---|---|---|
| Kalamazoo | Catawba seedling, | Dixon, O. |
| Mottled | " | Carpenter, O. |
| Norfolk (syn., Progress) | " | White, Mass. |
| Norwood | " (?) " | " |
| Owasso | " | Goohue, N. Y. |
| Onondaga | Diana × Delaware, | N. Y. |
| Poughkeepsie | Iona× " | Caywood, N. Y. |
| To-Kalon | Catawba seedling, | Dr. Spofford, N. Y. |

It will readily be admitted by any close grape student, in viewing this family, that it exhibits vinifera characteristics in many points: 1st, the tendrils are generally *intermittent*, a vinifera characteristic, and not of Labrusca; 2d, the peculiar shade of green is lively, very much like vinifera, not dull as in Labrusca. The quality is invariably fine, resembling some vinifera generally. The skin is usually thin and tough; "foxiness" is generally absent. The varieties all are more or less subject to mildew and rot, and succeed poorly in Carolina, where Catawba originated and where the wild Labruscas are quite exempt from both mildew and rot, and have a coarse foxy fruit in small clusters. The more I become acquainted with these and the wild Labruscas, the more am I convinced that Catawba is an accidental hybrid of Labrusca × vinifera.

There is no doubt that better families than the Catawba might be developed out of several of the Moore's, Rickett's and Roger's hybrids, into which Catawba blood has not entered.

THE DELAWARE FAMILY.—As to the specific blood composing Delaware, it has long been a puzzle to grape students. Some suppose it to be æstivalis, but most persons think it a hybrid embodying Labrusca and æstivalis, or Labrusca and vinifera. That it possesses in part at least Labrusca blood is quite generally conceded, as so many of its seedlings clearly show Labrusca marks. The writer, after years of critical study and growing many seedlings of it, finds the analysis indicates quite satisfactorily the composition of this variety to be *V. Labrusca*, hybridized with some form or variety of *V. Bourquiniana*, such as Herbemont or Le Noir, of the so-called "Southern æstivalis," which certainly is not native, as commonly supposed.

One familiar with these forms, and Delaware and its progeny, readily sees the close kinship among them. Having produced a number of hybrids between Herbemont and different Labrusca varieties, and finding such hybrids to greatly resemble Delaware in vine and leaf and general character of fruit, my supposition is strengthened as to the specific blood of Delaware. But, of course, this is a theoretical conclusion at best, and the best I am able to form.

| | | |
|---|---|---|
| Beauty | Delaware × Maxatawney, | J. Rommel. |
| Beauty of Minn. | " × Concord, | J. C. Kramer. |
| Croton | Concord × Fontainebleau, | S. W. Underhill. |
| Delaware | Lab. × Bourq., | P. H. Provost, N. J. |
| Golden Gem | Delaware × Iona, | J H. Ricketts. |
| Ithaca | Delaware × Chasselas, | Dr. Parker, N. J. |
| Lady Charlotte | " × Iona, | Pringle, Vt. |
| Putnam | " × Concord, | Ricketts. |
| Purity | " × " | Campbell. |
| Raritan | " " | Ricketts. |
| Rommel's No. 3 | " × ? | Mo. |
| Rommel's No. 4 | Delaware × ? | Mo. |
| White Delaware | " seedling, | Campbell. |
| Walter | " Diana, | Caywood. |
| Willis | " × ? | W. W. Jones, Ill. |
| Wylie's No. 1 | " × Concord, | S. C. |

The following Delaware offspring are of my own raising:

| | |
|---|---|
| Delgœthe | Delaware × Gœthe. |
| Delmar | " × Martha. |
| Oleta | " × Irving. |
| Roscoe | " × Martha. |
| Sparkler | " seedling. |

Owing to lack of productiveness none of these are very promising as profitable varieties for the vineyardist, though they all are fine in quality. That is the general character of the Delaware family. So far, Delaware is, for real value, superior to any of its seedlings. In the hands of the hybridizer, Delaware gives much better results when used as pollinator of such varieties as Lindley, Herbert, Agawam, Concord, etc., than as the mother of pure or hybrid seedlings, as indicated in my Brilliant, Gold-Dust, Lindel, etc., where Lindley was the mother vine.

ISABELLA FAMILY.—For pretty much the same reasons that I regard Catawba as a hybrid of Labrusca with vinifera, I am also compelled to put Isabella in the same category. It appears to have been always as tender everyway as most of Rogers' hybrids, and its progency do not indicate pure Labrusca blood in it. Hybrids or crosses of it with pure vinifera are generally quite tender and greatly resemble vinifera, as though they possessed as much as three-fourths vinifera blood, which they should if Isabella itself is a hybrid.

| | | |
|---|---|---|
| Adirondack | Isabella seedling, | N. Y. |
| Albino | " | J. B. Garber, Pa. |
| Allen's Hybrid | " × | G. Chasselas, Mass. |
| Eureka | " seedling, | S. Folsom, N. Y. |
| Golden Drop | Adirondack × Delaware, | Vt. |
| Isabella | Lab. × Vin., | Isab. Gibbs, S. C.? |
| Israella | Seed'g of Isabella, | Dr. Grant, Pa. |
| Logan | Seed'g of Isabella, accidental, | O. |
| Lydia | " " " | Carpenter, O. |
| Maxatawney | " " (?) | Pa. |
| Mary Ann | Isabella × Hartford (?) | Garber, Pa. |
| Prentiss | Isabella, | J. W. Prentiss, N. Y. |
| Rebecca | Isabella × Vinifera (?) | Peake, N. Y. |
| Union Village | " Seed'g, | Shakers, Ohio. |

There are many other Isabella seedlings and seedlings of some of the Isabella seedlings, but not worthy of mention here.

ROGERS' LABRUSCA × VINIFERA FAMILY.—These were produced by E. S. Rogers, at Roxbury, Mass., in 1854–5–6, by hybridizing good selections of the most vigorous wild Labrusca of Massachusetts with vinifera pollen, such as Black Hamburg. I name only a few of the lot.

| | | |
|---|---|---|
| 15 Agawam | | |
| 39 Aminia | | |
| 43 Barry | | |
| 41 Essex | | |
| 14 Gærtner | Lab. × White. | Chasselas. |
| 1 Gœthe | | |
| 44 Herbert | Lab. × Hamburg. | |
| 9 Lindley | " × Golders. | Chass. |

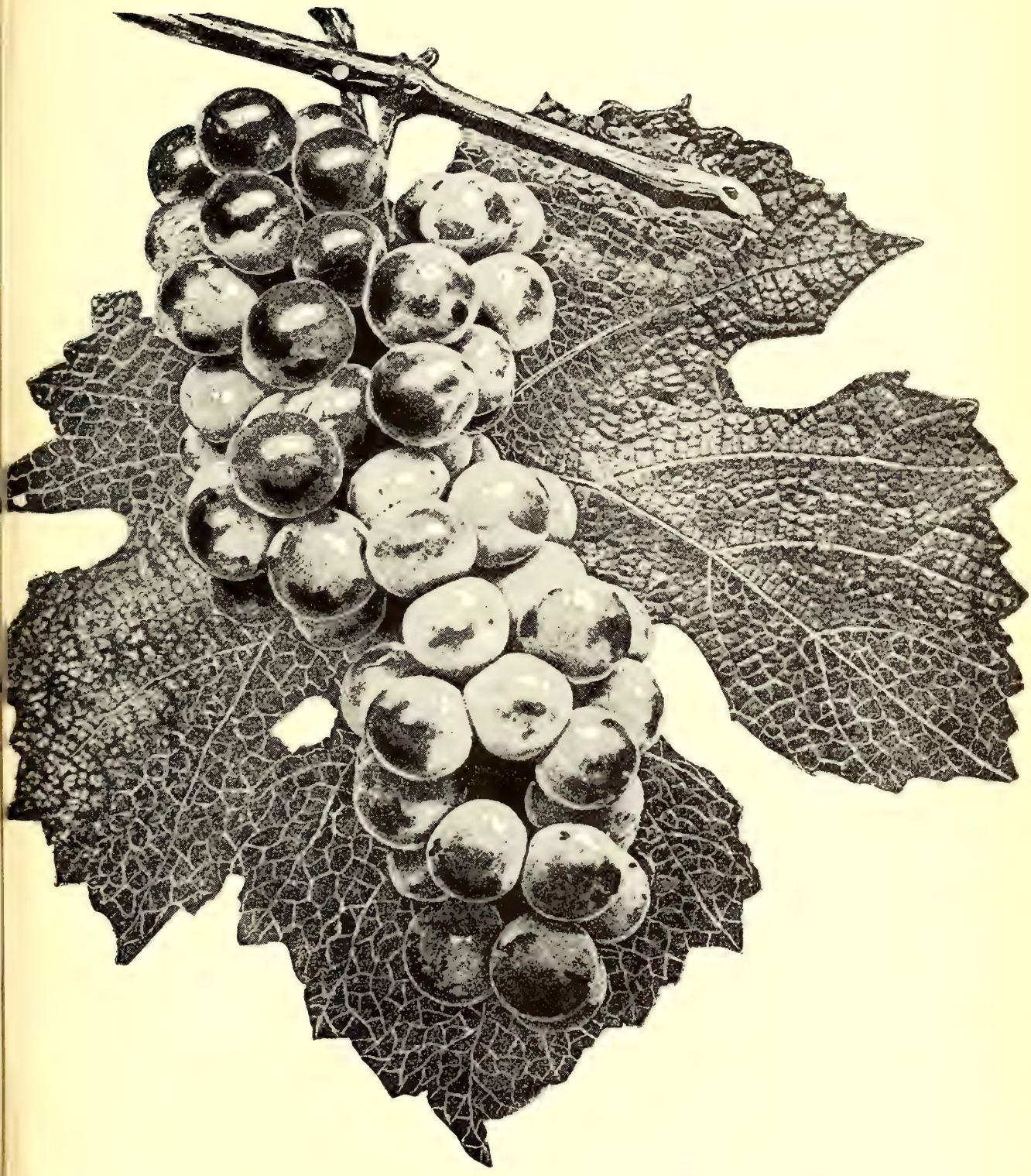


FIG. 2. HYBRID GRAPE, "PROFESSOR BAILEY." (*V. Lincecumii* × *Triumph.*) (See page 585.)

19 Merrimac . . . . . .
3 Massasoit . . . . . .
28 Requa . . . . . .
53 Salem . . . . . Lab. × Hamburg.
4 Wilder . . . . . " "

By using some of these fine varieties, such as Herbert, Salem, Agawam, etc., to give size and richness of flavor to other of our best species and varieties, doubtless very valuable results may be obtained, as indicated in my own efforts with Lindley hybrids, as follows:

Brilliant . . . . . Lindley × Delaware.
Gold Dust . . . . . " "
Golden Grain . . . . . " "
Linelva . . . . . " × Elvira.
Linherb . . . . . " × Herbemont.
Lindel . . . . . " × Delaware.
Linmar . . . . . " × Martha.
Opal . . . . . " "
Red Bird. (Promises to be very valuable for early market) . . . . . " × Champion.
Rusiter . . . . . " × Concord.

The Brilliant, to most tastes, is finer than Delaware, as having a more fruity flavor, and is otherwise pure and sprightly. It is very handsome, and promises to be valuable over a large territory, especially where Delaware succeeds.

A vast number of other pure and hybrid Labruscas not mentioned in this paper have been produced. Comparing this species with others which are much superior, and its numerous varieties and hybrids with the few varieties of better species, it would seem that a great waste of time has been made.

We have been trying to clothe the entire country with vines from the New England slopes, while the other slopes of the country offer better material for the construction of vineyards for those regions. Let every section do with its own material for itself as well as have the eastern and central states done for themselves, and our country will become a great grape country throughout.

THE SOUTHERN ÆSTIVALIS CLASS (*Vitis Bourquiniana*).—No other class offers so many really fine varieties for the south and southwest as this, considering the number in cultivation. Though this family of grapes has been considered by Dr. Engelmann and other Amphelographers as natives of the southern states, yet most diligent search after their origin, by the writer, has signally failed to find any indications that they are native, as no such wild vines have been brought to his notice from any of the many places where it was reported they occur, and search was instituted. The Herbemont as "Brown French," and Le Noir or Jacques as "Blue French" he has traced back through the Bourquin family of Savannah, Ga., to their bringing to Georgia in its early settlement over 150 years ago from south France. The Louisiana was reported by the French in Louisiana near New Orleans, among whom it was first known in this country to have been imported from south France many years ago, probably in last century. These original varieties of the group bear French or Spanish names, almost invariably. So we cannot avoid the conclusion that these are varieties of some foreign species nearly allied to, but yet not identical with æstivalis. Where the wild home of the species is or was is not known to writers on the grape, but I am led to believe it was the original wild species along the borders of the Mediterranean, while vinifera came from further east, in Asia Minor, Syria, Persia, etc.

There is this remarkable difference, that this resists phylloxera and most of our grape diseases in the south where vinifera is destroyed. In honor of Gougie Bourquin, who so well assisted me to trace out the origin, in this country, of Herbemont and Le Noir, I named the group as a new species, *V. Bourquiniana*, as *V. æstivalis*, to which it has been heretofore attached, *it is not*. It is about mid-way between that and vinifera, with some characteristics of *V. cinerea*, and certainly offers one of the most valuable strains of blood with which to improve our southern species with at least a fair probability that the blood of this same species is that which gives fineness to the Delaware. Fig. 1 shows a seedling of Herbemont which I have called Onderdonk. It is a white grape of promise, with small berries but a large cluster. There are many good new varieties of this species.

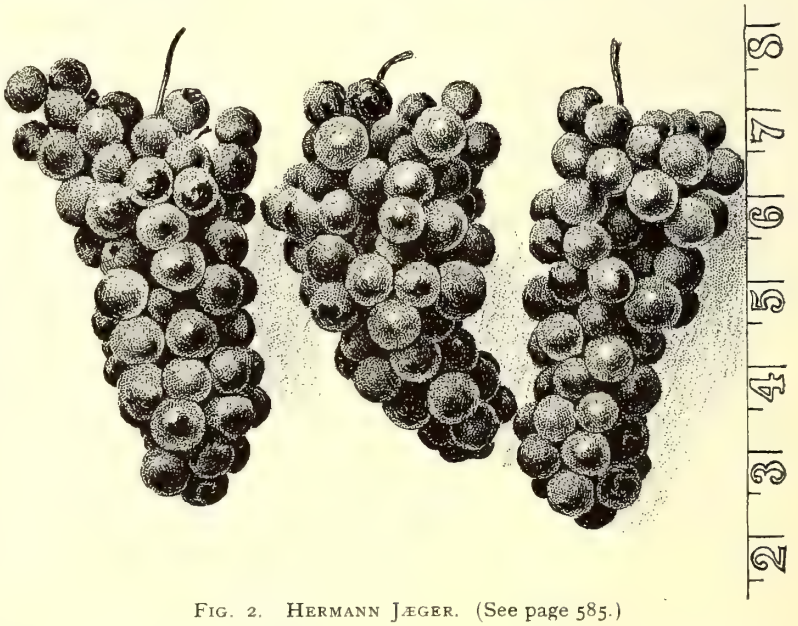


FIG. 2. HERMANN JÆGER. (See page 585.)

THE TRUE ÆSTIVALIS CLASS (*Vitis æstivalis*) has a more

restricted range and a lesser combination of characters than are generally ascribed to it. Norton's Virginia, although generally regarded as pure æstivalis, has some slight Labrusca characteristics, but so little that it may be taken as the best representative of the species in cultivation.

In the hilly regions of western North Carolina and eastern Tennessee, the wild æstivalis often has large, long, handsome, compact clusters of medium sized berries. Some of these are of good wine properties; but the fruit of the species is generally very astringent, and not palatable.

Quite a number of seedlings and hybrids of Norton's Virginia have been produced by H. Langendorfer and J. Balsiger, of Missouri, and by the writer, as well as by some others. The pure seedlings are generally very puny, often have a white fruit, rarely are equal to the parent, and very rarely a little finer. I am quite sure I have at least one such which is quite similar to parent in vine, cluster and berry, with a more refined flavor.

I have hybrids of Norton with Elvari, with Martha, with Herbemont, with *V. Lincecumii*, with Concord and others. Some prove quite good, others very small, astringent and poor. As a parent of hybrids, it does not do nearly so well as my best post-oak grapes. The only cross or hybrid known to me of Norton now in general cultivation is the Hermann, which is evidently a hybrid with the *V. bicolor* of the bluffs of the Missouri river, near Hermann, Mo. The long, cylindrical, compact cluster of very late, small berries, astringent and rich in sugar, is characteristic of bicolor. Hermann is a very fine wine grape.

The Blue Grape, or Northern Summer Grape (*Vitis bicolor*) has commonly been confounded with the last, although it is very distinct. Of this I know of no varieties except the Riesenblatt of Pœschel, Hermann, Mo., in cultivation, but it possesses merits of hardiness and productiveness, with purity of quality, though the berry is small, that should make it a valuable element in developing grapes for the north. Some wild hybrids of this with *V. riparia*, which are of good quality, have been noticed in Wisconsin. Dr. Hunger found one such which has fruited with me and is of good quality to hybridize upon with such varieties as Worden, Moore's Diamond, Moore's Early, etc., to get earliness, size and extreme hardiness for the far north-west. Brilliant, upon this, will doubtless give fine grapes.

Post-Oak Grape Family (*V. Lincecumii*).—The typical *V. Lincecumii* of Buckley is found chiefly in a belt of country 50 to 100 miles wide, and some 200 or more miles long, extending from about San Antonio, or a little south of there, north-east toward Palestine, Texas, and has much rusty wool on young wood and under side of leaves, and no bluish bloom (glaucum) on mature annual wood and under side of leaf, as the variety of it in northern Texas and south-western Missouri and northern Arkansas has. It is native on high, loamy, dry sandy lands on which generally post-oak trees (*Quercus stellata*) grows, hence the name post-oak grape. This species (or variety, as botanists may prefer) of the æstivalis series is one of the most valuable for improvement, by selection and hybridization, for the dry, sandy lands of the southwest. So far, the results in the careful hands of H. Jæger, as well as with me, have been very remarkable.

A grape to which I have given the name Hermann Jæger, is shown in Fig. 3. It is a hybrid between *Vitis Lincecumii* and *V. Bourquiniana*. The plant is exceedingly vigorous and prolific. The berries are black, with a bloom. The quality is excellent, and the berries are of good size, often twice larger than shown in the cut. These two species offer a promising field for hybridizing; and *V. Lincecumii* also intermingles to great advantage with *V. rupestris*, *V. Labrusca*, and others.

The following are some of the offspring of *V. Lincecumii*, which is still very new to cultivation. Texas Raisin and Jack's Favorite are of the pure species. They were found wild in Gonzales county, Texas, by J. H. Lewis. They have fair quality. Early Purple, Lucky, Wild Texan, Nimon and some others represent *V. Lincecumii*, var. *glauca*, and were found wild by myself in northern Texas. Belonging to the same natural variety are Neosho, Far West and several others, found in southwestern Missouri by Mr. Jæger. A number of these are of really good eating quality, as well as very fine wine grapes. They were collected from the woods from among tens of thousands of vines, in many years of hunting, as the best found. Both Mr. Jæger and the writer have hybridized upon the best of these finds the best selections of some other species, and some of the finer grapes in cultivation, thus producing a number of really fine grapes for cultivation. I name a few:

Jæger's No. 70 . . . . . V. Lincecumii × rupestris.
" " 72 . . . . . " "

Both of these are superior, prolific wine grapes; No. 72 is excellent for eating.

Hermann Jæger. Purple, medium berry, large cluster, medium to late . . . . . } V. Lincecumii × Herbemont. (Fig. 3.)

Carman. Same blood as last; bears at a very young age, and enormously; medium berry, large cluster, vigorous.

Perry. Purple, medium berry, large cluster, exceedingly fine quality . . . . . } V. Lincecumii No. 2 × Herbemont.

Professor Hilgard. Same parentage and description as H. Jæger.

Professor Bailey. Black, large, medium season . . . . . } V. Lincecumii × Triumph.

The Bailey is shown in Fig. 2, page 583. It is a variety of great promise, particularly for wine.

Nellie. Purple; very delicate, sweet and beautiful . . . . . } Neosho × Herbemont.

Husmann (Fig. 4) is another hybrid of *V. Lincecumii* by Triumph, possessing many good points. It is black, smaller than Concord.

There are something over 100 of these, my *V. Lincecumii* hybrids of real merit, but space will not permit mention of all. Most of them are superior wine grapes, and so fine in habit of growth, productiveness, etc., that they can well compete with the vinifera varieties. Some are excellent table grapes. They are especially promis-

ing in the region west of the Mississippi river and south of Kansas City and St. Louis.

SIMPSON'S GRAPE (*V. Simpsonii*).—This form of the æstivalis family has leaves greatly lobed, with scalloped teeth and bearing much pale, hairy down on under side and on young wood. The berries are generally larger than in æstivalis, with less astringency, often quite agreeable to the taste. The peduncle of the cluster is very long. The vines are more slender than in *V. æstivalis*, and climb much more extensively. No varieties are in cultivation known to me outside of my own grounds.

Ashtabula (*V. Simpsonii* × *coriacea*) is a wild hybrid at Ashtabula, Fla., in cultivated ground, brought to my notice by Col. G. H. Norton, of Eustis, Fla., who informed me that the vine had been known to produce in one season as much as 300 pounds of fruit. Three-year vines of this in my grounds have borne some fruit, in cluster resembling Norton's Virginia, of a very pleasant, vinous character and a peculiar flavor. This is certainly a valuable wine grape, as it is for the extreme south, and capable of becoming the basis of a very remarkable and valuable group of varieties for both table and wine in the Gulf regions. No mildew or rot so far have been observed to affect it, but it is tender as to cold.

THE FROST GRAPE (*Vitis cordifolia*) grows along streams and ravines south of 42° latitude, east of Iowa, Kansas, Brazos river, Texas, all through to the Atlantic and the Gulf. In Florida it has purple growing tips, and the leaves hold on till very late in winter, while northward and westward it is the earliest of any species to shed its leaves. The small, intensely sour, pungent fruit renders it unfit to eat, though it develops a high per cent. of sugar late in the fall.

RONK'S BLUE (*V. cordifolia* × *Labrusca*).—This remarkable grape was found wild near Salem, Roanoke Co., Va., by a Mr. Ronk, some 30 or more years ago, and moved into his yard, where it has continued to bear abundantly to this day. It is purely vinous, with no "foxy," but a little of the cordifolia flavor. Having recurved stamens, it does not fertilize itself well. It does well here at Denison when near long-stamened varieties.

Roanoke is one of a number of seedlings of it grown by me, which is large in berry and cluster, fertile in pollen, and the fruit is quite good enough for table, as well as wine, ripening a little after Concord. The flavor is peculiar and liked by every one who tastes it; the berries are oval. Another of these seedlings is red, of fair size and color. These are the only cordifolia hybrids or seedlings of cordifolia known to me worthy of notice, and they promise a unique and valuable group for a wide range.

VITIS RUBRA.—No special varieties or hybrids of this species are known to me. The flavor is very pure and sprightly, but the small berries, usually with one large seed with skin close about it and little juice between, make it not promising for hybridizing for vineyard culture. The vine, with its bright red twigs and leaf-stems, and glossy dark green, beautifully lobed and cut leaves, is very ornamental. It is very hardy to withstand cold. It is free from diseases, and probably if intermingled with large-berried, large clustered varieties, would produce good wine varieties. It grows natively in southern Illinois, along some of the rivers, notably the Mississippi.

VITIS MONTICOLA.—The "Sweet Mountain grape" of the limestone hills of south-western Texas is a most distinct species, with small to medium berries in small to medium clusters, having a very peculiar flavor. The berries are mostly seed and skin. The leaves are small, glossy, light green both sides, with large, prominent teeth. It is ornamental, hardy, and often found naturally hybridized with *V. Berlandieri*, *V. Champini*, and occasionally with *V. rupestris* and *V. candicans*, which are native in the same regions.

As a resistant stock, capable of growing in limy and chalky soils and the driest localities, it may be of great value, but for fruit in pure or hybrid form, I think it will hardly be of much use. But as the result of

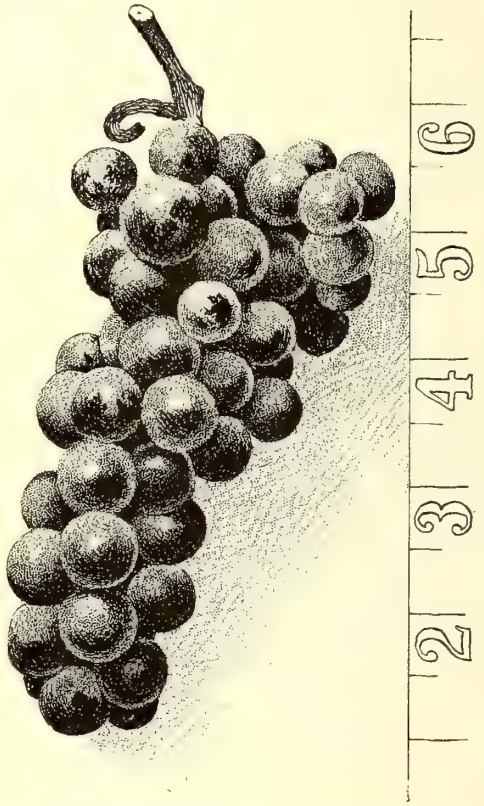



FIG. 4. HUSMANN. (See page 585.)

combinations can never be determined till produced, it would be well for experimenters to use it in hybridizing such species as *V. Doaniana*, *V. Champini*, *V. Lincecumii*, etc.

T. V. MUNSON.

(To be continued.)

# SIXTY-FOUR MILLIONS OF DOLLARS—II.

PRACTICAL MANAGEMENT OF THE FOREST GROWTH.

*By the Chief of the Forestry Division of the United States Department of Agriculture.*

N OUR FORESTS, the young growth consists usually of a mixture of seedlings and sprouts from the stump. The latter grow more rapidly than the seedlings, and are shorter-lived. If they come from old stumps, especially high stumps, they rarely grow into desirable trees. So it is preferable to reduce this kind of growth to a minimum and favor the trees that come from seed. Seedlings that have vegetated under the old growth many years have sometimes lost the capacity of vigorous development when set free, and so are to be taken out in the first thinning.

The shade-enduring kinds, like maples, beech, and on good soils, oak and ash, may recuperate after having been shaded for a time, while the light-needing kinds that have not been killed out by the shading are rarely serviceable for the new growth.

In thinning out sprouts, the interior shoots should preferably be removed, for they do the least for the shading of the ground and draw most upon the roots of the mother stock; while the outside shoots form new roots if the cutting has been done properly, i. e. close to the ground. There are next to be cut such as are bushy, and others, like aspen, willows, soft maples, etc., which in the full sunlight shoot up and grow too thickly in view of their inferior value.

Any which are to be specially favored must be freed from too close neighbors, even if some of good quality have to fall. Especially is it necessary to know which are the quicker-growing and which the shade-enduring, in order to determine which need assistance and which must be kept back.

The cuttings of poor kinds are made gradually during the first ten to fifteen years of the growth, and late summer or early fall. August and September are the best months for this trimming, as then the year's growth is completed and the foliage allows one to form judgment as to the conditions of each individual. These cuttings must be done carefully, however, so that the crown-cover be not broken for a longer time than two or three years; that is to say, the remaining growth must be able to close up and shade the ground fully within that time. There is danger of cutting too much by the amateur forester who wants to have something to do with his wood-lot, when simply waiting would be better.

When the crop has been brought into desirable composition, there comes another series of thinnings to hasten the formation of valuable wood. Do this by cutting certain trees in order to give the remaining room to develop more quickly and favorably. Life, as well as rapid growth, depends upon the amount of foliage to assimilate food.

It is the number of trees that yield the best result, not the greatest number, that we try to keep growing. What this best number is, depends naturally on the kind and age of the trees. In the average, in the 20th year 10 square feet, in the 40th year 40, in the 60th year 100, in the 80th year 125, and in the 100th year 160 square feet growing space. Or 4,300, 1,100, 435, 350 and 270 trees per acre respectively at the ages noted, would represent about the proper average. There are from 50 per cent. to 75 per cent. more shade-enduring trees possible on an acre than light-needing, and more trees on poorer soils, sometimes two to four times as many, than on good soils, and more in the valley than on the higher elevations; so that while a pine growth at, say 60 years, may show 400 trees to the acre, a beech growth, under the same conditions, may contain from 600 to 700 trees.

Left to itself, as the forest grows up, and as the individual trees develop, each trying to hold its ground and struggling for light, there is a natural thinning taking place, some trees lagging behind in growth and being shaded out, until, in old age, only as many trees remain as can occupy the ground without incommoding each other. We are to give direction and assist in this struggle, to hasten its results and obviate useless expenditure of energy.

As a rule, it is best to begin thinning when the struggle for light begins to show unmistakably, that is, when a decided difference in individual development can be seen, and the dominant growth be discerned from the laggards. Generally they are begun in light-foliaged, rapid growing trees with the 15th to 25th year; with shade-enduring species one may wait until the 25th to 30th year; that is the time when the greatest annual height growth is attained and diameter development is desirable.

In small wood-lots, where the owner uses perhaps the thinned-out material himself, a continuous gradual thinning is perhaps best; while on large areas it may be more practicable to cut over a larger area at once and repeat it in a few years.

The oftener the thinnings are repeated, the better for the remaining growth. The recurrence may be every two or three years in pines and rapid growing soft woods, while with slow growers every five years may be sufficient. Conditions of growth and the judgment

alone can determine this, and also the amount to be thinned out.

And why are the readers of THE AMERICAN GARDEN to be treated to such subjects as this? What has the garden to do with the forest? Has the forest a relation to the garden?

Have you not heard how the olive used to be grown in northern France, while now its cultivation is pushed southward, because of the opening of the northern coast to refrigerating winds by the forest destruction? Have you not heard how in Kansas the timber belt on the south side of a field or garden has protected the crop against the scorching hot winds? Is not everywhere the value of the wind-break, the timber belt, properly placed, known to the orchardist?

The world is full of experiences to show that alternations of forest growth with open fields gives the most favorable climatic and cultural conditions; and hence every gardener will locate where he can have such protection as the forest affords against the rapid evaporation and sudden changes of temperature which the unchecked summer and winter winds bring with them.

If he is wise and able he will own the protecting woodlot and will manage it somewhat as indicated, as a protecting cover, from which he can derive also useful material. He will relegate this friend of his orchard to the forest soil he has, to the rocky, unsightly places, and those that are not fit for any other use; for forest growth thrives even there, yielding a revenue and affording grateful protection and beauty. B. E. FERNOW.

# GALVESTON.

TO ONE who remembers the tragedy of Last island, and who comes to Galveston fresh from viewing that scene of old ocean's mighty power and anger, there is something horribly suggestive in this long, low stretch of sand upon which the Island City is built. It is fronted by the ocean and hemmed in by its estuaries. If you come to it by rail, for three miles your train runs upon a trestle that is set upon piling, and the water is under and all about you. If you approach by steamer, then from the vessel's deck the eye has an unobstructed sweep, for an elevation of seven feet is the uttermost height that can be found throughout the length and breadth of the land—the thirty-five miles of length and the two and one-half miles of breadth that comprise the domain of Galveston island. As one watches the waves roll in upon the long, low beach, the thought comes that some day the sea may again gather up its strength and tumble huge wave after wave shoreward until naught but wreck and ruin are left in its track. Thus did the waters of this huge gulf with Last island, with Indianola, with Sabine Pass. But unconcernedly some 30,000 good people here go about their daily tasks, and eat and sleep and sing and dance, never fearing what the sea may bring, and so I, who am but a looker-on in Venice, will do to-day as the Venetians do.

The physician, the sanitary engineer, the man who looks into things, will ask, before he has completed his first day in Galveston, about the drainage and the water. And the genial citizen will point to the water flowing at a snail's pace in the open gutter, and reply: "Drainage? Yes, sir! Good drainage; fall of a foot and a-half to the mile." And as to sewerage, while an attempt is made to carry it off through an outlet at the back of the town, the fact is, that both sewerage and drainage are mainly accomplished by means of the porous and absorbent quality of the soil. "Sickly?" Not at all, especially considering the facilities which would seem to exist for cultivating plagues and diseases. In truth, Galveston impresses one as being a clean city; much more so than certain others of the south where better facilities for cleanliness exist. And to revert to the water question. Upon bathing my face at the hotel, a peculiar brackish taste was left upon my lips and moustache. Upon inquiry, I found that all water, except for drinking and for culinary purposes, was obtained from wells, and that it all had a "salty flavor." For table use and cooking, each resident must catch his own supply from the clouds or go without. This is not a difficult thing to do, as the annual precipitation averages nearly 60 inches, being, I believe, the heaviest of any point within the United States, certainly much in excess of any other point in Texas. This water is retained in large tanks or cisterns above the ground, not highly ornamental.

BROADWAY, GALVESTON.

I am an ardent pedestrian, but I soon found that in Galveston pedestrianism was not to be lightly under-

taken. The streets and the paths and the lanes and the by-ways are of sand. It is deep, and yields under foot much as half-packed snow does. Locomotion is difficult

In the Turn Verein Garden, Galveston.

for the footsteps, and travel becomes toil and trouble. There has been grass upon some of the paths, but it was Bermuda grass, holding but slight tenure on that light soil, wearing away quickly beneath the tramp of the traveler and leaving but the merest apology for sod. The beech, where the incessant beating of the waves has made the sand hard and solid, gives the only good footing, excepting, of course, the few streets in the business portion of the town, which are well paved with wooden blocks. But much can be forgiven the spot where roses bloom the year around; where the oleander is used as a common hedge plant upon the streets, and where the July temperature is 84°, while that of December averages 58°. And not only are roses in bloom here this month of December, A. D. 1890, but orange trees in the door-yards are yellow with fruit, while the great brilliant blossom of the banana lends color to the whole landscape, so huge and bright it is. Parrots screech at one from open windows, and thus, by some strange process of reasoning, lead us to notice a lack that is common to so much of the south, especially along the coast—the absence of singing birds. Sometimes we hear an oriole, or the mellow note of the nightingale, but it is infrequent at the best.

Another thing that is conspicuous by its absence is the magnolia tree, so common in all other southern cities. There is nothing here to take its place for shade. The hedges of oleanders are dense and pleasing, but not tall enough to be of appreciative benefit as the sun gets well up in the sky; and as for the sand or salt cedars, their curiously dwarfed and twisted bodies, with the merest apology for a canopy of foliage, only serve to remind one of the curious efforts of the Japanese toward dwarfing nature. These trees look as though they might be a thousand years old, so mis-shapen are they, and so thin and gray their tops.

Landscape architecture here is a difficult accomplishment, and nothing is undertaken on a large scale. The vegetation is semi-tropical, and with its aid some very pretty yards have been made, but they have usually an artificial look. Two distinct methods obtain in horticultural practice—one having a grassy lawn as the foundation, with a few fine specimens of sago palms, pritchardias, musas, etc., interspersed and bordered with fine clipped hedges of arbor-vitæ or privet. The difficulty with these is to secure a good foundation of green lawn as the basis, for the only grass which flourishes here is the Bermuda, and excepting during the rainy season, this is much inclined to turn to a yellowish-brown instead of retaining the desired bright green color of a perfect lawn.

Opposed to these are the gardens in which roses and other decorative plants fill all the space except that reserved for walks. No grass is cultivated, and, as the soil is light in color as well as texture, it does not give the best basis against which to display the colors of the flowers and foliage, and is, on the whole, less pleasing than the other method.

One point which we have tried to present in our illustrations is the open plaza on Broadway, where nursemaids wheel their infant charges in the cool of the early morning, and where lovers stroll between the rows of fragant oleanders in the soft warm nights; and another is the garden of the Turn Verein, a delightful grassy, shady spot, just beyond the walled garden of the convent of the Ursuline Sisters. As I sat there beneath a great live oak and smoked my pipe and emptied a glass of light wine from the Brazos, I wondered if the sounds of careless merry-making ever disturbed the nuns at their prayers, or if we were worse because we smoked and laughed, or they the better because they built a high wall betwixt themselves and the world, and counted their beads in silence there.

James K. Reeve.

# A GARDEN OF DELIGHTS.

MOST people are too conventional in planting, and their pleasure grounds are too much alike. One sees the same mock oranges, lilacs, spiræas, deutzias and honeysuckles everywhere, while the catalogues are full of beautiful rarities that have only to be known to be appreciated.

Suppose one with a keen enjoyment of sweet odors should say that in his garden nothing should exist that was not fragrant. Designed with taste and properly laid out, such an enclosure would be a veritable garden of delights. If his space permitted and he began with trees, he would be surprised to find from what a long list he could select. Did he desire evergreens, there are the balsam pines and other aromatic conifers. For deciduous trees, he might choose the liquid ambar, or sweet gum, one of the most beautiful of trees, especially desirable for our perfume-loving friend when, in the spring, it unfolds its fragrant leaves, filling the air with pungent odor.

Fit companions for this charming tree are the fra-

grant sumac and the *Virgilia lutea*, the cherry birch, robinias, pines, catalpas, and the choicest magnolias.

*Cedrela sinensis* is like a sweet-smelling ailanthus, and should be better known. Its growth is rapid, and its large trusses of white flowers are very fragrant.

He would not be apt to overlook the flowering crabs and peaches, with their many charms, but, if his taste were like mine, he would rigidly exclude the paulownia, whose rank odor is so unwholesome as to be unendurable to delicate olfactories.

The sassafras should have a place of honor. It belongs, as all my readers know, to the laurel family, and is first cousin to the camphor tree of Japan and the cinnamon tree of Ceylon; and how beautiful it is with its expression (for have not trees expression?) of healthy cheerfulness.

Among thorns there are several that are too fine to be omitted, especially the English hawthorn and its fragrant double varieties. The fruits of some kinds, as well as the blossoms, possess a very fragrant perfume.

There is a marked difference in the fragrance of the various magnolias. In planting such a garden as I am describing, one should select only the choicest. The cucumber magnolia is the hardiest, but its flowers are only slightly fragrant. It grows to the size of a large tree. *Magnolia tripetela*, beautiful as it is, should be discarded, as the odor is not pleasant. *M. macrophylla* and *M. auriculata* are fragrant; *M. glauca*, *M. conspicua*, *M. Thompsoniana*, *M. hypoleuca*, *M. Kobus*, *M. parviflora*, *M. stellata* are all delightful, and it would puzzle a magnolia lover whose space is limited to decide which to reject.

Leaving the trees, one comes to a bewildering variety of sweet-scented shrubs, and here again is plenty of room for individual taste to enjoy free scope. I would choose a group of various lilacs, not forgetting the old-fashioned white, which is one of the best, and several of the choicer new sorts, such as the Persian white and, perhaps, *Syringa ligustrina*, var. *Pekinensis*, which is said to have the odor of honey, but with which I am unfamiliar. After all, there is nothing sweeter than the common purple lilac, whose young leaf-buds early in the spring are as delightfully scented as its bloom.

Some of the upright honeysuckles would be very desirable, such as *Lonicera fragrantissima*, *L. Xylosteum* and *L. hispida*.

Next might be planted a group comprising all the flowering currants with their spicy odors "rich as meth," the calycanthus, clethras, wild azaleas, and some of the hardy improved varieties; a clump of sweet brier and wild roses, edged with the darling little *Daphne cneorum*. What a medley of sweets, the very thought of which is intoxicating!

Some people object to the strength of the aroma of mock orange, but there are varieties with a delicate perfume which will not offend the most fastidious.

A great pet of mine is *Clematis stans*, the Japan upright clematis, which is exquisitely sweet. I would also include the spice bush, which one associates with the first mild days of spring, and which is of the easiest culture; and I would plant in choice positions specimens of such shrubs as *Rubus odoratus*, *Fothergilli alnifolia*, *Pterostyrax ilispidum*, and the Japan bladder nut. The wonderfully effective yuccas need not be discarded. There is to me a great charm about their perfume, which resembles that of ripe June apples, and is particularly noticeable at night.

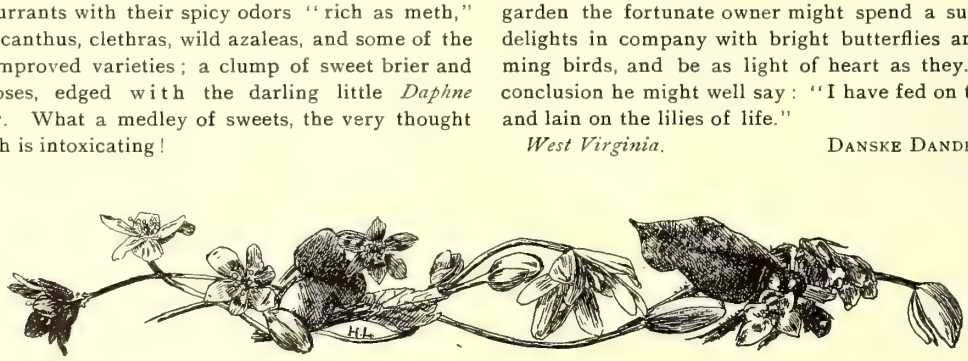
Embracing the trees, rioting over bushes and adorning the fences, many vines would find appropriate places. The hardy passion vines, the fragrant honeysuckles, the wild grape, the strange *Akebia quinata*, with its chocolate blossoms and uniquely delicious perfume, the climbing rose and the jessamine, would all lend to the sweet confusion and captivate every sense.

Some of the honeysuckles, such as the scarlet trumpet varieties, would here be out of place. Perhaps the best for our purpose are *Lonicera Belgica*, *L. flava*, *L. Magnevilla*, *L. Etrusca* and *L. Halleana*.

Such a garden, with the addition of hardy fragrant perennials, such as lilies of the valley, narcissus, white violets, one or two of the sweetest peonies, many lilies, bee-balm and clove pinks, and, for annuals, mignonette, sweet alyssum and sweet peas, would be delightful for seven months of the year.

Early in the spring it would be redolent of the first magnolias, the spice bush and flowering currant. Apple bloom would quickly follow with lilacs, upright honeysuckles and daphnes, with beds of lilies of the valley and other bulbs. In late May the yellow lilies (*Hemerocallis flava*), the garden heliotrope (*Valeriana officinalis*), and in June, honeysuckles and roses and wild grape would vie with each other as to which could most delight their happy possessors; and, later on, there would be no lack of perfume from the summer-blooming magnolias, clethras and yuccas, and other charming shrubs. In September the *Clematis stans* would be bewilderingly sweet, and in October the last faint roses, the monthly honeysuckles, sweet peas and mignonette would enrich the breeze with sweet odors until the cold breath of winter chilled them into sleep. In such a garden the fortunate owner might spend a summer of delights in company with bright butterflies and humming birds, and be as light of heart as they. At its conclusion he might well say: "I have fed on the roses and lain on the lilies of life."

*West Virginia.* DANSKE DANDRIDGE.



# NOW IS BULB TIME.

NOT THE blossom time, but the time to get ready. In the spring we look at our neighbor's flowering bulbs with envy. In the autumn we forget that now the foundation must be laid for such a riot of color in our own grounds another year. It is simple gardening. The bulbs can be tucked in any out of the way place, in the back of the border, against the house where it is too hot for plants under summer suns, and around the trees and under the shrubbery where nothing will bloom later. A bed of bulbs is a fine thing, but there is a peculiar charm about a cluster of flowers peering from some unexpected place. The edelweiss is not found by the Alpine traveler with half the pleasure with which he greets the delicate white crocus stepping out from the edge of the snow banks. Struggling over the Simplon early in May, wearied with cold and wind and dashes of hail, crouching low on the diligence as we pass through snow tunnels, a new glacier or towering mountain height gets to be viewed with indifference, but a bed of crocus, bravely blooming among the rocks thousands of feet above the sea level, and with no thought of the warm valleys below, is hailed with fresh delight.

But it is hardly fair to speak of the crocus before the snow-drop. This pale beauty bows before us between the last snows. If a good lookout is not kept it may be gone before you realize that it has hung out its promise of green lawns and leafy trees and flowers to come soon. It is not the snow-drop, you see when you pluck it. It is all the glory of the summer, on to the harvest home.

So put in the snow-drop bulb in the warm south border, and next spring it will surprise you with a flower of hope. In the chill days that follow, before hope really wavers, comes the crocus, bold and sure, red, purple, yellow and gaily striped. There is no hanging of this head, but it gives its message frankly.

"Just put me in anywhere, these October days," says the bit of a bulb, "I ask for no bed prepared for me, nor any care; scatter me over the lawn or group me at the base of the big elm or in edge of the border. Help me to nestle, and in the spring you need not look for me. I will report myself in hues not to be passed unnoticed, and if my nesting place be among the warm grass roots, with their aid I will give you flowers earlier than if planted in the bare, cold ground."

If you want a line of blue to repeat Heaven's own hue, plant a row of scillas. It is a choice little flower, and goes into your vases with a pretty grace. There are red scillas and white, but the blue are the most desirable. There is a sentiment about the snow-drop and the crocus, and this is shared by another bulbous flower, the daffodil. It is not as beautiful as some others of the narcissus family, but it means more to whoever remembers the clumps of full yellow heads that grew in the home garden before its more elegant sisters were known commonly.

About the tulip and hyacinth there is no sentiment. Gorgeous in color, aristocratic in bearing and sweet breathed, they stand solely on their own merits, which are great. They furnish a feast of superb color through long weeks, when they fear no rivals, and seem to regard the tender green of the grass and foliage as simply a set-off to their own beauty. These demand more than the earlier bulbs. A good soil and a winter blanket of leaves are needed to induce them to do their very best; but given this, what returns they make!

A bulb altogether too much neglected when planting spring gardens, is the anemone. There is a variety of these, double and single, in whites and reds and blues and intermediate shades. They are hardy, easily grown aud good for a shady place.

But to give a list of the bulbs is not the aim. It is simply to remind you to get them in now that you may rejoice next May. As to the expense, it can be small. Snowdrops cost by the dozen bulbs thirty-five cents; crocuses, ten cents; tulips, thirty-five; scillas, fifty; hyacinths, sixty cents. Named hyacinths and tulip bulbs can be bought for a few cents each. Narcissus and anemone bulbs cost from five to eight cents. Bulbs once in the ground, if given a place where they are not disturbed, will grow for years without much care, and every spring be a fresh surprise and joy.

Plant your bulbs in the fall any time before the frosts, say the gardeners; excellent advice, but I knew a bed last year that was left unplanted tlll the frost came, and the ground froze and staid frozen two weeks. Then a warm rain softened it somewhat, though the spade turned it up in chunks too hard to crush. In among them went the bulbs, to certain death said everybody, and this spring they rose in as brilliant array as the most seasonably planted.

Whence come all these bulbs? Mainly from the land of patience and dykes and windmills. Holland sends the hyacinth and tulip, the crocus, snowdrop and the narcissus. All the way around from China travels the sacred lily that we grow in water. The easter lily

comes from Bermuda, and the auratum and some others are best raised here. From our own southwest, tulips begin to come to us.

I hear a ringing of little bells, and the lily-of-the-valley reproaches me. Beauty, sentiment and odor are combined here. It is not an early bloomer, but never to be overlooked when bulbs are the subject. There is no more general favorite and no bulb more hardy nor easily grown.

*Munro.* OLIVE LUSK.

# A LITTLE FLORIDA WITHIN FOUR WALLS.

I HAVE a friend, a young married lady of very moderate means, who is abnormally sensitive to the influences of bright skies and genial summer weather. She does not love snow any more than the birds and squirrels and rabbits do, and her greatest happiness is to dwell in an old garden, surrounded by books and flowers and songsters. In the winter, failing in her out-door enjoyments, she takes what compensations fall to her lot as cheerfully as possible and lives in a sitting room, which is a bower of beauty although it contains nothing very costly. My friend, although a semi-invalid, attends to her pets herself, and all her ideas are as practical as they are æsthetic. Her room is 18x20, and the wood-work is black walnut. It has two wide windows on the south, and one very large double French window opening on the western piazza. In early October or late September when she pots her plants, she takes down her pretty airy summer curtains, for several reasons: to preserve them from possible damage when sprinkling her flowers; to get all light obtainable on dark winter days, and, lastly, because she means to decorate her windows with a more beautiful drapery than the finest lace. Her room is mainly furnished in olive green, and she has pretty rugs upon a dark polished wood floor. This furnishing admits of a little deep red, here and there, to give it tone. A few fine engravings on the cream-tinted wall are wreathed with plentiful garlands of grasses and bitter-sweet berries, *Celastrus scandens*, whose red and orange remains fresh and bright throughout the season. Here and there she has cat-tails, curious seed pods and lichens and many other spoils of the late summer; yet her windows are after all, the main attraction. She has hanging baskets, and half a dozen brackets on each side of each window. The window seats are occupied by pots and boxes, and she has several large tubs on the floor.

The brackets were made by her husband to fit into sockets, and can be easily removed at need. They are of three lengths, and are made of three-eighths-inch round iron, bent at right angles at one end to fit into two sockets for each bracket tacked on the side of the window-frame. The other end is bent into a circle. They move freely in the sockets and on very cold nights she has nothing to do but to turn her brackets away from the glass. On these brackets she has her flower pots, painted a reddish brown. The small ones fit into the circles, and larger pots stand on cheap tin saucers placed on the circles which her tin man made for her and which are painted to correspond with the pots.

On a pine table, made by her husband, and painted brown, she has a large tin waiter for top, about three inches deep filled with sand and covered with moss. On this waiter she sets the pots of such of her plants as require a good deal of moisture. This table is in the center of the double window, which opens to the ground. Now for the effect. Her windows are draped with vines. She has two large passion vines in tubs; one for each southern window. They are trained up the side and across the top and down the other side of each window, and they grow and flourish, and nothing hurts them, as they are nearly hardy and always beautiful. They do not bloom in winter, and hers are never troubled by insects. Her prettiest hanging basket is a rustic log of wood, filled with freesia for the center and graceful *Russellia juncea* fringing the rim.

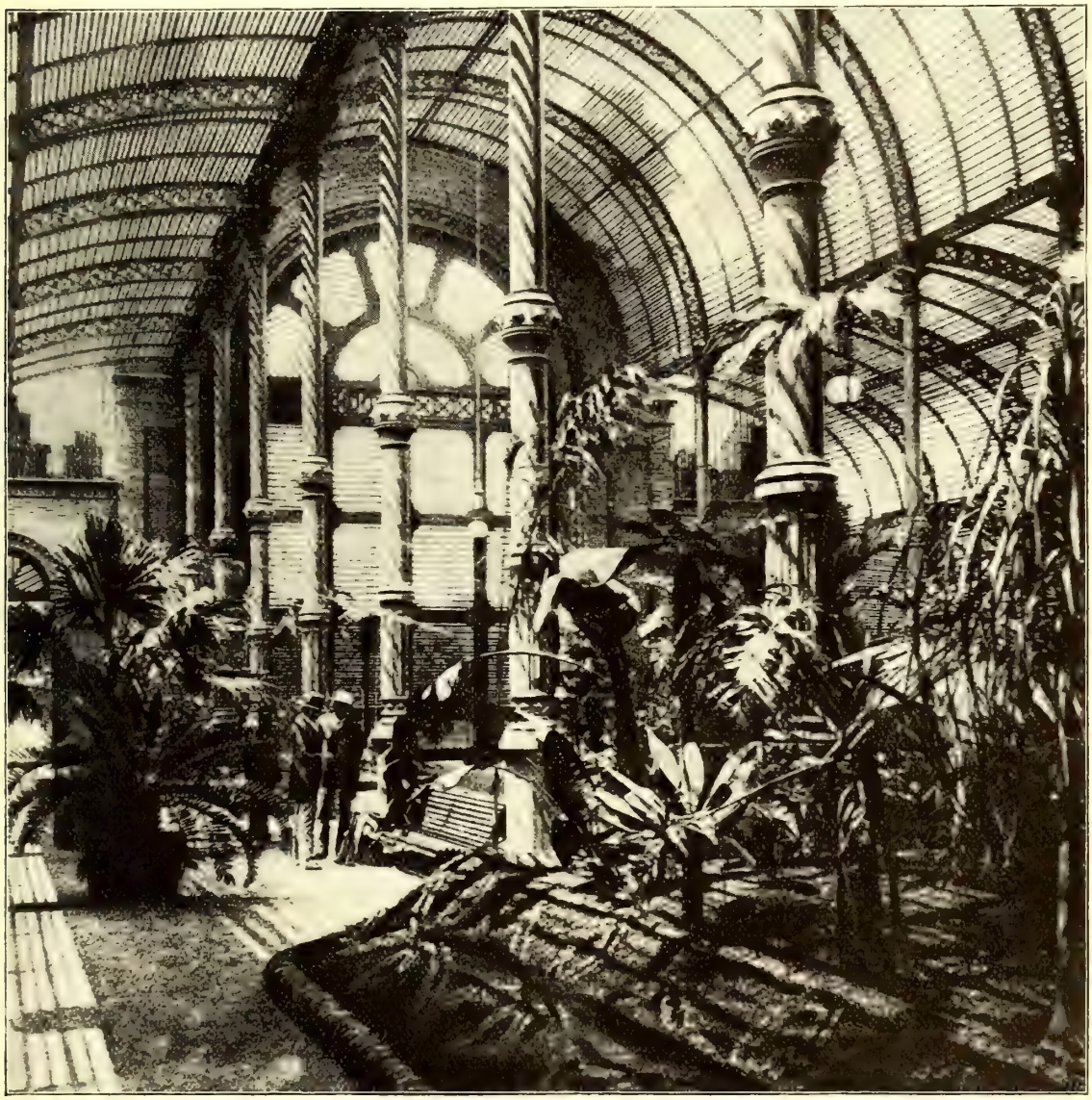
In another basket she has a lobelia, smilax and german ivy, her only trouble with the latter being that it grows so rampantly that it is difficult to keep in proper bounds. In the double window hangs her best beloved pet, a young mocking-bird who sings, as it were in under tones, the most exquisite quavers and trills and warblings, through the cold months, reserving the full force of his marvellous voice to welcome the coming of the spring. There are a number of vines, and, among other beautiful plants, a fine large orange and a promising lemon tree.

My friend is not satisfied with the ordinary window plants alone, such as primroses, geraniums and callas, though she does not despise their beauty because it is common; but she delights in rarities and succeeds with many flowers that are not often seen in window gardens. When I last visited her, she had a large and very flourishing *Olea fragrans* in bloom, which filled the atmosphere with its delicately delightful odor. Next to this was a *Daphne odorata* just opening its clustered faint pink blossoms. She had many bulbs among others a white allium which was new to me, and which she assured me was of the easiest culture. I particularly admired an ardisia, covered with showy red berries. These, she told me, hang on for months, and the plant was very thrifty.

She liked abutilons because they were always to be

depended on for bloom, and she had several varieties. She was very fond of azaleas, declaring that they were very little trouble, and, though the first cost is considerable they last a number of years with little care. She had also two fine palms, some variegated thyme, a climbing asparagus and a few of the fragrant-leaved geraniums. A few begonias with scarlet blossoms were there ; she did not care very much for the rough-leaved begonias that must have no water on their foliage. All her plants were used to an abundant showering twice a week and as much air as possible.

About the room were several pillows covered with India silk and filled with the leaves of her summer roses and needles from her fragrant pines. She showed me her pot-pourri jars with evident satisfaction and told me her recipe for filling them. This was not new to me, except for her addition of two or three drops of such attar of rose as may be obtained from any reliable druggist at about five cents a drop. On my friend's lunch table she had one of her pots of flowers in an ornamental jar, and she varied her bouquet quite frequently.



INTERIOR OF A SPANISH PLANT HOUSE, BARCELONA. (See page 595.)

The sun shone brightly through the delicate drapery of vines and the flowers sparkled like living gems. When I left Mrs. C.'s house I acknowledged that she had the most delightful sitting room I had ever seen. Here she could easily forget the vagaries of the weather and luxuriate in her little Florida within four walls.

*West Va.* DANSKE DANDRIDGE.

# A HANDSOME FAMILY.

SUMMER tourists who know anything of the flora of western North Carolina usually come early in order to be in time for that rarest sight of the season—the rhododendron show. The dense mass of rich evergreen foliage, which all winter long has made beautiful our foot-hills and mountain sides, from early May till July is gemmed with great waxen clusters of white and rose-pink flowers, which gleam out brilliantly from amidst their dark setting. The tightly folded conical yellow buds, that, iron-clad, defied the frost-king, and throughout the winter guarded jealously all this sleeping beauty, now lavishly yield it up to festoon lofty mountain tops and bury the hillsides under great banks of bloom.

All through the mountain region of North Carolina, Georgia and Alabama, these rhododendron forests abound, and are a glorious sight, both to strangers and native. Such forests occur rarely also (for the rhododendron might be called a local plant) in New England. Near Fitzwilliam, N. H., is a forest of twelve or thirteen acres, and there are several smaller ones in other sections of the same latitude.

It is *Rhododendron maximum*, the great mountain laurel, and the most superb of the species, which makes such a wonderland of our woods in spring-time. Enter a path cut through one of these forests, and see how noon-day changes to twilight under the thick canopy of great, shining leathery leaves. Here, in mid-winter, the feeble folk of the forest come for refuge, the thick thatch sheltering them from wind and rain; and snow, bending the lithe branches, heaps itself about thick leaf clusters into warm cozy coverts for wild bird and cony.

Bend down one of the branches and you will see that the leaves alternate in arrangement, eight to ten inches long and three or four wide; are thickest and largest just beneath the flower cone, forming a wide green whorl, and so a single cluster makes a big bouquet, for the individual flower often measures two inches across the corolla.

This corolla is somewhat bell shaped, very rosy in bud, but whiter on opening and dotted with pale yellow about the throat. The stamens are usually ten in number, and with the slender style, are rarely exserted, as in the azalea section of the genus rhododendron. The pedicels and the scaly bracts which enclose the cunning pink buds are viscid and sticky, and thus the gauzy wings of many an unwary insect prove its death trap.

American rose-bays, our laurels are sometimes called, and this name is much prettier than the longer one of rhododendron, taken from a Greek word meaning "rose tree." A tree *R. maximum* certainly is, for here in its chosen habitat it often grows to the height of twenty-five or thirty feet, with a still wider girth about the outermost tips of its branches. Often these branches in growing curve and turn and twist themselves into many fantastic shapes and figures, and as the bark is rich bright brown in color, striated like the grain of oak, the gnarliest stems with quaintest crooks are used for making rustic vases, settees and tables by the deft fingered mountain lads, who sell them for quite a fine price.

Besides *R. maximum*, there are only about six other species of rose-bay found on our western continent. *R. Catawbiense* is found on the higher mountains of Virginia and North Carolina. *R. lapponicum* is prostrate; violet-purple; White mountains to Labrador. *R. punctatum*—Sweet; dwarf, and white; North Carolina and Georgia. *R. Chapmani*—Stamens and style exserted; pine barrens of western Florida. *R. macrophyllum*—West of Rocky mountains. *R. Kamschaticum*—Near Behring's strait.

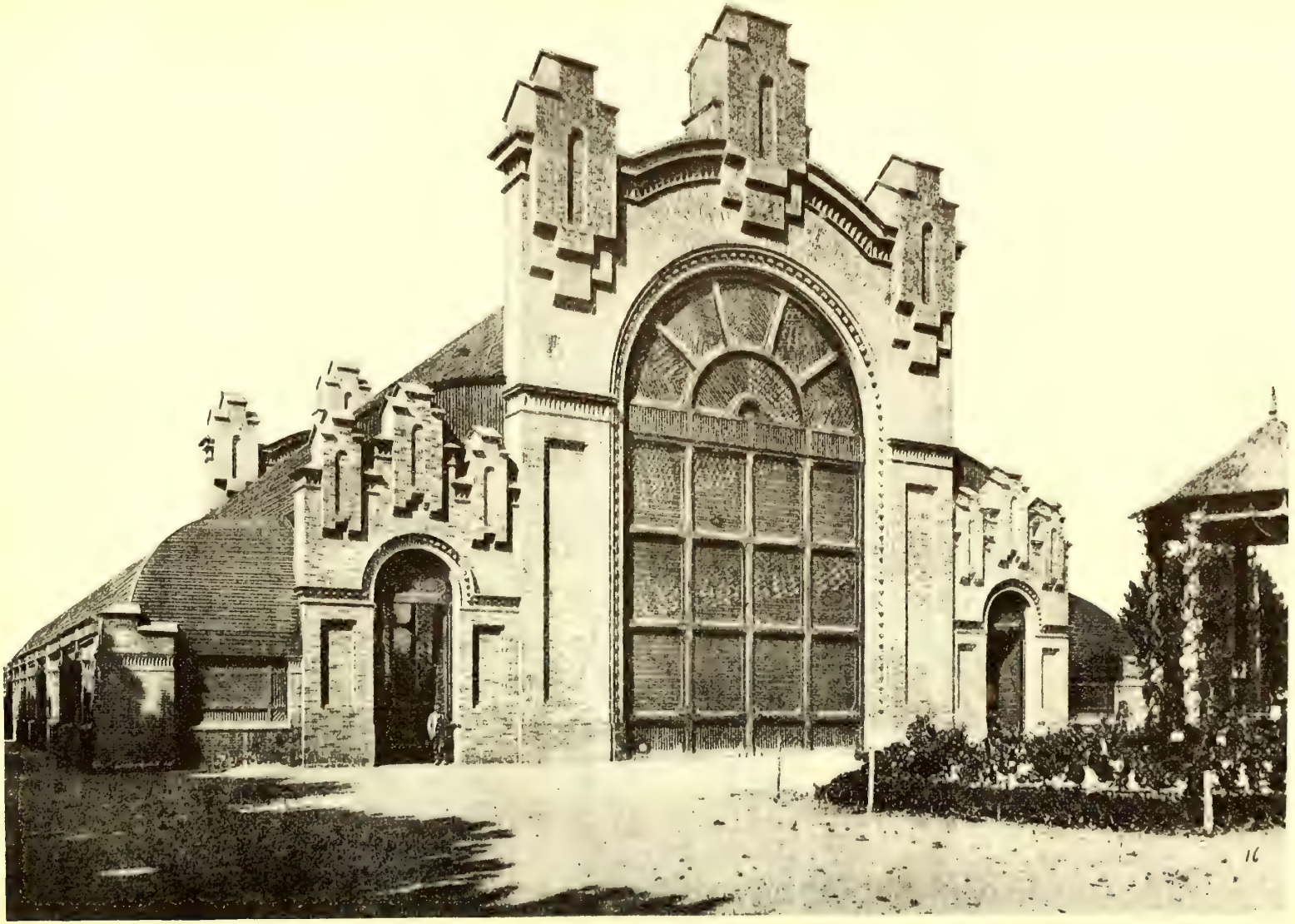
There are no rose-bays in Mexico, Oregon, Africa or Australia, countries where one might well expect them, but the Himalayas are their best loved home, and more than forty varieties are found there, at altitudes ranging from 6,000 to 18,000 feet above the sea.

Sir William Hooker, the great botanist, grew quite enthusiastic over them, and ran many risks to obtain specimens. Braving the vengeance of a hostile rajah, he found eleven distinct varieties on Mt. Darjeeling, not far from Calcutta. Many of these were epiphytes, growing high up in the tops of towering oaks, pines and magnolias.

*R. Dalhousii* is the handsomest of these. The plant stalk grows to be five or six feet, and the corolla of its blossom is often four inches across, pure white, changing with age to orange, dotted rose color. It has a citrine perfume, and bears six or seven of its great lily-like flowers in a cluster.

To gain a good specimen of *R. Edgeworthii*, Hooker made friends with a landslide, which brought it carefully down within his reach from an inaccessible mountain top.

*R. Hodgsonii* is, perhaps, the best combination of useful and beautiful to be found in this great family. Its bright pink flowers are exquisite, and its wood so tough and unyielding that cups, spoons and ladles are made of it by the Bhootan natives, and also the little "tak" saddle, from which their pack-loads swing. Its leaves are used as plates, for lining baskets, etc., and a present of butter or curd is always sent on this glossy foliage.



Exterior of a Spanish Plant House at Barcelona, Spain. (See page 596.)

One of Hooker's prime favorites was *R. nivale*. "This singular little plant attains a loftier elevation than any other shrub in the world. Its hard, woody branches, thick as goosequills, straggle along the ground for a foot or two, presenting brown tufts of vegetation where no other plant in the world could exist. The branches are densely interwoven, and the stunted shrub, raised barely two inches above the soil, spreads horizontally. This species, the latest to bloom of all the family, the smallest in foliage and, proportionately, the largest in bloom, lepidote in vesture, humble in stature, rigid in texture, and deformed in habit, is yet the richest in perfume. Its climate is the most trying in the world, for it lives under the joint influences of a scorching sun by day and keenest frost by night, of the greatest drought, followed by a saturated atmosphere of balmiest calm, alternating with mountain whirlwinds. For eight months of the year it is buried under snow; for the remaining four it is frequently visited by snow and sunshine in the same hour. When the sun heats the soil to 150°, its perfumed foliage scents the air, and its purple flowers will remain perfect through sleet and and sunshine until fructification takes place. The odor of this plant resembles eau de cologne."

The rose-bay is a great pet in English gardens, and the damp, foggy atmosphere of that country is just what it likes best. Many fine plants from our American forests find their way over there and are given high seats of honor. From seedlings of these plants, some fine hybrid scarlets have been obtained.

The rhododendron branch is the pride and flower of all the great and handsome heath family, which is represented in every soil and climate under the sun; in every tint and shade of every color; and in every grade of stature, from dainty, creeping *Epigæa repens* (the trailing arbutus) up to the great mountain laurel. Many temperaments, too, this family contains, from the lazy, luxurious *R. Dalhousii* to the heroic little *R. nivale*, bravely defying the fierce cold and whirlwinds.

Being a patriotic people, we think it but right and fitting that the "maximum" of all these good points should be found native only in America, and that it should be best in the good old "north state."

*North Carolina.* LENNIE GREENLEE.

# AT A SPANISH HORTICULTURAL SHOW.

DURING AN extended ramble through the departments of France—from the rose fields of Grasse in the south-east unto the pretty nurseries environing Paris—from the rural points of central Gaul unto the snowy peaks of its meridianed Pyrenean barrier—much of interest in the gardening world was seen.

While among the romantic Pyrenees the opportunity was taken to visit the historic Andorra Republic—the second smallest democracy on the globe. To reach the little state is difficult. If in France, one must either go via Saint Girons or Foix. The latter is the best and shortest route; but as the writer had wandered into the first named town, the direction was taken over the pass el Portus, the long summit of which was covered with snow varying from three to fifteen feet in depth (according to the fixed measuring poles), and he had to walk over the glaring white acres, often sinking to the knees. Despite the exertion, a climber is frigidly cold at the feet, and yet liable to sun-stroke if not wearing his hat, such is the heat overhead. Not wishing to pay the $3 or $4 demanded by a guide at the last French hamlet, the ascent was made alone, and not a single person was encountered in those lonely mountain regions.

The "road" (only a rocky path) was over tortuous valleys and dells, and mounts for a day and a half unto Firbia village, whence until the second mountain of snow is reached and plodded over. Then it is another day before reaching Andorra's microscopic capital of the same name. All the journey has to be done on foot, which is less fatiguing than on mule-back. But the pedestrian is recompensed with bewildering scenery along the ever-changing route until he reaches Andorra, as a magnificent garden in the bosom of the Pyrenees, charmed with the poetry of the distant prospects and vast horizons. Seen from the surrounding snow-capped heights, a flood of light irradiates the smiling picture of the contented valley,

Five day's further walking—the journey was wholly performed on foot for the purpose of seeing well what rustic Espana was like—carried your correspondent over some of the best vintage acres of the peninsula and into Barcelona.

Fortunately, while in the second city of Iberia, the exposition of arts was going on, and also the larger show of the Catalona Horticultural Society.

It is not my intention to weary you with a long description of the fine series of Spanish flora shown, unless the details—which would have their own peculiar interest—are called for. It is sufficient to pen that the natives have made a creditable exhibition of their garden products, although it is not so extensive as had been anticipated. Of more edification to the practical man are the numerous stands of gardening

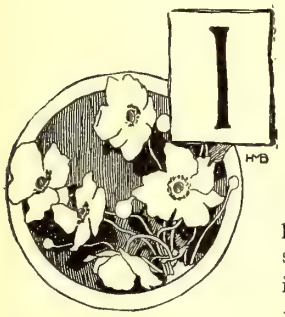
implements and machines, put on view by native houses. The fact is, more space is devoted to garden tools and mechanisms, than to plants.

Worthy of particular notice is a plant-house in the small, yet beautifully shrubbed and treed park. Neither in the United States or in Britain has the writer seen one of similar construction. It is built in light and graceful iron arches supported by 32 ornamental iron columns, supplied (so read the plates on each) by J. Plena, calle Villar rool 15, Barcelona.

W. Loda.

*Barcelona.*

# A GARDEN OF CRINUMS.



IN FRONT of the site selected for my cottage was a pool about 150 feet in diameter, and eminently suitable for the cultivation of malaria microbes. The bottom was of oozy peat or muck, and at the surface, half floating, growing and dead vegetation a foot or two in depth. A survey showed sufficient fall, by beginning the drain a quarter of a mile away, and after the usual delays, six-inch tile was laid and the bottom of my pond lay bare. Thirty barrels of lime sufficed to kill the microbes. Sand was brought by wheelbarrows and spread over the surface a few inches deep, and in another year I had as fine a garden spot as could be desired.

Among other plants, useful or ornamental, a few species of crinum that had grown but slowly on the higher land thrived exceedingly. A random experiment or two in hybridizing succeeded so well that, two years ago, I became fired with ambition to possess all the crinums that were obtainable, and to study their relationship as indicated by the possibility of crossing the different species. So catalogues were conned, some directors of foreign gardens and societies were consulted through the mails, and packages of bulbs ordered from England and Germany and Italy and India (though with quaking of the "pocket nerve" when that unknown quantity, the possible express bill, was considered), until finally a good collection had been brought together without incurring a very serious outlay. Then my crinum garden began to really deserve the name. A sector of the circle was appropriated to them, and the 43 named and half as many unnamed varieties were made at home in their new quarters, together with a lesser collection of pancratiums and their allies.

When the blossoms began to appear—not many of them the first year, however—the buds were watched with absorbing interest; and when the flowers opened, the available authorities were consulted to see if this or that were "true to name." The fallibility of human things in general, and of nurserymen in particular, did not fail of abundant exemplification even in the 17 species which have bloomed so far; but experience in growing rare palm seeds, where correct naming is the rare exception, caused these "mistakes" to be accepted with resignation, the more so as everyone was a beauty, irrespective of its name.

But I was anxious to begin the work of hybridizing, and a little watching in the evening twilight showed that these flowers had attractions for others besides their owner. The hawk-moths came in numbers; some poised like humming birds, and delicately sipped the honey with their long unrolled tongues, but others, with shorter probosces, banged and butted into the open flowers until they fairly creaked, and then left them all sooty within with detached scales and hairs, the moths meanwhile having thoroughly powdered themselves with pollen to distribute it wherever they went.

So it was necessary to remove the stamens before maturity, and then, to prevent pollen from being brought from neighbors' gardens, each flower was pinned in paper after crossing it with such pollen as might be selected.

The crinums were rather a sorry sight thereafter, with their heads all done up in curl-papers, and this sacrifice in the cause of science was hardly appreciated by the visitors who came to admire the flowers. Often the humble bees came and seemed much puzzled, and provoked as well, as they tried one flower after another, finally going off with an angry buzz that sounded a note or two higher than their ordinary complacent hum.

Usually the flowers open at dusk, but the stamens burst sometime during the preceding forenoon, one or two sorts as early as seven o'clock on warm, sunny mornings; though usually nine o'clock is early enough to make the round of the garden, removing the stamens from all buds that should burst that day, and laying a sufficient number of anthers of each sort in its little labeled paper envelop. Each flower thus treated has its stigma dusted with pollen collected from another sort the previous day, and a little tag is looped around its pedicel, bearing the name of the pollen parent. As long as the flower remains unwithered, the enclosing paper is unpinned daily and fresh pollen of the chosen kind is laid upon the stigma. Memoranda are made of the combinations tried. In four weeks, if successful, the seed is ripe; or if otherwise, in half that time the entire flower has withered and fallen away.

In this way, in the last two years, from the 16 species that have bloomed and matured 121 different crosses have

been tried, out of the 240 theoretically possible if they all bloomed at once, and 27 have yielded good seeds. Many of the more difficult crosses have been repeated dozens of times, being sometimes successful and sometimes not. At times large pods will be produced, but full of empty air; sometimes a small seed or two will be found nestled in one corner of one or more of the pods, and pounced upon as a prize; this is usually the case with *C. capense* when fertilized with *C. Americanum*. At other times a large but irregular and eroded seed will be found, apparently destitute of any germ; such are generally produced by *P. pedunculatum*, when the pollen applied has any effect at all. Sometimes the pods swell up to solid masses nearly as large as one's fist, half a dozen of them in a single umbel, and 40, 60—yes, even 80—big fat seeds packed cheek-by-jowl inside of each! Such pods are often produced by *C. capense*, fertilized with such dissimilar kinds as *C. pedunculatum* or *Kirkii*.

A table is appended, showing just what species have been successfully crossed so far, and what combinations have failed. Probably some of the kinds mentioned are sterile hybrids; *C. amabile* and *C. augustum* are thought to be such, chiefly from the fact of their sterility. Even in these cases there is a chance that seeds would be produced by the application of pollen of one of the parent species. With these sterile sorts it is hardly necessary to keep the moths away, and so they are allowed to display their beauty to the passer-by. A well-grown plant of *C. augustum* is a noble sight. In the open air, with unlimited sun and abounding moisture, the bulb grows to the thickness of a man's body, and is crowned by a complete rosette of stout, radiating leaves five feet high, while the umbel of flowers, each eight or ten inches across, is a monstrous armful.

As we leave our crinum garden we cast a glance around, noting the tall banana clumps that surround what was once the pond, acting as nurses for a double ring of hardy palms of many kinds, that will one day rise up and take their place. As we pass over the bridge that crosses the encircling ditch, and under the overreaching bananas, our last sight of the garden is a lattice by the wayside, all covered with the clinging leaves and spangled with gaudy flowers of that strange lily with high-sounding name, the *Gloriosa superba*, apparently as much at home here as under the tropical sun of central India, where these plants made their last year's growth.

*Lake Charm, Fla.* THEODORE L. MEAD.

| CRINUM | amabile (1) | Americanum | Asiaticum | augustum | capense | crassipes | crassifolium | erubescens | fimbriatulum | Kirkii | Kunthianum | Moorei | pedunculatum | Powelli | scabrum | variabile |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| amabile(2) | 7 | 4 | 4 | 4 | 4 | | 4 | | 4 | 4 | | 4 | 4 | | | |
| Americana | 4 | 6 | 4 | 4 | 4 | | 4 | 4 | 4 | 4 | | 4 | 4 | 4 | | |
| Asiaticum | | 4 | 6 | 4 | 4 | 4 | 4 | 4 | | | 4 | | | 3 | | |
| augustum | | 4 | 4 | 7 | 4 | | | 4 | | | | | 4 | | | |
| capense | | 3 | 3 | 4 | 6 | 3 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| crassipes | | | 4 | | 4 | | 4 | | | | | | | 4 | | |
| crassifolium | | 3 | 4 | | | 4 | | 4 | | 3 | 3 | 3 | | 4 | | |
| erubescens var. | | | 4 | 4 | 4 | | 4 | 7 | | | 4 | | 4 | 4 | 4 | 4 |
| fimbriatulum | 4 | 4 | | | 4 | | | | 7 | 4 | | 4 | 4 | | | |
| Kirkii | | 3 | | | 3 | | 3 | | | 6 | | 3 | 4 | 4 | 3 | |
| Kunthianum | | | 4 | | 4 | 4 | 4 | 4 | | | | | | 4 | | |
| Moorei | | | | | | | | | 4 | 3 | | | 4 | 4 | | 4 |
| pedunculatum | | 4 | | 4 | 5 | | | 4 | 4 | | | 5 | 6 | | 4 | 5 |
| Powelli | | 4 | | | 4 | 4 | 4 | 4 | | | 4 | 4 | | | | |
| scabrum | | | 4 | | 4 | | | 4 | | 3 | | 3 | 4 | | 6 | 3 |
| variabile | | | 4 | | 4 | | | 4 | | | | 3 | 4 | | 3 | |

(1) male parent; (2) female parent; (3) produced seed; (4) failed; (5) abortive seed; (6) self-fertile; (7) self-sterile.

# CHRYSANTHEMUMS.

THEIR HISTORY AS THE IMPERIAL SIGN OF JAPAN.

HISTORY records that the chrysanthemums popularly cultivated at present are not the natives of our empire, though the wild ones have undoubtedly existed here. Various written records of ancient time give us the facts that in the year 386, Kudara (Corea) paid as a tribute blue, yellow, red, white and black colored chrysanthemums to the Emperor Nintoku. In the year 797 the Emperor Kammu made a poem on the subject of the flower, and in the years 889, 901 and 947 respectively, emperors of the time held great festivals with their subjects in favor of chrysanthemums. From these data we know that chrysanthemums have been cultivated widely and favored by us from 1504 years ago.

During about 823 years (from 889 to 1712) they were cultivated popularly, and in the latter part of the period a book of chrysanthemum culture, entitled "Nochi-no-Hana," was published; but the most flourishing period of kiku (chrysanthemum) culture seems to have been the middle part of the eighteenth century.

The kinds cultivated since the year 386 are roughly divided into three sorts, according to the size and form of the flowers. They are as follows: (1) Sho-kiku, or middle sized flowers, have been popularly favored and cultivated from very old times; (2) O-kiku, or large

sized flowers, have prevailed since the year 1704; (3) Ko-giku, or small sized flowers, became popular about 1716. No. 1, or Sho-kiku, again prevailed at about the year 1751.

Varieties cultivated at present besides the above three are as follows: Saga or Ito-giku; petals of fine tubular threads. Natsu-giku, summer varieties; Kan-giku, winter varieties.

With regard to popular favor, the chrysanthemum occupies the first place throughout the empire, and none is superior to it in popularity or in the quantity used as cut-flowers for vases in the flower market. Consequently many florists devote themselves entirely to kiku culture.

Of the chrysanthemum as the sign of our imperial family our historical knowledge is rather obscure, and we cannot trace back clearly to its origin. A record entitled "Toshoryo-Kiroku," published in 1887 by the Imperial library, states as follows: "Kiku seems to have been used as the royal seal some time after 'kiri' (another sign of the imperial family composed of three racemes and one leaf of *Paulownia imperialis*, but less esteemed in the court), and first made its appearance as the sign on the bricks of the Buddha temple called Horiuji, established by the ex-emperor Shirakawa in the year 1075.

Lately, Dr. M. Konakamura in a book, "Mondokoro and Kokki-no-Nissho," says that the signs of families in general have their origin in ornamental figures woven in cloths. In this manner the chrysanthemum, as the sign of the imperial family, had its origin in the ornamental figures on the court dress worn by an ex-emperor. A written record, dated August 9th, 1260, tells us that the ex-emperor Kameyama wore a red colored court dress which had the figure of a chrysanthemum of eight petals woven within circular linings. Moreover, a sword, known to us as that of ex-emperor Gotoba, has the stamp of chrysanthemum on its handle. This ex-emperor Gotoba had been driven to an islet (Oki) by civil contest, and died there in 1239. From the above facts we are able to suppose that the chrysanthemum had already been in use as the imperial sign from the beginning of the eleventh century—a long period of time.

THE BOUQUET OF WILD FLOWERS—OVER 60 SPECIES—WHICH WON FIRST PRIZE AT THE SUMMER MEETING OF THE WISCONSIN HORTICULTURAL SOCIETY.

*Japan.* H. TUKUBA.

## FERNS OF THE WISCONSIN DELLS.

"DURING the last three years I have been traveling through Indiana, Illinois and Wisconsin in search of a suitable locality, within 200 miles of Chicago, for the study and culture of all ferns and wild flowers of great America, but could find no satisfaction until chance brought me to the beautiful dells of Wisconsin. In this charming place, the natural features are richly varied. Where can you duplicate Stand Rock, Dining Hall, Witch's Gulch, Coldwater Canon, Artist's Glen, Congress Hall and Stony Arbor?

"The place is a paradise for artists of every study. What a field for the botanist; nearly all the ferns of America can be found here! Within a mile of the town there are at least 32 distinct species with their endless varieties.

"See the *Osmunda regalis*, *interrupta* and *cinnamomea*. The name osmunda originates from the fact that a boatman, Osmund, saved a king's life by concealing him on an island covered with this fern; hence the name King Osmund, more commonly known as the royal flowering fern. Clayton discovered another osmunda, but the seed was placed near the middle of the frond, which gave it the appearance of a withered center, so it was called *interrupta*. Later on a still more beautiful species was found, which throws up its fertile fronds separately, resembling a stick of cinnamon, and was consequently named *cinnamomea*. The sterile fronds of these two osmundas so closely resemble each other that it is difficult to tell one from the other, and as the fertile fronds perish before the barren or sterile leaves mature, it is only the practiced eye that can tell them.

"Come with me to the nearest wood. Now what do we find growing with the osmundas? Two athyriums or lady ferns, beautiful maiden hair (*Adiantum pedatum*) and the lastreas, dilatata and spinulosum. The stately botrychium, the ostrich feather (*Struthiopteris germanicum*), the bold eaglewing, *Pteris aquilina*, and the downy *Asplenium thelypteroides*. On the shadowed rocks are *Lastrea marginale*, *Cystopteris bulbifera* and *C. fragilis*. The delicate and verdant oak fern, with its sister the beech fern, *Polypodium Dryopteris* and *P. phegopteris*, and the most delicate of them all, *Pellæa gracilis*. Now we come to the more open rocks and find *Pellæa atropurpurea*, the little rock brake; numerous patches of the evergreen *Polypodium vulgare*, modest little maiden hair, spleenwort, *Asplenium Trichomanes*, the woodsias, an occasional fragrant fern (*Lastrea fragrans*), and you may find the walking cap (*Camptosorus rhizophyllus*). In the marsh below see the *Lastrea cristata* and *L. Thelypteris*, the marsh fern. *Onoclea sensibilis*, the sensitive fern, and in the meadow close by may be found the unpretentious little adder's-tongue, *Ophioglossum vulgare*, and, perchance, *Brotrychium Lunaria*.

"To collect ferns from a rockery you will require strong implements. Some of the roots can be taken up with the hand, while others, like the osmundas, require a hachet. Very few farmers will object to your removing ferns, as they look upon them as brakes, which Shakespeare says are "hateful to crooked ploughs." I suppose that this originates from the fact that the roots of the common brake, *Pteris aquilina*, run through the earth like so many ropes.

"All of these beautiful ferns can be cultivated without much difficulty in any of our numerous ravines and dells, and with the assistance of glass, which might be made invisible by suspending the orchids and air plants—most of the exotic ferns could be introduced, and also the lovely tree ferns."

The above is from an address by C. H. Chanter before a local horticultural society. A boy of 16, Sydney Davis, living with Mr. Chanter, is so greatly interested in wild flowers that he won the first prize (a year's subscription to THE AMERICAN GARDEN) for a bouquet exhibited at the summer meeting of the Wisconsin State Horticultural Society, of which we present a picture, and which contained over 60 distinct species. Among the known and named sorts in the bouquet were the following list:

| | |
|---|---|
| Lupinus perennis | Common Lupin. |
| Asclepias tuberosa | Pleurisy root. |
| Lilium Philadelphicum | Scarlet or Orange Lily. |
| Sambucus Canadensis | Common Elder. |
| " pubens | Red-berry Elder. |
| Campanula rotundifolia | Harebell. |
| Aquilegia Canadensis | Columbine. |
| Onithogalum umbellatum | Star of Bethlehem. |
| Trifolium repens | White Clover. |
| " pratense | Red Clover. |
| Taraxacum dens-leonis | Dandelion. |
| Oxalis violacea | Violet Wood-sorrel. |
| Anemone Virginiana | Common White Anemone. |
| Thalictrum Dioicum | Early Meadow Rue. |
| Leucanthemum vulgare | Ox-eye Daisy. |
| " Parthenium | Feverfew. |
| Polygalaceæ | Milkwort. |
| Geranium maculatum | Wild Crane's Bill. |
| Phlox divaricata | Phlox. |
| Zizia aurea intergerrima | Zizia. |
| Lithospermum Arvense | Corn Growwell. |
| Chimaphila maculata | Spotted Wintergreen. |
| Krigia Virginica | Dwarf Dandelion. |
| Astragalus Plattensis | Milk Vetch. |
| Lathyrus venosus | Everlasting Pea. |
| Cypripedium pubescens | Large Yellow Ladies' Slipper. |
| " acaule | Purple Ladies' Slipper. |
| Polygonatum giganteum | Great Solomon's Seal. |
| Cornus Canadensis | Bunch Berry. |
| Baptisia Leucantha | Wild Indigo. |
| Euphorbia corollata | Flowering Spurge. |
| Asarum Canadensis | Wild Ginger. |
| Smilacina racemosa | Wild Spikenard. |

DRIED JULY-AUGUST FLOWERS, INTERMIXED.

| | |
|---|---|
| Liatris cylindracea | Button Snakeroot. |
| " scariosa | " " |
| " punctata | Blazing Star. |
| Petalostemon violaceum | Prairie Clover (rose). |
| " candidus | " " (white). |
| Vernonia Noveboracensis | Iron Weed. |
| Solidago Cæsia | Golden Rod. |
| " latifolia | Golden Rod. |
| " canadensis | Golden Rod. |
| " lanceolata | Golden Rod. |
| Gentiana quinqueflora | Five-Flowered Gentian. |
| " Andrewsii | Closed Gentian. |
| " crinita | Fringed Gentian. |

SOME OF THE FERNS IN THE BOUQUET.

Osmunda regalis, interrupta and cinnamomea. Lastrea spinulosa, Alpine, marginale and thelypteris. Asplenium trichomenes and thelyptheroides. Polypodium vulgare, Dryopteris and phegopteris. Cystopteris fragilis and bulbifera. Pellæa gracilis and atropurpurea. Adiantum pedatum. Pteris aquilina. Camptosorus rhizophyllus (Walking Leaf or Cap).

# THE SELECTION, ARRANGEMENT AND CULTURE OF HOUSE-PLANTS.

PART FROM that æsthetic satisfaction which house-plants afford, the principle of growth, which they exemplify, has its own strong and almost universal attraction. Thus it is that we behold in dust-blurred windows of squalid tenements, rows of dented tomato cans, desolately holding their stunted geraniums, fuchsias and other feeble bits of greenery. Such half-pathetic attempts at floriculture are, indeed, "touches of nature" that "make us kin" to the forlorn inmates of these shabby ill-conditioned dwellings who, amid poverty and its possible degradation, have still courage for, at least, one fine endeavor.

It may be said of plants that they are, like human organisms, dual. They have their spiritual as well as their material part. Hence it is that the perfume of the flower—veritable, though intangible—is termed "its soul;" and some author—whose name I do not recall—has gone so "far afield" as to give us a treatise on the "cerebral processes of plants. I do not recollect the name he has given to his paper," but remember that he cited, in evidence of his odd theory, the sensitive plant. On the face of it his article seemed slightly absurd; there are, however, "more things in heaven and earth than are dreamt of in our philosophy;" and, had plants but tongues, they might, no doubt, tell us "a thing or two" worth knowing in regard to their own especial mode of existence. There is a wonderful account of a madeira vine, which exhibited to an experimenter such signs of intelligence as have seldom, or never have been elsewhere attributed to a mere plant.

For the present, however, our attention must be confined to the tangible, the material side of plants; and the sole purpose of this paper is to impart some simple knowledge gained through a long and earnestly loving experience in the beautiful art of plant-culture. Our first step is the choice of our plants; and we shall do wisely to select such as will best accommodate themselves to the somewhat adverse conditions of furnace-heated and gas-lighted rooms, such as most of us occupy.

First and foremost in our collection should stand sweet-scented plants; not only because these impart to our rooms a delicious air of summer and etherealize the entire atmosphere of our homes, but also because of their sanitary value; medical authority having distinctly declared that the perfume of growing flowers, exhaling on the in-door air, tends to neutralize fever, and other disease-germs. For delicacy of perfume and continuity of bloom, the heliotrope may take the first rank among odorous house plants. Its very name—derived from two greek words, *Helio*, the sun, and *trope*, to turn—is charmingly suggestive of summer-time. The plant does not belie its name. It cannot have too many sun-kisses. As a cut-flower it is perishable and unsatisfactory; but its growing bloom lasts long, and holds its odor even in decay; is delightful up to its very last breath.

To secure good winter bloom from the heliotrope, begin in early summer with the plant while in the ground; and by repeated pinching-back make it sturdy and robust. This done, choose some cloudy afternoon, about the middle of August, for potting. Your soil should be thus prepared: one-third good loam, one-third leaf-mould, and one-third well-rotted manure; a few pinches of soot may be added, and enough white sand mixed through the whole to keep it light and dainty. Pot carefully, and with as little root disturbance as may be. Water thoroughly, and keep the plant in shade until its leaves recover their tone. After this it may stand in the sun, if given plenty of water, for a week or two, while the buds get under way.

Be sure to house before the faintest suspicion of frost, as this sun-lover is extremely tender, and the slightest nipping harms it. Give it a southern exposure in your room, and place close to the glass; and if you have not a double window, leave the fly-screen in to save the leaves and blossoms from immediate contact with frosty panes. A heliotrope should never once become wholly dry, and should have a weekly drink of manure-water, which must be about the color of moderately strong coffee. For insect pests dust the leaves with a light feather-brush, and then wash thoroughly. This process must be repeated as often as the insects appear.

Nicotiana—or tobacco plant—is another fragrant and desirable plant. It thrives in about the same soil as the heliotrope, but needs an entirely different exposure, being one of the few plants that flower perfectly in a sunless window. Experimenting with the nicotiana as a house-plant, I found that in a south window the plant was not robust, was scant of bloom, and the flowers quite perishable in comparison with the blossoms in a north window, where two plants grew to a height of more than five feet, and, together, produced one hundred and fifty-six flowers. Through the entire winter no ray of sunlight reached them. They were trained on stout strings quite close to the glass of a double window, kept moist, and given an even temperature of from sixty-five to seventy degrees, and were watered well with liquid manure.

At evening the blossoms expand, and all through the night it is as if the room were

"Perfumed from an unseen censer, swung by angels."

Among the sweet-scented tribe mignonette ranks high as an out-door plant, and as a window bloomer it is exquisite. It rarely outlives transplanting, but may be sown in pots about mid-summer, and pinched back for the house. Another method is to obtain the plant from the florist when in bud. The cost is trifling, and if kept cool and in a sunny window, it will continue in bloom for weeks. Mignonette needs much sunlight, but not too high a temperature, and the plant is much weakened by a single day's omission in watering.

Another—now almost obsolete—fragrant house-plant is the night-blooming jasmine. Its odor is peculiar and intense, and—as its name implies—is only emitted by night. Its foliage is not especially delicate, but nothing can be more dainty than its slender spikes of pale greenish-white bloom. It is a thrifty plant, making in a single summer a growth of five or six feet. It is a shrub, but one could fancy that, ages ago, it must have been the "sport" of a climber, so slender and rapid is its habit of growth. After flowering-time, which begins late in July and continues until late in October, it drops most of its foliage, which is soon replaced by young, delicate shoots and fresh leaves.

The *Daphne odora*, which combines in its small clusters of bloom the exquisite perfume of many sweet flowers, may not be lightly passed by. It is not an easy plant to manage, and often drops its buds just as they seem ready to open. By placing it in the sunny window of a cool room, and watering evenly, and not too copiously, it may be brought into flower; and then nothing can be finer than its fragrance.

The more homely and familiar hyacinth is not only delightful in form, color and odor, but may be recommended as a "safe investment," as it seldom fails to flower and needs comparatively little care. It develops more rapidly in glasses than when planted in pots, but the blossoms are scanter and do not last so long. For this purpose, the single varieties are best. The water, to which should be added some lumps of charcoal, should cover the base of bulb to the depth of a quarter inch. Do not disturb the roots by changing the water, as the charcoal will keep it pure. Occasionally examine, and if there are decayed portions of the skin of the bulb, remove, and change the water. Keep in a dark, cool closet until roots are well formed; then place in sun in a room where the temperature is low. When the flower is perfected, place in a warm room out of the sun, where the odor may be enjoyed.

With the hyacinth, however, the finest result may be obtained from potting the bulb in light, rich loam, with a liberal allowance of fine, white sand, some of which may be placed under it to prevent decay from overmoisture. A four or five inch pot should be used, and the bulb pressed firmly in the soil, leaving about an eighth of an inch, or even less, above the surface. Place in darkest corner of cellar, water about once in two weeks, and when the bulb is well sprouted, which will be in about six or eight weeks, you may know that the roots are formed. Accustom it gradually to the light, and when the crown has become quite green it may be given a full sun-bath until the flower is perfected. After this, bring into the warm parlor, where the perfume may exhale, but do not place in the sun, or water too freely, if you wish to preserve the flower.

Beginning with the bulbs about the first of September and planting at intervals of two weeks through all the fall months, you may have blossoms from Christmas to Easter. The bulbs which have been thus "forced" may be used later for out-door planting; but, for house-culture, fresh bulbs must be obtained.

The mahernia is another desirable fragrant plant. It is very effective in a hanging-basket. It comes in flower about the first of February, and its tiny yellow cups are brimful of delicious odor. A home-bred mahernia makes fine foliage, but seldom blooms abundantly; it is, therefore, best to procure the plant from the florist when fully budded. It will then flower finely in a sunny window, and for three or four weeks one's room will be sweet as summer. The wax plant, though properly a summer-blooming plant, sometimes flowers in winter. Its blossoms are very odorous, especially by night; and in structure and color they are simply exquisite. It is a long-lived plant, easily raised and tended; and being a climber, may be tastefully trained on a trellis, where, with its glossy rubber-like leaves, it is very effective. The petunia, as a window plant, blooms freely, and the white variety is fragrant—especially by night. The plant is rather ungainly in its habit of growth. To conceal its scragginess of structure, twine its stems among other foliage on your stand, and place it close to the glass, and you will find it pretty and effective. And now that sweet-smelling plants are under consideration, may I not give you the details of an experiment with the common lilac as a house-plant? It was made some fifteen years ago, and before I had the slightest knowledge of lilac-forcing, which I now find is quite common among trans atlantic florists, although in our own flower-market we do not find winter lilacs.

Early in December a stout, low bush of the hardy purple variety was, with the aid of a pickax, dislodged from the frost-bound earth, and with its frozen ball of sod still adhering, thus treated: A large nail-keg, having an auger hole in its bottom, on which some bits of crock were strewn, was filled to about half its depth with warm stable manure; on this the dry leafless bush, with its frozen soil, was set, and the keg filled in with mellow loam. After a good watering, the keg was placed in a deep pan, which was then filled with boiling water, and the whole set near a huge hall-stove. The hot water was daily renewed at the bottom, and before many days leaf and flower-buds began to swell on the hard, bare stems of the bush. When these were well-formed and the tiny buds quite distinguishable among the pale green foliage, the lilac was removed from its dim corner beside the stove, and given an entire east

window in the long hall, where the temperature ranged from forty to sixty, and sometimes as high as seventy degrees. In about two months from the time of housing, fourteen large and perfect clusters of pearl-white lilacs rejoiced our eyes. These blossoms were far more delicate in odor than out-door lilacs, and made a delightful atmosphere of spring-time in the homely old farm-house which was then our dwelling place. We had, too, the novel pleasure of suprising our friends with clusters of fresh lilac in February.

French florists, who give much attention to lilac-forcing, lay great stress upon the necessity of keeping the bush in the dark in order to bleach the flowers—white lilacs being most marketable, and the common purple lilac most available for forcing on account of its superior vitality. Fortunately I stumbled upon the right treatment, and mine seemed to come white of their own sweet will.

The odorous sacred lily of China, we all, no doubt, grow yearly in water, with a bottom layer or two of pebbles. It is well to make incisions lengthwise of the bulb with a sharp knife before planting, and there should be lumps of charcoal among the pebbles to keep the water sweet. A single bulb, thus treated, will give one seven flower-stalks. That old-fashioned plant, the calla, though less common in our homes than it was twenty years ago, if grown in an artistic vase, and given an entire window, is beautiful.

It has been said of the calla that it needs water like a mill, heat like a furnace, food like an army, and absolute rest during summer. "Keep its feet in water" says the florist. In its native habitat it is in water to the depth of a foot or more, in broad open sunlight, and in soil as rich as decayed vegetation can make it. Soon after flowering-season the waters subside, and the soil becomes as dry as it is possible to get in the tropics. Here, nature teaches us how to cultivate the calla. The canna thrives admirably as a house-plant, and has a happy way of accommodating itself to circumstances, which makes it especially desirable for decorative effect. In a sunny window it will flower all winter if given abundant heat. In a north window of the same room it will give one beautiful foliage, and it will, "at a pinch," take a back seat and hold its own in the shade, grouped with the statuary and screens, where, with its large, handsome leaves, it will impart to the drawing-room a certain air of oriental languor and magnificence. The canna should be lifted early in September and placed in rich loam, in a large, well-shaped pot or vase, and kept for a week or two in the open, in partial shade, and well-watered. It must be carefully housed before the lightest frost appears. Its vigor and beauty are increased by the addition of wood-soot to the soil.

All the begonias thrive well as house-plants. My experience with the new and choice varieties has not been sufficient to enable me to give valuable advice in regard to their culture. I had formerly supposed that a north window might suit a begonia. It was a mistaken impression. The plant, I find, needs much sunlight and a warm atmosphere. It must be regularly and carefully watered, and I have found it best to give the small-leaved begonia its water from the saucer. The smooth-leaved begonias are said to affect a Sunday morning cup of coffee by way of gloss to their foliage. I have seen a superb one thus treated, but have never myself tried the experiment. The plant likes an occasional watering with soot tea while making its summer growth in the garden.

The coleus, as a window plant, affords fine color effects; but the plant is too tender to be agreeable for house-culture. It requires an invariably high temperature, a fair amount of sunlight, regular moisture, and very rich soil. This given it will grow superbly; but if overtaken, in some unguarded hour, with the slightest chill, it loses its beauty and vigor. The house coleus is almost sure to become infested with mealy-bugs. These may be picked off, and thereafter the plant should be given a careful wash of kerosene water, which must be repeated as often as the pests appear. The formula for this spray, which is used for roses at Mt. Auburn, was thus given by the late Mr. Collins, head gardener at the cemetery. It is simply one wine-glass of kerosene oil to a gallon of water.

Ferns, as decorative plants, are beautiful and easily grown, though all do not succeed with the maiden-hair, All ferns should have an abundance of light, but not too much sun. I have found an eastern exposure the very best possible. Ferns should be placed in the full light of a window, given a high temperature and watered evenly, but not too much. The soil should be partially renewed annually, and care should be taken with the roots, which do not like disturbance; especially is this to be observed with the maiden-hair, which, if possible, should *never* be transplanted, and should have its stated period of entire rest, during which it should be kept almost dry. The fuchsia is, properly, an out-door bloomer, but with care can be brought to flower in winter. To this end, pinch back in summer; and in September house, and place in a north or east window. Give much light, water freely with warm water, and give liquid manure and soot tea about twice a week. If given an entire window both flower and foliage will be superb, with this treatment. Time would fail me to enumerate all the desirable plants for house-culture; there is the orange tree, the costly palm, the delicate asparagus, the achyranthes, anthericum and curculigo; the aspidistra, cyclamen and many more equally beautiful and practicable; and last, but not least, the inevitable rubber-plants, a little stiff and heavy, perhaps, but as a single plant decidedly effective.

In arranging a table or stand of mixed plants, care should be taken to give each its proper growing place without marring the general effect. Heliotrope, that ardent sun-lover, should have the front row, close to the window-glass. Beside it should sit a begonia or two, and some flowering geraniums. A petunia and a bridal-rose might come next—the petunia twined

among the others to hide its scraggy limbs. A nicotiana, well in the light, might make the evenings sweet with its perfume, and if the room be not over-warm, a pot of mignonette might sweeten the air by day, and at night be removed to cooler quarters. In the "middle aisle" an achyranthes or two, may stand with sunlight sifting through its fiery leaves, which have thus all the color-effect of blossoms without their perishability. Further back, anthericum may flourish, with curculigo spreading queenly its fluted palm-like leaves, and always craving moisture. And, in the "pauper's pew" wandering jew will contentedly sit, like charity, kindly covering the entire defects of staring pots that needs must hold its betters; and on the floor, at the foot of all, aspidistra may *seem* to "choose darkness rather than light." If you need a growing amaryllis or two to eke out your foliage display, they will take a shady place though to bring them into flower you need a strong, steady sunlight.

For a hanging-basket use the oxalis, of which there are many beautiful varieties. It flowers abundantly, but, as the season advances, must be stimulated with repeated applications of liquid manure and soot tea, that its foliage may not lose its vigor and become straggly. Wandering Jew, though structurally coarse, is a good hanging plant, and will accommodate itself to any exposure, really doing its very best in a north window. Ivy geranium is another hanging plant, beautiful in structure, and with its double rose-pink blossoms, as in the improved varieties, most fair to see. It demands strong food, much moisture and oceans of sunlight, Madeira vine and German ivy both make effective hanging-baskets. The latter is too alluring to the green fly to make its house-culture easy or satisfactory. Smilax, if trained on strings, in a sunny window, is exquisitely delicate, and its blossom is odorous. The English ivy as in-door greenery, is delightful. I have attempted its culture, but my experience being but a series of ignoble defeats, is not commendable. I wish it were! The odious scale has at last compelled me to abandon the field. I must also confess to repeated failure with in-door geraniums. Mine have not bloomed well; and a geranium without its blossom is a poor affair (not including the scented varieties). Last autumn, after having tried many methods with many kinds, I turned over a new leaf in geranium culture. All my best geraniums were consigned to an upper room, where no furnace heat could reach them, and where, in cold nights, the temperature falls perilously near to freezing point. The plants have a southern window, and through the day the room is moderately warmed from the ascending heat of the kitchen. Geraniums (and fuchsias and nasturtiums as well) have taken kindly to this low temperature, the geraniums blooming as finely as in the open during summer. Many of us have, no doubt, seen floating about in print, the little story of that pot of geranium which was the sole bequest of a dying man to his family, who carefully tended this precious, though not pecuniarily valuable legacy. When spring came the pot was reverently committed to the cemetery lot to summer close beside the grave of the buried husband and father. On removing it in autumn, the plant was found to have outgrown its quarters, and was tenderly dislodged for repotting. To the great surprise of these good people, a hollow false bottom was found in the original pot; and on its removal a little fortune in bank notes was disclosed, which as the story ran, had obligingly kept themselves intact for the heirs in this odd storing place. This tale has been cited of late, by a scientific floriculturist, as evidence of the deplorable ignorance of the common mind in regard to absolutely necessary conditions for growth demanded by a plant. "A geranium," he authoritively tells us, "cannot exist without drainage, hence, an account which asserts that one has for months survived the ordeal of a tight-bottom pot can have no foundation in fact." So we have been taught; but, alas for the infallibility of time-honored theories! In the material world new discoveries are continually upsetting old conclusions; and we are *now* told that our geraniums and fuchsias have a natural affinity for *tight-bottomed tomato cans!* The finest geranium in my present collection has the proud distinction of growing in a water-tight lard kettle. Though a young and blooming plant, it was held in light esteem by its owner because of a vicious tendency to magenta, and in the autumn, no pot being at hand, was given this apparently slim chance of survival. Not only has it carried its buds and blossoms straight on through the entire winter, but has graciously overcome its perversity in the matter of color, changing from a glaring magenta to a deep and lovely rose. In the same group is a large white geranium three years old, which, after blooming all summer in the garden has never once, throughout the winter, been out of bud and blossom. This well-behaved plant grows in an old butter tub which stands squarely on its "own" sound "bottom," unmutilated by gimlet or auger. The plant had in late winter, ten clusters of bud and bloom, while its small neighbor of the lard kettle had six. A nasturtium, in the same window, flowers abundantly; and a fuchsia beside it is a paragon among plants. All these have had weekly applications of manure water and soot tea, and have not been kept over-wet. Especially is this true of the two geraniums —which may, perhaps, partly explain their dispensing with drainage. The finest hyacinth I have ever grown in the house perfected itself in a handleless fancy pitcher which had no outlet at the bottom. Having no pot of the right size, some lumps of charcoal were thrown into this make-shift affair, the soil tossed in, and the bulb, not without serious misgivings, carefully planted. It flowered late, but its foliage was abundant and its bloom exquisite. It gave me five perfect rose-colored spikes. These all, in common with my other plants (excepting ferns and aspidistras) were well fed with liquid manure and soot tea, and, in potting, a little wood ashes was added to the soil.

That very old-fashioned plant, the bridal rose, is a free winter-bloomer, and has a kindly way of sending up

a perpetual supply of shoots for one's neighbors and friends. But, taking roses altogether, they are not profitable house-plants. The constant battle with insect pests is fatiguing, and one cannot spray and fumigate and spray and fumigate incessantly, as the florist does. Now and then, after hard labor, virtue has its reward in the shape of an exquisite rose or two; but, even then "the play is scarce worth the candle."

The same may be said of carnations, which not only teem with insects, but require a much lower temperature than we have in our living rooms, as also do winter violets. The tulip, lily and narcissus as house plants are comparatively uncertain; but hyacinths, potted well, will behave beautifully and give a sure succession of bloom through the entire winter, filling the room with a faint, sweet perfume and calling forth words of delight from the passers by, as they stop to "take in" the beautiful colors and forms of the spikes.

As to the finer uses of house plants, I have but time to suggest, in conclusion, that whoever cultivates them from sheer material satisfaction in their growth, from mere pleasure in their structural perfection, or with an eye single to their market value (as a florist naturally must), overlooking their poetical—I had almost said their *religious* side—has grasped but a small portion of the delight to be derived from floriculture, and has wholly missed that divine inspiration, that mental help, which emanates from "a thing of beauty" and makes it "a joy forever."

SARAH WARNER BROOKS.

# THE GARDENS OF CHARLESTON.

MOST PEOPLE visit Charleston in winter, and fear the heat of August in a southern latitude. Business recently called us to that section of South Carolina, and we took occasion to spend a day in the city. There are many things in the city at this season that do not strike the eye so plainly at other seasons. The great masses of white oleander bushes are now snowy with flowers, and the crape myrtle trees are loaded with bloom. The giant camellias which are so gay in early spring now show only their glossy foliage; but the palmettos are now in bloom. Great masses of creamy white flowers in racemes two feet or more in length hang around the bases of the great leaf stalks, and are very popular with bees and beetles.

The Battery is at this season, more than ever, the popular resort, and under the shade of the live oaks the nurses roll the baby carriages in crowds. What a blessed resort this little Battery Park is to the city babies, with its cool breezes fresh off the Atlantic! Few cities possess such a genuine breathing place.

On Meeting street, close to St. Michael's church, we stopped to see the famous Marechal Niel rose bush of Dr. Shepard. This great plant, grafted on Banksia roots, clambers on the one hand over the two-storied piazza of a large building, and on the other, covers two large arbors. At the base the stem measures over three feet in circumference. We were disappointed, however, in its appearance. The foliage seems thin and scanty, in comparison with the massive luxuriance of the same rose on our deep red clay here in Raleigh. In fact, all the foliage of the roses in Charleston looked scanty and poor. The soil is evidently too sandy and hot for them.

We were very much interested in visiting Dr. Shepard's tea gardens at Summerville, 22 miles from Charleston. Here Gen. Le Duc, when Commissioner of Agriculture, began some experiments in tea culture, which his short term of office left no time to complete and which his successor abandoned. Dr. Shepard has bought the old government plantation, and has planted a large additional area. The old trees planted by the Agricultural Department have been given over to seed bearing, and now nurseries are being started from these and from imported seed. The new tea gardens are all planted with the Assam hybrid tea, but the Doctor has orders abroad for seed of all the best sorts from China, Japan and the Himalaya region. His tea has been pronounced very superior by experts. The well-cultivated gardens and the thrifty plants showed that the tea plant is perfectly at home there.

That a high quality of tea can be easily made in North and South Carolina seems evident. Before going to South Carolina we visited a plantation of tea made over thirty years ago near Fayetteville, North Carolina. We found the tea bushes struggling for existence in a thicket of pine, laurel, cherry, and all manner of wild growth.

It has had no culture, whatever, since the war, and yet from these trees the old lady who owned them gave me a large bundle of tea of remarkably fine quality, which a New York dealer who tested it at the hotel pronounced worth one dollar per pound at wholesale. The ridicule with which the northern press treated General Le Duc's experiments caused the abandonment of systematic effort in this direction, but it does look as though a new money crop of great value might be added to the south, and I am glad to record the fact that Dr. Shepard is giving the matter a thorough test, I hope his work may be crowned with successful results.

W. F. MASSEY.

# HINTS FOR WINTER SUCCESS WITH FLOWERS.

FEW PLANTS are more generally found in window collections, or are more popular for window bloom than the calla lily. This may be greatly due to the beauty of its tropical growth and the ease with which it is cultivated, proper conditions being given. There are, however, many different and some erroneous ideas concerning the culture of this much abused plant, particularly as to the amount of water to be given to it. Some people give so much water that the soil around the roots is kept in a state of mud; even the pot is stood in water. Others allow it to get dry, and then water, or give it a little every day. Some advocate a rest for the bulb during the summer in the pots; others shake the bulb out of the earth, and again, many others advise keeping the bulb growing all summer. So I shall give my plan for growing this beautiful lily, which has been always successful in bringing me the finest blooms and many of them. After a winter and spring of good growth and bloom, I gradually slack off the water, and when placing the pots out-doors, lay them on their sides, without removing either bulbs or soil, in some sheltered place, where they rest, perfectly dry, until the last of August or the first of September. Then I take the bulb out of the pot, shake off all the earth around its roots, remove all of the little offsets, and repot in fresh rich soil, using some old thoroughly rotted manure which is thoroughly mixed with the soil. No manure should be used unless it is well decomposed, else it will injure the bulb; where such cannot be procured, bone-dust may be mixed with the soil. Also add a little pulverized charcoal and some sharp sand to the soil, letting the latter be around the bulb. The soil, besides the additions mentioned, should be of muck or leaf mould, but if either cannot be procured, a good, rich garden soil will do if manure is used. In its native home on the banks of the Nile, it stands in earth that is mostly made up of decayed vegetation, so if the sand is added the soil can scarcely be too rich.

Before filling the pot with earth, good drainage should be provided, so that all surplus water can drain off; if water is allowed to stand around the roots, the soil will get sour and soggy, which would perhaps injure the bulb quite seriously. For drainage, use pieces of broken pots and charcoal—the latter will serve to keep the soil sweet; this drainage provision also makes it possible for some air to reach the roots, which is of importance. For a bulb three or four years old, a pot of ten or twelve inches will be suitable. A bulb of that size should have about four crowns, which will be sufficient to furnish a large number of leaves at one time, and each crown will probably give from three to four lilies.

When inserting the bulb in the earth, press the soil around it firmly, but have a care not to bruise the roots, which are tender. Water thoroughly well with tepid water, and set the pot in the shade for about a week, so as to allow the roots of the bulb to make a good start. Do not water more than enough to keep the soil moderately moist, until the bulb is growing well. Then set the plant in a light half-shady place until it is removed to its winter quarters, which should be light and warm, with some sunshine. Water always with warm water, and let the leaves be sprinkled every day or two. Water it every day if necessary, and give enough so that a little will drain off through the hole in the bottom of the pot. The soil should be kept wet all of the time, but not muddy, and never should it be allowed to become dry during its growing season. The secret of growing the calla successfully is to observe as closely as possible its native condition of growth. Callas, when blooming in their native home, are said to stand a foot deep in water in the bright, open sunshine and in soil made very rich by quantities of decayed vegetation. After the blooming season is over the waters subside and the ground in which they are growing becomes very hot and dry.

The calla must not be allowed to lack for food; so when in bud or bloom, unless the soil is very rich and not exhausted, a weekly dose of liquid manure should be given them, in order to have fine, large blooms.

OXALIS, when through blooming, should be left in their pots through the summer, and not dried off and taken out of the earth. Water them until foliage commences to turn yellow, gradually decreasing.

THE NEW double yellow daisy, *Anthemis coronaria flora plena*, is magnificent for bedding or for pot culture. It blooms most profusely all through the year, and its rich golden yellow flowers give it a wonderfully striking effect.

THE SPIDER LILY, *Pancratium Caribbæum*, so much spoken of, is truly a lovely and curious plant. The bulbs may be potted or grown out-doors in the flower bed, and are easily raised. The flowers are large and white, coming in clusters; they are very finely scented, and freely borne. When planting them, set the crown of the bulb just a little below the soil.

THE BEST SOIL for nearly all pot plants is composed of leaf mould, good garden loam and sand mixed in equal parts; in many cases less of the sand should be used.

THE MYRTLES like best a soil composed of peat, with garden loam, and they should be watered regularly and syringed quite often. In order to raise bushy plants, take cuttings, and after they are rooted, plant in very small pots, and as they grow gradually shift them into pots a size larger each time. The young shoots should be nipped off, as it prevents the flowers from coming.

AMONG the principal climbers which are easily grown in pots during the winter, the best are the passion flowers, maurandias, thunbergias, cobæa, ipomæas, bignonia, lophospermums, nasturtiums, manettia vine and *Solanum Jasminoides*, besides all the ivies, morning glories, etc.

THE ANGLE-WORM, or common earth-worm, which is found in all soils and often in flower pots, is not to be feared because of the direct injury it may do to the plants themselves, but because it feeds on the nutriment contained in the soil, thus robbing the plants of their proper nourishment. It also injures the soil. Lime water can be successfully used against it, as the caustic of the lime acts fatally on its cuticle.

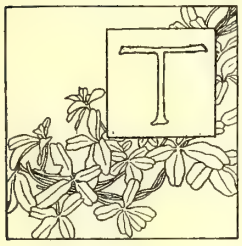
THE VINCAS, Harrisonii and major variegata, are lovely trailing plants for hanging baskets, bracket pots and vases. They grow nicely in the house, or they may be wintered over in the cellar.

THE ALTERNANTHERA likes plenty of heat and thrives well if given a warm, light place; the temperature must not fall below sixty-five degrees at night.

NITRATE of SODA is a valuable fertilizer for carnations, chrysanthemums, etc., during their growing period, as it is a powerful stimulant to them, and makes their foliage very luxuriant, and the flowers larger and more abundant; but, like all other manures and stimulants, it should not be given to the plants when at rest. When used, it must be applied very sparingly. The proper proportion to mix it for use is to dissolve one-half pound of the nitrate in six gallons of water. Mixed in this proportion it is also a good fertilizer for lawns.

GRETA BEVERLY.

# GREETING FLOWERS.



THE PAST summer has developed a charming feature in the retail cut-flower trade that bids fair to maintain a popular hold, recommended as it is, by its simple, affectionate, refined elements. This new or enlarged line of trade is expressively termed "greeting flowers." The remembrance basket for departing friends bound on ocean or trans-continental trips, the elaborate presentation boquet, the cunning boutonniére, a myriad of devices for wedding and other ceremonials, have all drawn upon the taste and ingenuity of the decorating florist.

The donor suggests the special varieties appropriate to the occasion, and herein is a charm connected with the idea. Thus, at the wharf, depot, hotel or tea table, a visiting relative or cherished friend may be greeted with a tuft of heather that will call back the breath of far off hills. In this significance of flowers there can be a graceful posy-blending that will contain the best loved blooms, buds, sprigs or sprays considerately identified with pleasant experiences. The range of resources is ample; "everything goes," princely or plebian, fitting playful or higher moods.

The field-spangling daisies—now dignified to "Marguerites," dahlias and geraniums in their palette-spattered array, opal-tinted pea-blossoms, dandelions that vie the guinea, swaggering, gaudy tiger lilies, honeysuckles with their coral petals, pompous horse-chestnut blooms, asters of cameo-cut neatness, tress-like chrysanthemums, rompish carnations, dainty wood flowers, and the countless multitudes of wayside, garden and glass grown beauties are all adaptable to some sentimental or remindful significance. As a "touch of nature makes the whole world kin," so the humblest individualized floral greeting assumes an adorning halo which belongs not to art, but to love.

It is interesting to observe the quiet enthusiasm and delight the exhibition of simple flowers creates around florists' windows. A spray or two of fox-glove or a bunch of delicate primroses will unfailingly attract a little group as readily as a gorgeous orchid. A bright oleander in full bloom, often to be seen in front of a New York wine or dining saloon, always proves to be an inducement for the visiting Texan to call for liquids or solids at the home-reminding place.

We are glad to see a reviving taste for the so called "common" flowers, and the "greeting" idea will do much to further it. Greenhouse producers are already adding to their list varieties that have evidently settled into permanent demand.

Speaking of common flowers, we recently heard a prominent man of wealth say to his gardener: "Why don't you raise some old-fashioned holly-hocks?" The gardener replied "Well, I haven't thought them stylish enough to bother with." "Stylish enough! why, my good man, don't mind that; raise me some next season. When I see them growing they always put me in mind of my dear old mother standing where they were waving by the gate side, as she kissed me off to school."

Only another melodious echo of poor Ophelia's sweet murmer when she culls rosemary from her flowers: —"that's for remembrance." T. A. G.

# WOOTTON.

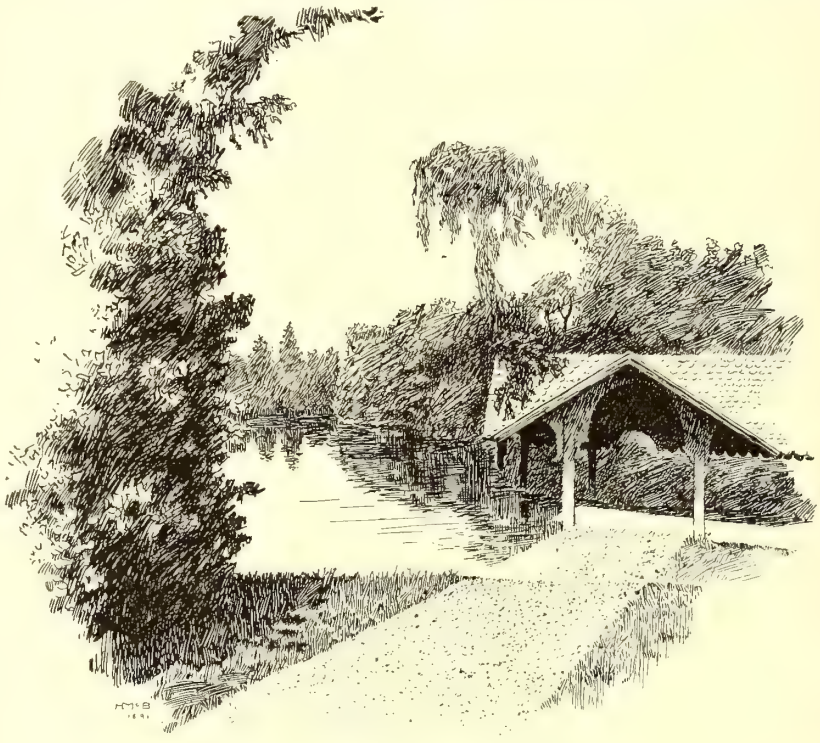
THE COUNTRY HOME OF GEO. W. CHILDS, AT BRYN MAWR.

A TASTEFUL entrance to a country home has much to do with putting the visitor into such a frame of mind that he shall be expectant, and properly receptive of the further beauties that lie within its gates.

In approaching Wootton, the country-seat of Philadelphia's widely-known millionaire philanthropist, one comes first to a simple pillar by the roadside, upon which is inscribed the single word, "Wootton."

From this pillar stretches away down the three-quarters of a mile that constitutes the frontage of the place, an excellent hedge of spruce. It is six feet high, broad, green, compact, carefully trimmed, and tantalizingly suggestive of the well ordered landscape that must lie behind it. I say tantalizingly suggestive, because as one walks along the road he is able to catch only momentary glimpses of the higher portions of the grounds, the hedge being almost a complete shield. One is not disposed to cavil at this, however, as the grounds are always free to whosoever will come, and one has only to go on to the artistic little lodge at the entrance gate, somewhat more than mid-way down the hedge, to enter into full possession.

The hedge is protected, on the street side, by a light, open iron fence; and over this honeysuckle clambers in profusion, while here and there a rose bush throws forth a fragrant mass of bloom and beauty, making bright relief against the dark background. Some fine trees border the outer edge of the walk, one of which, a giant hickory at the further end, has been measured by Thomas Meehan and declared by him, I believe, to be the largest one of its species known in this country. The tree seems more than 100 feet high, and it is known to be 309 years old. And this leads me to speak just here of one of the predominant features of this estate—the great number of magnificent forest trees in which it abounds. These are veterans of the primeval forest, oaks, hickories, chestnuts, pines, poplars, tulips and beeches, wisely left by Mr. Childs upon points of commanding prominence, when clearing and laying out the grounds. In one of these, whose manner of growth has kindly lent itself to this purpose, a spiral iron staircase leads up to a pavilion among the topmost branches. From this an excellent view is obtained of the whole estate, and here, too, one may rest in absolute seclusion, hidden from the world below. This is a favorite resort of the master of Wootton, and here Mr. Childs often secludes himself on Sundays to look over the week's letters from his legion of friends, or to read or dream for an hour in perfect quiet.

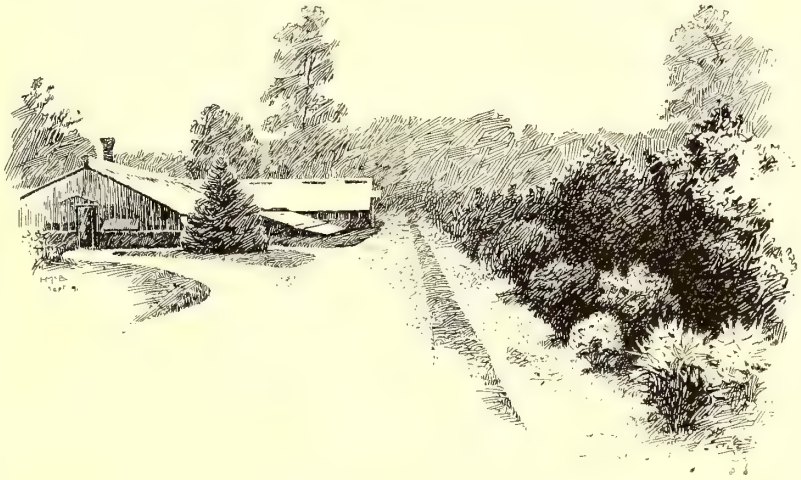


BOAT LANDING AT "WOOTTON."

The lawn is sixty acres in extent, and slopes away in a gradual and graceful descent to the front, and upon either side of the mansion. In extent, smoothness, and in beautiful slope I know of no other lawn to compare

with this, and every part is exquisitely green and neat. The planting of trees and shrubbery has been so arranged as not to interfere with long prospects, yet the lawn is sufficiently broken to do away with the quality of sameness. Upon the right it is fringed with a strip, some ten acres in extent, of natural woodland. Well toward the foot it is crossed by a sparkling brook, which has given opportunity for the graceful exercise of the landscapist's art. It has been brought within bounds by cemented walls; artificial falls have been arranged—permitted by the natural slope of the ground—over which the water tumbles musically; and rustic bridges have been thrown over it, where roads or pathways cross.

Two buildings, each containing ornament and utility' are deserving of especial mention. One just where the lawn and forest meet, is where a crystal spring has been given a beautiful housing. The other is the spring house, built of white flint-stone, with tiled floors and stained glass windows, a model for anyone who would build a perfect dairy. Although seemingly too beautiful for practical use, the spring house comprises a milk-room and work-room, and here the milk from a number of pure-bred Alderneys is diligently cared for. Near by is a small ornamental stone house containing the water-power for sending the supply needed to the extensive green-houses. Mr. Childs is an intelligent floriculturist, and takes special pride and delight in his roses. When the Society of American Florists visited Wootton in the summer of 1886, they unanimously agreed that his rose-house and rose collection were the finest in the country.



GREENHOUSES AT "WOOTTON."

The mansion, well situated upon a rising knoll, is of red brick, and is a good example of Queen Anne architecture, although not so extensive as to preclude the idea of a home. It is fronted by a terrace, and this bordered by a wall and railing of massive and artistically cut stone, half hid by trailing vines and ornamented by vases of tropical plants.

But to the trees. In connection with their planting Mr. Childs is establishing an arboretum of original design and unique interest. Wootton has entertained guests from every land—men and women famous in every walk of life. Many of these have planted here each a tree with their own hands, as a souvenir of their visit, and of their friendship with Wootton's most genial and lovable master.

An oak, fitting emblem of the man, was planted by General Grant; a tulip tree by Christine Nilsson; a Normandy pine by Nellie Grant Sartoris; a Japan maple by Henry Irving; and others by Cannon Farrar, Mrs. Grover Cleveland, Senator Bayard, Hon. Hamilton Fish, Thomas Hughes ("Tom Brown at Rugby"), and others whose names are household words in two lands. An interesting group is that of three trees, planted in close proximity by three staunch friends, Chauncey M. Depew, Cornelius Vanderbilt and Joseph M. Choate. Probably no home in America has opened its hospitable doors to more people who are really worth knowing, than has this; and this not because Mr. Childs has sought to entertain social lions and notabilities, but because his culture and broad humanity have endeared him to all with whom he has come in contact, either in the social or business relations of life. Of these matters, and of fetès that have been given here to world-famous guests, it is hardly our province to speak. But of another and equally notable class of entertainments, held here annually, I wish to write. Wootton is a farm as well as a country seat. A tract of land under the highest state of cultivation is devoted to showing how a farm, dairy and fruit garden may be run. Commercial considerations do not enter into the management of these, as all surplus products are given to hospitals and charitable organizations. But they clearly afford Mr. Childs the right to call himself a farmer, and to give such Farmers' Club dinners as are rarely heard of elsewhere. At these gatherings Mr. Childs personally conducts his guests about the place, showing what improvements have been made, new structures erected, new stock added, etc.

Everything that the intelligent and liberal use of money can do to bring it to a high state of perfection, has been done. It is little more than ten years since Mr. Childs began the erection of Wootton, and then without a definite purpose of bringing it to the elaborate completeness that has been done. It might well stand now as the finished work of a lifetime, instead of merely the accomplishment of a decade of years. Much of this is due to the careful work of the superintendent, John M. Hughes, whose constant aim it is to let no

country place in America excel this in any single feature.

The personal interest of Mr. Childs in horticulture is shown by the fact of his election (January, 1890) to the presidency to the Pennsylvania Horticultural Society, of which he had long been a member. This society is a "live" organization. It is the oldest institution of its kind in the United States; has held sixty autumnal exhibitions, many hundred monthly shows of plants, flowers and fruits, and has distributed nearly $40,000 in premiums.

I have spoken of Wootton as a summer home, but it is in fact a spring and autumn home. Upon the approach of spring the family remove hither from the city, and remain until the first hot days of early summer send them to the sea shore. In the early autumn they return here in time to get the full benefit of the bright foliage of the October woods, and remain until early winter. Mr. Childs is a busy man, and consequently remains near the great interests that demand his daily attention. Wootton is about ten miles from his office in the Public Ledger building, Philadelphia, and he drives back and forth often, instead of using the trains.

Wootton he makes as free to others as he does his own time, and it is rarely that some visitor may not be seen strolling through the grounds. The young ladies of Bryn Mawr college especially appreciate the opportunities it offers, and have learned to know well its pleasant walks and shaded nooks.

I have omitted much reference to special features in the planting of these grounds, as it was the purpose of this paper to describe a country home, rather than to catalogue a botanical collection. But there are two items that I cannot forbear to mention—one is a long winding avenue of the Asiatic plane-tree (*Platanus orientalis*), which, though now young, gives promise of great beauty. The other is a straight avenue running across the entire place at the rear (about three-fourths of a mile in length) which is bordered upon one side by maples, and upon the other by hemlocks. This I should like to see when autumn has painted the maples with their thousand brilliant hues, and the hemlocks are yet clad in all their sombre greenery.

A View at "Wootton."

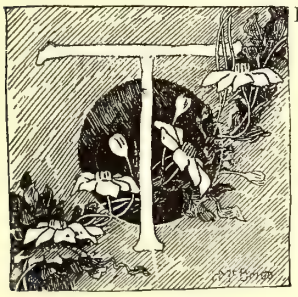
The location of Wootton is peculiary well chosen. In the midst of undulating upland, portions of which yet are heavily wooded, commanding wide prospects, it affords splendid opportunity to study and observe nature when at her best—when putting on the green robes of spring, and when donning the prismatic tinted robes of autumn. Upon leaving at the close of a fair June day, I thought that one might be well content to call it home throughout the circle of the months.

James K. Reeve.

*A Contrast to Wootton.*

# IOWA NOTES.

THE SEASON'S OUTCOME—FLOWERS AS EDUCATORS AT A CAMP-MEETING—IN NATURE'S SANCTUM SANCTORUM.



THE weather this season has been cold beyond experience. Ordinary crops have suffered severely, small grain having been kept damp by the constant rains, and the corn is sadly behind, owing to the cold. Apples have been blown off in large quantities, plums suffered from the curculio, and peaches, where protected during the winter, weakened by the fruit setting too thickly. Yet, notwithstanding the spring's promise, there will be, from present appearances, apples enough to do through the winter, and plenty of plums of late varieties. The Miner, with us, seems to stand opposition the best thus far, but the Wolff is commending itself, this and last season, by its hardiness and abundance of fruit. My opinion is, however, that nothing derived from our native varieties will ever equal the blue plums of the east. Those of California, to my palate, are tasteless and insipid, not beginning to compare with either the Wolff or De Soto. We need to use the sprayer to fight the insect pests, both on apples and plums. Everything in the shape of a sour cherry does well on the prairies. I shall try sweet cherries by laying them down during the winter. If they do well, a half-dozen trees will amply repay all additional trouble and labor.

The flowers about the house have been delightful all summer long. The excessive moisture has caused them to grow rankly and bloom profusely. The country being new, but little has as yet been done on the farms in this direction, or in the towns either. I believe that I have more varieties by far, and finer flowers, than are to be found in our county town. However, we are mending in this respect. I took a bouquet to camp-meeting yesterday that was the wonder of all who beheld it. I left it there; it was an educator. There were auratums eight inches across and profoundly deep and fragrant; double balsams; asters so fine that the ladies did not recognize them as such; a Dinsmore rose that brought out a chorus, "O, what a beauty"; star-eyed perennial phloxes; perennial larkspurs, matching the blue of heaven; a monstrous spike of *Hydrangea grandiflora*, the like of which was not to be found in a circumference of miles; and many another, with pansies galore. That bouquet will be a blessing to several communities. "Consider the lilies," says the Word; and when I departed, the injunction was being followed to the letter.

> "If God hath pleasure in a flower,
> Though such a little thing;
> A simple breath of sun and shower,
> So short its tarrying—
> Why may not I my chalice bring
> And drink delight from the same spring,
> And midst Jehovah's gardening
> Enjoy a sacred hour?"

But a few rods from the house commences a grove some four acres in size, which I am letting grow at its own sweet will. The trees are, many of them, 50 feet high, intertwined with bitter-sweet, grape vines and other llianas, until in many places the sun finds it difficult to struggle through to the ground. A former owner was too lazy to cut it down, and I have been thankful for it. He, like his log cabin, has gone from the remembrance of the neighborhood. Hither I stroll to enjoy communion with unzoned nature. It is astonishing how prolific she is in such nooks. The Indian turnip is turning a scarlet, the berries of the bitter-sweet are full grown, and the grapes are taking on a blush of blue. The plums along the edges are turning red, there are windfalls of wormy hickory-nuts; the robins wait impatiently the ripening of the wild cherries. It is a veritable *sanctum sanctorum*. A fox squirrel has taken his abode here, and in winter I keep him sleek by slipping nubbins behind the vines that trail up to his nest. He knows me, and so do many of the birds, I believe. The common prairie lily lifts its cup to the sun in the outside fringe of the hazel roughs, sometimes four on a stalk. In an open space one day this summer, I came upon one of the loveliest lilies I ever saw. It was a little darker than the tiger lily, recurved, with brown spots and of good substance. The stalk was three feet high, and bore two flowers; its leaves were in whorls some distance apart. I transferred it to the house. It shall not waste its beauty upon fox squirrels, polecats, cuckoos and whip-poor-wills; it is mine.

In many places prickly ash tries our patience sorely, but I don't see how we could get along without it. It only grows in woods, and this is a little bit of primitive forest. It is true that it is doubtful whether there is a tree in it over 30 years old, but there is time before it, and it grows and does duty splendidly. Here I find the red-eyed vireo, and criticise its artistic nest. The white and black warbler hops down on the lower branches and eyes me curiously. I never miss Madam Whip-poor-will; and in the edges the quail. I suffer no shooting on

my premises; the birds and myself have a fee-simple on them, and properly recorded in the county records. Besides, the boys respect my crankiness, as they call it, and mark with curious eyes the birds that I point out to them. Three-fourths of bird shooting is due to the ignorance of the boys. Did they but know enough of the feathered beauties, they would be the last ones to destroy them.

I love trees. How can a man help but pat one on the body, growing up so lustily, with branches and leaves and clean, smooth trunk! Take my young bur oak; we are personal friends. We become acquainted with the physiognomy of trees; to us they are individuals. A bit of primitive woods is the vestibule to many of the secrets of nature found there, and only there.

*Ringgold Co., Iowa.* EDWARD B. HEATON.

# SOUTHERN HORTICULTURE—III.

AN ACCOUNT OF AN EDITORIAL JOURNEY.

URING recent years the state of Georgia has developed rapidly in many ways. It seemed to possess within its boundaries more of the attributes to success on the lines of northern procedure than any other of the southern states. It was, therefore, the first of the war-desolated regions to develop new life and to enter upon the new order of things with a possibility of wresting success from the dead ashes of rebellion.

In horticulture, no less than in other industries, Georgia has won for itself a place where it is attracting the attention of that portion of the world which is interested in the culture of the soil.

Blessed to an uncommon degree with a climate unsurpassed in point of salubrity, acting on the worn and discouraged horticulturist from the cold north like the elixir of life; having within her confines that great variety of soils and climatic conditions so necessary to the best work in horticulture; offering to the aspirant for independence, lands at moderate prices, fair markets and a glorious climate—surely there is little wonder that Georgia, horticulturally, has worked her way close to the front.

During my visit to the state in May, I was particularly interested in the rapid development of grape culture. We have heard for some time of the large yields and correspondingly large profits from the culture of peaches in the state, principally in the vicinity of Macon. Certain sections of the state, mainly in the vicinity of Thomasville, (long known for its famous orchards of the Le Conte and Kieffer pears, and Albany, Quitman and Americus, have become famous for their ability to raise the toothsome watermelon. The grape industry is of recent development, but it promises so much for the future that it is receiving the attention of capital and skilled labor, good evidences of its prospective value.

My investigations of the grape industry in Georgia were confined mainly to the vicinity of Poulan and Tifton. On the line of the Brunswick and Western railway, Poulan is so situated that, with an increase of its vineyard yields, it can readily find an out-put at the minimum of cost. It may interest the reader to learn of the cost and the proceeds from the small vineyard of which our illustration shows a passing glimpse. This vineyard in 1887 (its first in bearing) cost in expense to its owner $786.22. These figures, and the following information regarding this vineyard owned by a Mr. McPhaul, were given me from the records of Dr. J. F. Wilson, who had the vineyard in charge. In receipts, there were sold 12,593 pounds of fruit for $696.74; also 1,361 gallons of wine, at $1.50 per gallon, $2,041.50. Melons grown on the field to the value of $150, and hay from the same field to the value of $60, make a total of $2,948.24 in receipts, against expenses of $786.22, leaving a margin of $2,162.02. As these figures are a matter of record, I have no reason to believe them other than correct.

A VINEYARD AT POULAN, GEORGIA.

The 1,361 gallons of wine were made from 15 pounds of fruit to the gallon.

The expense and receipts of hay and melon crop prop-

erly belong to this account, as the expense was calculated on the whole area of eight acres.

Speaking of the work in his section in general, and his own labors in particular, Dr. Wilson told me that his object was to increase his area until he could have in bearing 100 acres. He believed that grape growers in his section would do vastly better, on the whole, by selling a good quality of fruit to near-by markets, or even shipping to New York, than they could by attempting to handle their whole crop under the line of "fancy fruit," though he thoroughly believed in good, honest and attractive packing. The varieties mainly planted were Concord, Niagara, Ives, Martha, Delaware, Brighton, Catawba, Champion, Hartford, and Moore's Early. If I could base my judgment on the growth of vines, I should say that Champion and Niagara were decidedly the best for the section.

Ives is mainly grown, and in large quantities, for its good shipping qualities.

Dr. Wilson has, on the several places under his management, 50 varieties of grapes which are being tested. These are mainly of the labrusca type, with a few riparia and æstivalis.

It is interesting to note the cost of vineyard planting in this section, especially for comparison with older sections of the country. The figures given are the results of actual work performed, and leave a margin for the contractor equal to a fair wage per diem.

STARTING A GEORGIA VINEYARD.

For clearing land (second growth of pine mainly) $8 per acre; fencing, $5 an acre (material for fencing being taken from the timber on the land); removing stumps, $10 per acre; for vines (one year old), planting, cultivation and care for first year, $76 per acre; total cost exclusive of land, for first year, $99 per acre; for the second year, fertilizers, cultivation, care and trellising, $68 per acre. This brings the vineyard to the bearing point when it may be expected to return part of the expense the next year.

Land in this section can be bought at from $2 to $5 an acre in large tracts, according to distance from the railroad and the quantity of timber on it.

Under Dr. Wilson's care are several hundred acres of land, part of which is in vines. Our illustration shows the manner of cultivation and gives a faint idea of the growth of the vines. The photograph was taken about May 10th, and the vines were set the previous February. The balance of the tract is being rapidly cleared and planted. It is owned principally by New York professional men who are interested solely for the sake of profit. They have faith in the region and in its future as a grape-growing section, a faith which I believe is fully warranted by the prospects. The dreaded rot has not yet appeared to any extent, even in the older vineyards of this section.

In a recent letter from Dr. Wilson he says: "The grape prospect improves as time passes. The crop on bearing vines was as good this year as usual. Not a vine was sprayed, and no rot or mildew was seen on any of the standard varieties. Prices were good for fruit that went to market in good condition, but some of it was so badly handled that the growers consequently did not realize anywhere near its full value.

"I had 75 pounds on one-fourth of an acre of Champion, planted in the spring of 1890, also a few Hartford, Martha and Niagara, which were sold at Albany, Ga., at 10 cents a pound.

"Young vines have done finely on Mr. Hashagen's place. (See illustration, cultivating young vines). The vines planted last spring on this place average a growth of six feet of cane, and many of them 10 feet. One of the finest vines on the entire 10 acres is a Muscat of Alexandria, and there are many vines of Black Hamburgs."

I have seen most of the famous vineyards in the United States, and so far as my opinion is of value, the state of Georgia is destined to outrival any of the United States, with the possible exception of California, as a grape region.

It is true that there are, and will be for some time, hindrances which will require time and money to overcome. More and better grape growers are needed. Capital can be used advantageously and, I believe, profitably. Better railroad facilities, which will undoubtedly come with the growth of the section, and lower rates of transportation—all are desideratums which, when gained, will place this section among the famous horticultural regions of our country. The great activity now prevailing in industrial matters in parts of Georgia must also re-act strongly upon fruit growing, increasing the extent of the markets, and improving the transportation facilities.

GEO. R. KNAPP.

# PRUNING LE CONTE AND KIEFFER PEAR TREES.

PEARS ARE being planted by the hundreds of thousands in the south Atlantic and Gulf states, and it is important that the best way to manage them should be known. The oriental race of pear trees and their hybrids, when on their own roots, or the roots of each other on fairly good soil, if allowed their own way, run up like Lombardy poplars, the Le Conte frequently attaining a height of 40 feet at nine or ten years of age. There are objections to such tall trees; the difficulty of harvesting the fruit from the top branches; the long limbs frequently breaking off with the weight of the fruit; or the fruit is liable to be thrashed off by the wind swaying the limbs against each other.

A POORLY PRUNED LE CONTE PEAR TREE.

We illustrate an eight year old Le Conte that has had very little pruning. The fruit was not matured when the photograph was taken, but already several limbs have been propped to prevent breaking off with the weight of the pears.

It is merely a matter of yearly winter pruning to bring these trees into a desirable shape; but many of our fruit growers object to the free use of the shears, fearing that the necessary close annual pruning for six or seven years will impair the fruitfulness or affect the longevity of the trees. The majority of our growers do very little pruning. Others

practice topping the trees annually, beginning with one year olds, cutting off the tops two to three feet from the ground, and every winter thereafter removing about two-thirds of the previous year's growth from the top limbs until the trees come into bearing at seven years old. This pruning is done any time after the fall growth ceases, and before the buds swell in the spring.

During January, 1885, I set out 1,000 Le Conte and Kieffer trees, and have topped them yearly to the present time. The illustration on this page is from a photograph of this orchard, taken in June, 1891. They are now handsome round headed trees, with stocky limbs and numerous bearing branches, each tree capable of holding half a ton of pears without injury. There is nothing in the appearance of the trees that indicates a want of health or thrift, although they have never been manured or fertilized and are on old land of moderate fertility. As will be seen, the trees are now in good shape, and the weight of the fruit hereafter will cause them to spread still more, so that they are likely to remain in good form with very little pruning.

Will my trees be as fruitful and live as long as they would have done had they never been pruned? In passing judgment it must be kept in mind that the habit of growth of this race of pear trees is very different from that of the old sorts of European ancestry. Active growth begins early in spring; buds suddenly burst into leaves and sprouts, and the tree is a mass of foliage. Apparent complete recovery from the closest pruning is the work of a few days. But I suppose these, like many other horticultural questions, can only be answered by facts, and as growing these pears is comparatively a new industry, we must wait for a solution.

In the meantime, all who ask for my opinion I shall

Top-pruned Pear Orchard, owned by Wm. Jennings, Thomasville, Ga.

advise to top their Le Contes and Kieffers, as, with all the light before me, I see only advantages in the practice.

At the winter's pruning there are always some water sprouts, weak or interfering branches to take off, but this should be done prudently, as the body and large limbs must not be too much exposed to the direct rays of the sun; at the same time the air and sunlight should be permitted to penetrate among the branches.

Something can be gained by passing among the young trees in spring and summer and rubbing off shoots that are starting where none are wanted, and pinching the terminal buds from branches that are growing too fast. But these trees are impatient of summer pruning, and only a limited amount of the foliage can be removed during the growing season without doing more harm than good.

The Garber and Smith's hybrids have the same habit of growth as the Le Conte and Kieffer, and require similar treatment; so also the Chinese and Japanese pears are ambitious, and when I find them trying to get up in the world too fast or too high, I take the top of their heads off, thus curbing their ambition and improving their appearance.

It must be remembered that this class of pear trees *with us*, are either on their own roots (grown from cuttings) or grafted on other roots of the same race, and the trees grow larger and taller than they do when grafted on French or American grown seedlings.

*Thomasville, Ga.* WM. JENNINGS.

# THAT LITTLE CURL.

NOT the one on the baby's forehead or the curl on the lip of smiling beauty, but the one that fastens the grape vine to the branch of a tree. What I am aiming at will be best comprehended by saying there lies before me a cane cut from a grape vine about two feet long, with six fine clusters of grapes weighing three pounds. But what of that? Is it anything unusual? Yes. I have seen thousands of acres of grape vines, but this is the first time I have ever seen six clusters of grapes grown upon one cane. Two to three clusters are common; sometimes there are four, and occasionally five upon *V. riparia* vines, but six good-sized clusters on one cane is phenomenal. In this case two or three of the curls or tendrils have been manipulated so as to become converted into additional clusters of grapes instead of tendrils. The economy of this will at once be apparent.

But the reasons for the increase of the crop is the question of significance. For all will remember what is said of him who caused two blades of grass to grow where but one grew before. It would require a whole volume to make this fully apparent, but I hope to condense the matter so that it may be comprehended in a single short article.

It all arises out of the great fact that the vine has been a climbing plant, dependent upon some other plant for its support, for perhaps a million or more years. Its remains are found in the rocks of the pleiocene, or later tertiary period, both in Europe and America. The curl or tendril is the means used by the plant for climbing trees and shrubs. It also utilizes its lower tendrils for thyrses or flower stalks, and here is a fact of the utmost importance to the practical vineyardist. These may, in the plant's economies, be used as tendrils for support in climbing forest trees, as under natural and wild conditions. Or they may be converted into clusters of fruit in the vineyard, according to the manner in which the vine is handled. It is all a matter of pinching instead of pruning. "There is a time and tide in the affairs of men, which taken at its flood, leads on to fortune." So there is a time and tide in pruning, which also leads to fortune. But this time is not after the canes are two-thirds grown or of full length. The pinching must be done in early spring, and not in the summer. Different species of vines require different lengths of cane and more or less buds, according to their different habits of growth. It is this early pinching that changes the nature and tendency to climb and directs the forces of the plant to increase fruit production, fruit instead of wood growth.

In varieties of moderate growth, this early pinching is often all the pruning required; but in the case of vigorous sorts the laterals, as they start, should also be pinched first to one leaf and sometimes to a second. Feeble vines should not be spring or summer pruned; but useless canes should be pinched or broken out on all vines so as to concentrate the growth in the parts where it is needed.

The correct theory seems to be that the primary object of the vine is to grow seed to perpetuate the species, and in order to do this it must grow fruit. But in its wild condition it had to surmount some tree or other object to reach the sunlight, where alone fruit could be developed, and often this secondary object and condition defeated to a greater or less extent the primary object. Now in this early spring pruning we defeat the second or acquired habit and turn the plant's forces and energies into the production of fruit, its primary object.

The first thing, then, to be done in the spring is to break off all unnecessary shoots when they are, say, six to ten inches long. Then if the vine is feeble, let all the rest grow; if it is a moderate grower and belongs to *V. vinifera*, *V. Labrusca* or *V. Lincecumii* and some other species, pinch the canes at the end of the third or

fourth node, according to the condition of the vine But if it belongs to *V. riparia* or its sub-species, *V. rupestris* and other great climbing species, then five or six buds and leaves should be left, according to its vigor and condition. Hybrids are to be treated like the parent species they most resemble and follow most closely in their manner of growth.

If these simple directions are followed an increase of one-fourth in the crop may be expected. And the main reason for this result lies in the increased production of pollen, consequent upon the strengthened condition of the reproductive organs. Owing to this, the numerous emasculated clusters and void spaces along the thyosi and stems are filled up, while the berries are enlarged and better developed and the number of clusters and berries is enlarged. Finally, all depends upon the largely increased size of the leaves, wherein is elaborated the sap which this early pinching develops just at the part of the plant where it is required to increase fruit production instead of wood growth—a most important but generally overlooked point.

*Jefferson County, N. Y.* D. S. MARVIN.

# THE STRAWBERRY IN TEXAS.

EACH passing year emphasizes the fact more strongly that Galveston county is a natural strawberry district. And yet, strange to say, there is but one variety entirely suited to our conditions. The Parker Earle, for instance, that grows so rankly and bears so abundantly in North Texas, is a mere pigmy here. I have plants two years old, in the richest soil, that are no larger than a saucer, with a mass of diminutive little berries, while along side, the Nunan of the same age have immense stools 18 inches in diameter, and loaded with the finest fruit. This is the strawberry "par excellence" for this region. Nearly all the standard varieties have been tested and discarded. The fomous Michel's Early, while quite prolific and a good grower, is so soft that it cannot be shipped except to the nearest markets. Both the Hoffman and Cloud did moderately well, but none can compare with the Nunan in point of vigor, productiveness or carrying qualities.

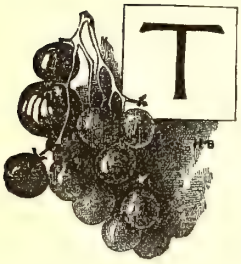
We began this year to ship the last of February, and many growers sold from $400 to $500 per acre, and the season is not much more than half gone. The crop has been very generally distributed over Texas, while some have gone as far as Denver and Kansas City in good order. Many of our growers have adopted the plan of shipping C. O. D. to the dealers instead of to commission merchants, and with excellent results. Up to the present time, the net price has been $5 per 24 quart crate. The plan of shipping direct to the dealers has had the effect of stimulating the growers to the greatest care in picking, sorting and packing, as they well know that inferior fruit will certainly tell on them. Now, as to methods of culture, our growers are coming generally to the conclusion that it don't pay to carry plants through the summer, especially on rich ground. Our season is so long, and grass grows so fast, that it requires more labor to keep one acre clean here than five at the north. Besides, strange to say, the two-year old plants are much later in fruiting in the spring, and the berries much smaller than those on the fall set plants. This is probably owing to the immense stools the old plants make, which put out in spring such a mass of blooms that the plants seem unable to bring the berries to a large size. Another disadvantage of the two-year plants on rich ground is, growth is so strong that the fruit is almost entirely covered by the leaves, which makes the berries pale and soft. To ship well and be bright and glossy, they must have plenty of sunshine. The plants set in September and October make less vine, but more large, firm berries. This difference between the two ages of plants has been clearly demonstrated in my own garden; those set in

October fruited freely for nearly a month before the older plants had any berries worth picking. At the end of the season they did well, though, of course, at lower prices; yet the tail end of the crop rarely fails to net 8 or 10 cents per quart. Many large growers reserved a small bed for plants of which the Nunan is exceedingly prolific after June, and plowed under the old beds to reset this fall. As this plan requires but little cultivation after the plants are set, the four-foot bed with three rows and plants one foot apart each way is about the best and most economical. As to manures, there is nothing better than cow manure, if plenty of it can be had. If not, then bone meal or a good superphosphate will give excellent results. Cotton seed meal is so stimulating that I am almost convinced that on fairly good ground it had better be discarded altogether. A bed manured last fall with bone-meal alone, at the rate of one ton to the acre, has made me magnificent berries. Our soil is naturally very poor, and requires heavy manuring for several years to get the best results. On new land, one part cotton seed meal to two parts bone meal, or dissolved bone, would be an excellent application. We are troubled here very little with insect or fungus pests. The cut-worm in fall and early winter is the most annoying, but a weak mixture of Paris green and water, a teaspoonful to two gallons of water is a good proportion, sprayed over the vines will kill them if applied regularly and thoroughly.

H. M. STRINGFELLOW.

*Galveston Co., Texas.*

# THE TOMATO AND ITS CULTURE.



THERE IS no vegetable that is not a staple article of food that is more generally esteemed and cultivated than the tomato. It has in the past twenty years grown into popular favor to such an extent as to require the culture of many thousands of acres to provide the necessary quantity that is demanded for use, either in the fresh state or for the purpose of canning and manufacture into catsup. In the smallest of home gardens, as well as in the market gardens all over the country, adjacent to the large towns and cities and in the truckers' fields of the south from Virginia to Florida, the culture of the tomato is a prominent feature of gardening effort. The area devoted to the tomato will doubtless continue to be enlarged annually.

Of the hundred or more named sorts listed in the various catalogues, it is only necessary to name a few for practical purposes, for the market gardener or trucker is not likely to include more than two or three kinds in cultivation. The most approved sorts, either for home or shipping purposes, are found among the following: The Beauty, Ignotum, Paragon, Volunteer, Green Gage, Mikado, Golden Queen. All of these are fine varieties, and it is difficult to say which is *the* superior variety. The first three are a grand trio, and when seed from a well-preserved strain is used can hardly fail to give satisfaction. The last named is a superb yellow kind, and for slicing raw is preferred by many to all other sorts.

Other good varieties, of course, can be named, but taken as a whole it would be difficult to find seven other varieties equal to these just named. The trucker soon comes to a decision as to which variety suits his soil better than all others, and he confines his planting mostly to that one variety, taking pains every year to maintain, even if he cannot improve its quality, by selection of the finest specimens for seed, being governed in his selection by the vigor and healthfulness of the vine, rejecting seed from any vine that has been affected with rot.

While propagation from cuttings has frequently been practiced, and in many instances highly commended, the average cultivator will not need to make more than one or two tests to satisfy him that the most satisfactory and practicable method is to grow the late as well as the early crop from the seed. Vines from cuttings are not nearly so productive as those grown from the seed, and there is no difficulty whatever in securing plants for any season on a month's notice.

In southern latitudes hot beds are rarely resorted to, as much better plants can be grown in cold frames. In the latitude of middle Georgia (33°) plants for the main crop are not desired before the first of April, and these are readily obtained by sowings in cold frames during the month of February. Where it is not desired to give the plants one transplanting before transferring to the open ground, sowings in the frames early in March give plants large enough for transplanting by the first of April. But the gardener who believes in making the largest crops possible, and who has once observed the plan of transplanting the plants once before setting in the open ground, is not likely to be satisfied with using plants that have been grown to a proper size in crowded seed beds. There is so much gained by having stocky, well-rooted plants to make the start in the open ground with, that it will always be found to pay to make the sowings in the frames in February, and just as the young plants are large enough to allow of it, draw them out and reset them in other frames at a distance three by three inches apart, where they are allowed to grow for two or three weeks and get strong and stocky. When such plants as are thus raised, are transferred to the open ground, few fail to live; and they grow off very rapidly and are soon beyond the danger line from cut worms or other insects.

While the first or germinating frames require glass, the second frames to which they are transferred need only a covering of varnished cloth. For the purpose of protecting the plants from frost, the latter is to be preferred and is much cheaper too. In this latitude, oftentimes for weeks at a time, during February and March, there is no frost at all, and there are only a few days in February when there will be need for keeping the frames closed in the day-time, but even when frost is not threatened it is best always to cover at night to keep the plants from being chilled. Killing frosts may be expected up to the close of March, but it is only rarely that they occur after the first of April. Even in the latitude of middle Georgia a fourth of the crop can be risked as early as the 20th of March, and most gardeners take about this much risk, but the bulk of the setting-out is deferred to the first of April. Occasionally slight frosts in early April may nip the young plants, but rarely is it severe enough to damage them. As we go further south, setting-out is from a week to ten days earlier for every 50 or 60 miles.

In setting out the plants, and especially where the soil is dry, we have always practiced the plan of grouting or puddling the roots. A mixture is made of equal parts of manure fresh from the cow stall and fine clay dust; to this is added a little cotton meal—a handful to the bucketful—enough water is added to make a mush, into which the plants are dipped, when the roots and stem will be well coated. A half-teacupful of kerosene oil stirred in the grout will be an almost perfect preventive of the cut-worm.

*Baldwin Co., Ga.* SAMUEL A. COOK.

[TO BE CONTINUED.]

# FORCING ASPARAGUS UNDER GLASS.

THE FORCING of asparagus is easy and profitable. It has been as yet impossible to can it successfully, and this heightens the demand for it during the winter months. The temperature for forcing is from 50° to 60° or 65°. Allow from four to six weeks for forcing to maturity, which depends somewhat on the length of the days. Do not try to force rapidly, or you will get small and inferior stalks. Various methods may be used. It may be in a permanent forcing bed, which in many cases is the most advisable, or in a merely temporary bed for one season's forcing.

In the case of forcing for one season only, the roots must be thrown away. An ordinary hot-bed might be used, though probably it would not be satisfactory. Permanent beds, four or five feet wide, as long as desired, covered with glass, surrounded by a trench bricked up on the outside and filled with stable manure, are sometimes used. As often as is required by the temperature, the manure is renewed. Box flues may be constructed through the center of the bed to heat it the more evenly. A method similar to this is to place the trench in the center, having merely the walls on the outside. Forcing in a house provided with steam is more satisfactory. Temporary beds, probably, are most profitable. These beds may be made 3 feet wide and the rows 1 foot apart. Plant in rows about 18 inches apart, and alternately as to the rows. Such close planting will need heavy manuring and close attention. If natural color is desired, they must be given light and air. A cheap and permanent house for forcing in early spring may be made either as a double or single span; if double span, 8 or 10 feet wide. Build a wall from the frost line to a foot above ground. Frame and cover with glass. If the drainage is not good, it must be made so. Dig a trench two feet wide through the center for a walk. Make an excavation several feet square at one end, to serve for the furnace or stove, and also for the entrance. To heat the beds, carry the smoke around the outside of the bed in flues which are almost entirely below

the surface of the ground, the smoke finally passing out of the chimney. Near, and for some distance from the furnace, build the flue of brick to prevent fire, but the rest construct of boards. In summer the sash can be removed, and in winter it would be better to apply a mulch and cover the frame with boards rather than the sash, as it would be more apt to give an equal temperature. Arrange the beds on each side of the walk, and plant as mentioned for the forcing house. It will be necessary to manure heavily and often where so little earth is given to each plant. This plan of growing will give profitable results. F. E. RUPERT.

# A VIGOROUS FOREIGNER.

(PRICKLY LETTUCE—*Lactuca scariola*, L.)

THE introduction and spread of prickly lettuce on American soil furnishes an excellent example of the ability of a well endowed plant to over-run a new region and crowd out the native forms, as well as immigrants of longer standing. I do not know just when the species was introduced. It is not in the 1866 edition of *Gray's Manual of Botany*; but in *Gray's Synoptical Flora*, 1884, it is mentioned as becoming common in the Atlantic states in gardens and around dwellings. In the sixth edition of the manual the plant is reported to occur in waste places and along roadsides from the Atlantic states to Missouri—a rapid spread in six years. But probably in 1884 it had already entered many other states away from the Atlantic coast. It certainly occurred in Ohio as early as 1879, having been collected that year in Toledo and Painesville. A few plants were found in the vicinity of Columbus in 1882, and since then the species has spread enormously. It now occupies a large portion of the commons and waste fields about the city, having crowded out nearly everything before it. There are many fields of several acres each in different parts of town, where the plants will average three to the square foot. The same is true of many other cities of the state, and of too many towns and villages.

Prickly lettuce is a composite plant growing to a height of two to six feet (probably averaging between four and five), with narrow open panicles of small yellow flowers. The leaves are pale green, sagittate, and have a row of stiff prickles on the under side along the mid-rib. They are usually twisted into a more or less vertical position. Few plants are better prepared for survival. The stem is solid, and furnished with a milky juice. Its solidity enables it to become erect again when trodden upon, and combined with the milky juice, protects it from insect borers. The prickles on the stem and leaves are a protection from herbivorous mammals. The seed is provided with a fine pappus, so that it is easily carried long distances by the wind. Each plant produces a large number of seeds. One of my assistants, after a number of counts, estimated that each plant produced, on an average, 688 heads, with an average of 12 seeds to the head, or 8,256 seeds to the plant. With three plants to the square foot, this gives 3,234,453,120 seeds to the acre! No wonder it can over-run things!

The accompanying plate, from drawings by Miss Freda Detmers, faithfully represents the plant. At *a* is shown a branch with flowers; at *b*, a section of the lower portion of the stem; at *c*, a single flower, and at *d*, a seed with pappus. CLARENCE M. WEED.

*Ev'n in the stifling bosom of the Town,*
*A Garden in which nothing thrives has charms*
*That soothe the rich possessor; much consoled*
*That here and there some sprigs of mournful mint,*
*Of night-shade or valerian, grace the wall*
*He cultivates.*

—COWPER.


Prickly Lettuce (*Lactuca scariola, L.*).


BY OCTOBER, in all the northern states, the season of out-door work is practically over. There are only a few last things to be done, and we can close the account for the season and see where we stand. Strawberries have to be protected for the winter, and it is curious to notice why this small, low-growing plant must be covered with straw or other light material. It is not to keep out the cold, for that would be impossible with such a thin sheet of loose straw. It is to keep off the sun—to shade the plants on bright sunny days in winter. The sun will often cause the frozen ground to melt, and in melting it expands, and small plants like the strawberry are drawn out of the ground. When next the ground freezes, the plants are left on the surface, partly pulled out of their beds. They are said to be "thrown by the frost." A little straw thrown over the plants keeps them shaded, and they remain frozen and safe all winter. The philosophy of all this is to wait till the last minute in November or early in December, and when the ground is frozen to scatter a light covering of hay, straw or litter over your strawberry bed—very light, or the plants will be covered too much, and may mould and decay for want of air. October is

CLEANING UP TIME.

Rake up the dead leaves and litter. Pile it all up in a shallow heap in an out-of-the-way corner, and cover it over with soil. Next year every plant growing on that spot will show the value of home-made fertilizers. Last year about this time the writer went over his garden, and with rake and barrow gathered up every corn stalk, every potato vine and cabbage leaf, every scrap of loose vegetable matter on the place, and dumped it in a heap at the rear of the garden. It made a mass about twelve feet long and eight wide and a foot high, and when every scrap of refuse that could be found, including all the small or useless roots, turnips, etc., had been thrown upon it, the whole mass was covered with soil. The earth was taken away all about it, which left a shallow trench that served to drain it in the winter. This last spring the whole heap was turned over and scattered on a space fifty feet square, and spaded in. It had nearly all decayed, only a little refuse hay and corn stalks being left. These were tossed together, and when dry were burned and the ashes scattered over the ground. Afterwards the plot was planted to potatoes and tomatoes. The plants grew well and, in spite of the severe drought, bore a very large crop. Other potatoes and tomatoes in the same garden died very early in the season, or only produced a small crop. The tomatoes, particularly, grew to enormous size, were bright, and grew through the whole of the dry season. Once in mid-winter while the heap was frozen hard, several barrels of water from the cess-pool were poured over the heap. This, of course, helped greatly, yet it was chiefly the great mass of vegetable matter safely decaying in the soil that carried the crop through the drought and gave a splendid harvest this fall. See to it now that

EVERY DEAD AND DYING PLANT

Is gathered up and buried. It is all capital for the home lot. It is the same with the garbage from the house, and the slop water. Bury it. Bury everything in the ground. It is all plant food for next year. It is the only safe thing to do with all waste, whether liquid or solid. Cover it with earth, for good soil is a perfect deodorizer and disinfectant. It is the same with waste paper, old rags, old shoes, scraps and refuse wood, shavings and useless materials. Pile them up in the garden and burn them. It is far better to burn old papers and old rags and to scatter the ashes over the ground, than to sell them to the junk man. The ashes are worth more in the garden than the few cents the junk man will give for them. It is the same with ashes from wood fires. Scatter them thickly about the stems of all your trees, under your currant bushes and along the raspberry rows, or sow the ashes broadcast over the strawberry bed. If the snow covers the ground, put the ashes on the snow; the first rain will leach them into the soil. Garbage, after the ground freezes so that it cannot be buried, should be burned and the ashes scattered over the ground or on the snow. It may soil the fair white snow for a day or two, but nature will soon take care of it, and next year will pay dividends on your present labor. The real secret of good crops on a home lot is a careful saving of everything. Things that will decay

naturally in the ground should be buried; other things, like wood, paper, leather, fabrics, etc., should be burned and the ashes spread on the ground. The learned writers upon horticulture will tell you that these

HOME-MADE FERTILIZERS

Are not "complete fertilizers." They mean by this that they do not contain all the materials plants require. That is true, and still they do contain some of them, and are therefore helpful. They all help your home lot and are profitable, because they cost so little and because all the garbage, paper, ashes and other refuse from the house must be got rid of in some way, and by burying it you "kill two birds with one stone." In the spring it is very easy to add a "complete fertilizer," and thus supply all that your plants will require. The "last things" in the home lot are the

REMOVAL INTO THE CELLAR

Of every crop for safe keeping. There are various plans for storing celery, potatoes and roots outdoors. This is not necessary or convenient for the home lot garden, and the best plan is to put all the things in a cool, light place, where they will not freeze. Celery keeps best if pulled up by the roots, and the roots covered with loam and sand in the cellar. Potatoes and roots may be stored in boxes or barrels, or heaped upon a dry floor. Squashes and pumpkins are safer hung up in a cool, dry room.

Last of all, when all the waste and rubbish have been buried, have all the soil spaded up and left loose and rough. Do not rake it down smooth. Leave the surface open and loose, so that the frost can get at it and break it up still finer. It makes a wonderful difference next spring whether the soil is left hard and smooth in the fall, or is spaded up loosely.

VERY LAST OF ALL.

Be thankful you have a garden. There are good people who have homes with a bit of ground, and do not see why they should be thankful at all. They see nothing in a home lot but an expense for seeds and manure—nothing but a great deal of backache, and only a few vegetables they could buy with less trouble at the stores.

THE OUT DOOR SEASON IS OVER.

There is leisure now to think over this whole matter of your home lot. Look at the picture at the head of this department. On one side is a bit of garden, on the other the dining room. Our arrow flies straight from one to the other. At one end is the source of all your food; at the other is your table that must be supplied with food from some piece of ground somewhere. Shall it be your own ground close to your table, or shall it be some other man's land? Do you prefer to pay yourself for food, or pay some other man for raising it, another man for bringing it to your town, and still another man for bringing it to your home in his market wagon?

You must answer these things for yourself. If you are working for yourself and making a great deal of money, it may not, in a strict money sense, pay to run a home lot. If you work from eight to ten hours a day for wages or a salary and have half an hour to spare once a day for about four months in the year, it will pay you to run a home lot.

NOW IS THE TIME TO THINK

About it. Now is the time to "read up" the subject. In eleven weeks from the first of the month the new year of plant life will begin. On the 21st of December spring will practically begin. Very soon it will be time to talk about your plans for next year. Very soon the mails will be burdened with the seedsmen's catalogues.

NOW IS THE TIME TO DECIDE.

About your home lot. Do you intend to use your land? Do you intend to lend a hand to nature, that she may put money in your pocket? If so, now is the time to ask for plans and suggestions, and to ask questions. What is THE AMERICAN GARDEN for? To help folks. How can we do it unless we know just what you want? How big is your lot? What does it contain now? What is the character of the soil? Is it wet or dry, thin or deep, rich or poor? Have you any soil at all, or only a bare space of gravel or clay? Send in a plan of the space about your house, with dimensions and position of buildings and fences, and the aspect (north or south) of the place. Do shadows of the buildings or trees on the next place fall on your ground? THE AMERICAN GARDEN stands for help and advice, and it can be of more use to you if it knows exactly what you want and what you have. Then there is

THE MATTER OF TOOLS.

Some people think a garden means hard work with hoe, rake and spade. Nothing of the kind. With the right tools the work is neither hard, difficult or tiresome. It all depends on this very matter of tools whether your home lot pays and is a pleasure, or becomes a nuisance and an unprofitable bother. It is the purpose of THE AMERICAN GARDEN to show from actual experiments the relative value of garden tools, and to show that this old idea—that a home lot means a terrible lot of weary labor—is a mistake.

# The Editor's Outlook.

*THE FLORISTS' SOCIETY.*

THE SOCIETY of American Florists has passed its seventh milestone in its Toronto meeting, which took place the third week in August. The attendance was gratifying, and the meeting a pleasant one in many respects. The beautiful city of Toronto was new to many of the florists, and is a sufficiently attractive place at any time. The Canadian people most heartily welcomed their American brethren; indeed, the public interest taken in the entertainment of the society was remarkable. The place of meeting was an admirable one in that it was free from disturbing causes. The convenient hall in the center of the beautiful Horticultural gardens was an inspiring place for such work as the florists ought to do; yet we question whether the actual results of this convention were satisfying to the mass of the florists who attended, and whether they were commensurate with the importance of such an organization to American horticulturists. There was a considerable undercurrent of dissatisfaction with the methods of the management, which has seemed to have a little too much of an autocratic tendency to please the true American. This tendency may be ascribed, possibly, to inexperience in the proper conduct of so large a society; yet we question whether much progress is being made toward better methods. This condition of affairs is, of course, the fault of those members who bewail it and who surely have the power to change it. The disposition to leave the real object of the meeting take a second place to mere entertainment, with the expressed idea that "We will get it all in the annual report, anyhow" was destructive to the proper discussion of the many important essays read, as well as to the bringing out of new facts which might make each session of the society a marked and distinctive advance in its work.

The Society of American Florists has been unjustly maligned, through the carelessness of its friends, in the peculiar reports given out through its trade organs relative to the convivial disposition of the members. To judge from these reports one would think that the various delegations from the larger cities traveling together were on a prolonged debauch, and that the entertainment at the sessions partook of the same character of bibulousness. That this is not true the writer has had personal evidence, and it is not just to the florists that hair-brained correspondents should be allowed to exploit their own ideas of fun at the expense of such an important body; nor is it any credit to trade journalism that space should freely be accorded to all sorts of undignified talk about the meetings.

Some work was done by the society looking toward proper representation at the World's Fair, and there is an outlook for excellent results. The meeting at Washington next year must be of great importance to the society, and we sincerely hope that its executive committee will by that time have come to a realizing sense of some things they seem to have disregarded of late years. They are all worthy gentlemen, and doubtless have the real good of the society at heart.

The beauties of a tariff fence were fully shown at the convention, and many a stiff "protectionist" execrated the customs authorities and the whole silly system, under his breath. Some exhibits did not get through at all; all had bother and delay and expense in passing the border. One poor unfortunate from New York did not get his trunk through until the last day, and then an expressman with a convenient conscience had to declare that it was his "uncle from New York" who wanted clean linen. Truly a high tariff between neighbors is a charming thing!

* * *

*THE AMERICAN GARDEN AND POPULAR GARDENING.*

ELSEWHERE in this issue will be noticed an announcement which must be of peculiar interest to our readers. The growth that brings together the two most prominent gardening papers of America, and the prospect that this union shall result in greater good to the cause of horticulture, and greater benefit to readers, is surely gratifying. It is rare indeed, that two successful periodicals are combined in one, as their publishers and editors are usually too much at loggerheads to discern and accept the great advantages of uniting their forces, and putting all their energies, strength and money into the production of one paper or magazine superior to what each has been producing separately. This rare deed has, however been accomplished in the case of THE AMERICAN GARDEN and the bright-

est of its rivals, *Popular Gardening*, as detailed in our advertising pages. THE AMERICAN GARDEN has no desire to enter into self-laudation, but it is proud of that success which has enabled it to arrive at so high a plane in horticultural journalism as to attract to itself the brightest and best effects of others. His friends and readers loved Professor Bailey for his genial nature and his good work, but his forced resignation on account of ill health brought us more quickly to see the advantages of a combination, not only of the journals, but also of editor with publisher. Under Mr. Long's skillful editorship, as he will give all his time and talents to this work, we believe our readers will accept this movement as progressive indeed, and one greatly for their interests and the interests of horticulture. We have no doubt that the new editor will welcome criticisms, questions and suggestions in the same open-handed and hearty spirit that has always characterized THE AMERICAN GARDEN, which shall stand in the future, as it has in the past, for all that is highest and best in gardening and rural life. And we bespeak for the editor the hearty assistance of the subscribers and readers of both publications to make the new magazine the more helpful and vital.

* * *

*WORLD'S FAIR.* WORLD'S FAIR matters are now taking on definite shape. Two good men have been appointed to take the horticulture in charge. It is gratifying to know that the long and harassing contention over chief of horticulture has been amicably and satisfactorily settled. J. M. Samuels has been nominated and confirmed for chief. Mr. Samuels is of middle age, energetic, broad-minded, and capable. He has been identified with large horticultural interests from boyhood, and has studied the horticulture of many countries and of every part of the United States. He has orchards and other horticultural interests in several states, north and south, and is a successful business man. There is every reason, therefore, to regard him as a cosmopolitan and representative man, one who will know no sectionalism and no partisanship, no devotion to a particular product as the main feature. We congratulate the horticultural world on this appointment, which is promising for good results.

The other officer is John Thorpe, who is to have charge of the floriculture of the World's Fair, a feature which is a part of the general department of horticulture. Mr. Thorpe needs no introduction to our readers. He is one of the representative men among the florists of the country, and is known as the father of the Society of American Florists. He possesses an intimate acquaintance with all floricultural matters, and has many admirers. We shall therefore look for prosperity in floricultural interests under his management, and a broad and comprehensive care for the best in plants and flewers. With the ample assistance he is guaranteed by the directory, and the magnificent buildings to be erected, Mr. Thorpe will have full scope to develop plans for great results. Now let every horticulturist exert his utmost to make our part of the Columbian Exposition a success, remembering that the time is all too short, and that prompt, active immediate attention to preparations is a vital prelude to a gratifying success.

* * *

*THE BOUNTIFUL HARVESTS.* SELDOM has America been so favored with a plentiful harvest as that of 1891, both in field and orchard. The country over is flushed with the great burden of wheat, which hungry Europe is eagerly awaiting, and just as we close these pages comes the report of the failure and collapse of a great banking firm in an attempt to "bull" or "corner" the supply of corn, because of the unexpectedly prolific crop, now safe from damage by early frosts. And fruits—who has ever seen apples, pears, peaches, grapes so abundant, good and cheap? Everything seems to have combined to bring out the latent forces of nature, and deluge the land with a glorious plenty. The farmers and fruit growers of the United States have probably a better showing to make than in a decade past, and the effect of this condition on general prosperity must be marked. For one thing, everybody is hopeful, and believes in a great advance in material prosperity the coming winter and spring, as the money from crops shall begin to circulate; and this belief of itself would almost assure "good times." But due heed for the possible bad harvest of next year should cause a conservation of resources, and prevent any foolish extravagances. As we are "blessed in basket and store," let us be hopeful, thankful, progressive, advancing with the spirit of the times, but not careless of the future and its possible scantiness. And let us remember that the land which has produced so freely this year, the trees and vines which have been fairly breaking with fruit, will need a generous return in the shape of intelligent feeding and care, by which the reaction from the great yields of this season may be largely avoided, and fair harvests rendered more likely in the years to come.


*** THE AMERICAN GARDEN *stands for simplicity, good taste and correctness in names of varieties. In general botanical nomenclature it follows Bentham and Hooker and Nicholson's Dictionary of Gardening. In the names of fruits, it adopts the catalogue of the American Pomological Society, and in vegetables the Horticulturists' revision in Annals of Horticulture. In florists' plants, it follows the determinations of the Nomenclature committee of the Society of American Florists. It opposes trinomial nomenclature, and therefore places a comma or the abbreviation* var. *between the specific and varietal names. It uses capital initials for all specific and varietal Latin names which are derived from proper nouns.*

*Do not overlook the announcement of the great combination of the two foremost horticultural journals in America,* POPULAR GARDENING *and* THE AMERICAN GARDEN, *on advertising page 4, just preceding the frontispiece.*

∴ *The subscription price of this magazine from January 1 will be $1 a year, reduced on account of the combination with Popular Gardening, without any reduction in the value or beauty of the magazine. We hope this will induce every present reader to send us at least five new subscriptions for 1892.*

∴ *Next month we shall ask you to vote on a name for the combination journal. The three names now being discussed are: 1. The American Garden. 2. Popular Gardening. 3. Gardening.*

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JAMES COLE, recently with Standish & Co., Ascot, has been engaged as manager to the famous begonia growers and nurserymen, Messrs. John Laing & Sons, Forest Hill, near London, England. Mr. Cole was formerly with Geo. Such, at South Amboy, N. J.

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JOHN THORPE, the chief of floriculture of the World's Fair, is well known among American florists. He is of English birth, 49 years of age, and has had a thorough practical training. In America since 1874, he has attained here a deservedly high rank for ability and broad culture in all plant matters.

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"MODERN GREENHOUSE HEATING" is the title of an attractive and valuable brochure from the Herendeen Manufacturing Co., Geneva, N. Y. It is one of the most impartial discussions of greenhouse heating which we have seen. If one does not care to read a manufacturer's view of the subject, he can find in it the best papers written by well-known florists, among whom we notice the names of J. D. Raynolds, J. N. May, W. H. Elliott, and others.

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SOUTHERN INTER-STATE EXPOSITION.—Having been appointed chief of the horticultural division for the great exposition to be held at Raleigh October 1st to December 1st, 1891, I take the liberty to urge all progressive horticulturists to make an exhibit at the Exposition. Potted plants will be well taken care of in a building specially designed for their welfare. Hardy trees will be placed in the open ground. Please let me know what you can send. We particularly wish to keep up a display of fruit all through the Exposition. Mark on shipments, Southern Inter-State Exposition Grounds. Address, W. F. Massey, Raleigh, N. C.

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THE newly appointed and confirmed chief of horticulture for the World's Fair, John M. Samuels, is 43 years of age and a native of Kentucky. He has been and still is very actively engaged in the nursery business and in extensive fruit growing operations in the south. In the course of his business he has visited nearly every state in the Union, and has also inspected the horticultural centers of Europe. His experience and broad culture, combined with activity and energy, promise good results for the division of horticulture, and there is general satisfaction at his appointment after the long contention against the efforts of the wine interests to make horticulture a tail to their kite.

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READERS OF THE AMERICAN GARDEN are requested to bag a few tomatoes, selecting those of small size—an inch or so in diameter. Then let them mark other tomatoes of the same size for comparison. If, as has occurred at the experiment grounds of the *Rural New-Yorker*, the bagged specimens ripen fully and evenly a week or more before those not bagged, it is evident that bagging the earliest set fruits will prove a profitable thing for those who aim to be among the first in the market. For several years past, the earliest tomatoes have brought such high prices as to render culture under glass remunerative. Oddly enough, bagging intensifies the color, and causes the flesh about the stem to ripen as early and perfectly as any other part.

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NEW GRAPE, EARLY OHIO.—C. S. Curtis, Co., Portland, N. Y. sent a basket of this grape under date of Sept. 3. They write: "We have been picking since August 24. Last year we picked the vines nearly clean August 17 and 18, and for the four years we have tested it, it has proven to be one to two weeks earlier than

Moore's Early. It is as hardy as Concord, a vigorous grower and very productive." Specimens were received on Sept. 4 in fair condition. Berries black, with bloom, of medium size, round and clinging to the stem well; bunches small to medium, not shouldered or but slightly so; skin about like Concord, a trifle firmer; pulp half tender with some acidity. It is not a grape of high quality in comparison with other sorts.

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A NEW PLUM.—I sent you samples of a plum, on August 19, that originated with me about eight years ago. They are pronounced by good judges here to be the most magnificent plums they have ever seen. Truly they are a sight to behold as they hang upon the tree—they are so large and showy. Tree a strong, healthy grower, of good shape and wonderful bearer. The plums are covered with a very beautiful bloom. Please report in what shape they reached you, and what you think of them.—D. BUNDY, *Colerain, Ohio.*

[These plums were large—nearly or quite two inches in their longest diameter—with a firm skin and tender, juicy flesh, of exquisite flavor. They arrived in excellent condition, with their beautiful bloom still upon them.—ED.]

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SOME GOOD PEARS.—General William H. Noble, Bridgeport, Conn. sends a box of handsome pears, which are correctly named according to Downing. Canandaigua was delicious in flavor and very juicy. Amanalis is coarse fleshed, very juicy, not so buttery as Bartlett and of lower quality in general. Dunmore is a very juicy pear, with a tender white flesh, somewhat spicy in flavor, perhaps not quite up to Bartlett in general quality. Hericart has a perfumed juice, of medium size, flesh white and fine grained, buttery but not rich. The strongest point with all these pears is their earliness. General Noble considers the Hericart one of the finest of early pears in texture, keeping qualities and delicate aroma, believing that no soft pear excels it. The confinement in a close package may have injured the quality of the specimens received.

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GREENHOUSE HEATING.—In this season of greenhouse construction, the following letter from the well known Herendeen Manufacturing Company, will be appreciated: "In our new book on heating by water and steam, we advocate a different method of figuring greenhouses than heretofore employed, namely, by exposure; that is counting in the entire exterior surface, glass, sides and ends. The old method was simply the glass surface alone, and was liable to error through varying differences in construction and location of the sides and ends. We also have prepared a table which is conservative, and based on a large number of actual trials showing the amount of square feet of pipe necessary to heat any given number of square feet of exposure to a maximum night temperature of 50 degrees, and also what will be necessary to heat the same amount of exposure to a higher temperature of 60 degrees. This latter is the highest temperature that florists commonly want.

"In computing the total exposure of the greenhouse, we add to the actual square feet of glass, one-third of the square feet of the ends and exposed outside wall surface. All this you will see worked out in the table given on page 11. After finding the number of square feet of piping that will be necessary to heat the house to the given temperature, then it is a very easy thing to transfer the square feet of pipe into lineal feet of whatever sized pipe may be chosen by referring to the table shown on page 9 of the catalogue.

"We have also given a resumé of the different methods of piping greenhouses for steam or hot-water, and for hot-water both the old and the new way of piping. As to the relative merits of the two systems of heating, we find that many leading florists have varying views, but at present the bulk of testimonials seems to be in favor of hot-water piped in the new way, that is with small pipes, as compared with the old fashioned way of using large four-inch pipes."

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THE HORTICULTURAL DEPARTMENT OF THE WORLD'S COLUMBIAN EXPOSITION, to be held in Chicago in 1893, is expected to excel anything heretofore attempted. The magnificent proportions and architectural beauty of the buildings designed for this department are upon a scale of unequaled grandeur, and will be located immediately south of the entrance to Jackson Park in the main portion of the World's Fair grounds. This building is 1,000 feet long, with an extreme width of 286 feet. The plan is a central pavilion with two end pavilions, each connected to the center pavilion by front and rear curtains, forming two interior courts, each 88 by 270 feet. These courts are beautifully decorated in color, and planted with ornamental shrubs and flowers. The main feature, or central pavilion, is roofed by a crystal dome 187 feet in diameter and 113 feet in height, under which will be exhibited the tallest palms, bamboos, and tree ferns that can be procured. There is a gallery in each of the pavilions. The galleries of the end pavilions are designed for cafes, the situation and surroundings being particularly well adapted to recreation and refreshment, and from the arcades, which surround them, charming views of the grounds can be obtained. Proper provision will be made for heating and ventilating, and every detail carried out to perfection. The contracts for the building have been let, and the cost is estimated at $400,000.

May we hope to enlist your co-operation in any manner you may deem proper in furtherance of the object of the managers to make this department especially interesting and attractive? Any suggestions you may be pleased to make will be duly appreciated and acknowledged.

The Society of American Florists, at their recent International convention held in Toronto, manifested

great enthusiasm in making the class of Floriculture one of great interest at the World's Fair, and appointed a special committee to look after the work. It is likely they will, in addition to their individual exhibits, make a splendid showing collectively in the interest of the society.—JAMES ALLISON, *Acting Chief, Department of Horticulture.*

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THE Seventh Annual Session of the Society of American Florists convened on Tuesday, August 18th, 1891, in the Pavilion at the Horticultural Gardens, Toronto, Canada. The attendance was quite large, and from all sections of the country. Mayor Clarke of Toronto, welcomed the society in a neat speech, and remarks of welcome were also made by Alderman Score, Hallam, Orr and Leslie, and Warden Massie. The response by Judge C. W. Hoitt, of Nashua, N. H. was eloquent, and was listened to with marked attention.

The president, M. H. Norton, of Boston, Mass., delivered his address, which congratulated the society on its prosperity, alluded to the work of the committee on nomenclature, recommended intelligent industry on the young men entering the business, called attention to the necessity for selecting a specialty to obtain profitable results, emphasized the benefits arising from producing only first-class stock, commended the work of this society and the local bodies in doing away with foolish jealousies, complimented the availability of women for commercial floriculture, alluded to the benefits arising from well conducted exhibitions, and bespoke constant attendance and careful attention to the essays and papers presented.

Secretary Stewart's report showed that the membership in 1889 was 827, and in 1800, 926. From January 1st, 1891, up to August 10th, there have been added to to the roll 62 new names. The number of new members during that period is considerably in excess of former years.

The treasurer's report showed that the society's income during the past year was $3,344.86, and the expenditure $2,318.32, leaving a balance on hand of $1,026.55.

The place for the next meeting was decided upon as Washington, D. C., and the following officers were elected: president, James Dean, Bay Ridge, N. Y.; vice president, Wm. R. Smith, Washington, D. D.; secretary, Wm. J. Stewart, Boston, Mass.; treasurer, M. A. Hunt, Terre Haute, Indiana.

The various papers and essays presented were not as fully discussed as was deemed desirable. Many of them were very well written, and worthy better attention than they received. Important action was taken regarding the World's Fair, and an unanimous recommendation made for the appointment of John Thorpe as chief of floriculture. James Allison, acting chief of horticulture for the World's Fair, addressed the society in regard to the expected exhibits. He described the horticultural building which is to be erected at the Exposition. It will be 1,000 feet long, with a width of 286 feet. There have been assigned about 200,000 square feet of ground in addition to this building for such purposes as may be required for the horticultural department. A committee of five, consisting of Messrs. John Chambers, of Toronto; Robert Craig, of Philadelphia; John S. Bush, of New York; Henry A. Siebrecht, of New York, and F. L. Harris, of Wellesley, Mass., was appointed as an advisory body, to act for the society in regard to the World's Fair. It was resolved to recommend no one for the position of chief of horticulture.

The executive committee was given power to use efforts to secure from the government a more uniform system of valuation of imports.

The society was entertained by Alderman Hallam at his spacious grounds on Wednesday afternoon, and on Friday were given by the Toronto Florists' Club a sail on the lake, succeeded by a banquet at Exhibition Park.

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NEBRASKA HORTICULTURISTS held their semi-annual meeting at Hastings, in August. Special attention was paid to small fruit.

*Raspberry Culture.*—W. J. Hesser has an apple orchard 15 to 18 years old, planted 32 feet apart each way; between the rows he plants three rows of raspberries. As the apple trees are of large size now, the raspberries are in dense shade, which Mr. Hesser thinks a prime necessity in successful raspberry growing. It is impossible to get a horse into this thicket to cultivate. Mr. H. keeps men at work with hoes all the time, if necessary, to keep weeds down, and it pays. When the canes have made a growth of about two feet, he pinches back two to four inches of the top; this is repeated every week for four or five weeks, in order to get every cane that may have been under size the weeks before. Each cane is pinched back but once, although care is taken to check the upward growth of all. Two objects are in view: to make the plants upright and stocky, and to cause as many side-shoots as possible to increase the bearing capacity. As soon as the berries are all picked, all the old wood is cut out. Mr. Hesser thinks the new canes make a much nicer growth if this is not delayed till winter.

*Best Old and New Variety of Cherry.*—E. F. Stephens says that the people of Nebraska are planting largely of English Morello and Early Richmond. There is complaint against Early Richmond, because of the tenderness of its fruit buds. He thought the English Morello our best variety. Of the new ones introduced by Prof. J. L. Budd, of Iowa, he has tried Spate Amarelle, Suisse Fruhe Weichsel, Lutovka, 23- 25- 26- and 27-Orel, Bessarabin, Vilne Sweet, Brussler Braune, Yellow Glass and Ostheim. There seems to be some difference in the Ostheim, as introduced by different persons; Mr. Stephens calls one of them Ostheim and the other Minnesota Ostheim. The latter is much like the old sprouting Morello; a good hardy tree, but of little value, as the fruit is too small. A native of Germany tells the writer that these differences are noted in his country, and that one is called Ostheim and the other Ostheimer, the latter being the desirable variety. Mr. Stephens thinks Ostheim a decided acquisition; tree hardy and healthy;

fruit larger and of better quality than the English Morello, and fully as large a bearer. With the Ostheim he would watch carefully Ludovka, Yellow Glass and Vilne Sweet. In his opinion, most persons pick cherries too soon; he finds that his English Morellos, if left on the trees, grow better in flavor up to the last of July.

*On Strawberry Culture.*—J. W. Stevenson thinks every farmer should have a patch of strawberries; the cost is little, not requiring more care than the same area in potatoes, and the yield in bushels will nearly equal the potatoes. Spring planting in Nebraska produces best results, on account of dry fall weather. Plant on rich, well-drained soil, but do not plow too deeply; sub-soiling done with an ordinary Katydid breaking plow is one of the best aids to success. Plant 3½ feet by 18 inches apart. Every fourth row should be fertilizing sorts. Captain Jack is the best all around plant for a fertilizer. Never allow the plants to get too thick, as it decreases the size and quality of fruit.

R. D. McGeehan tests annually 50 to 100 varieties, and he is accounted to be the best western authority. Any variety, on fruiting the first time, that does not have at least one point of superiority over the older sorts is promptly destroyed. Others of more merit are tried again the next year, and compared with known sorts. He names Warfield No. 2, Bubach No. 5, Haverland, Michel's Early, Parker Earle and Racster as possessing many desirable qualities. He would name Warfield as the very best, with Racster as a fertilizer.

L. O. Williams advocated preparation for picking fully before the season opens, for though the strawberry season comes during the longest days of the year, they are not long enough, even if we adopt the "eight hour" system (of eight hours in the forenoon and eight in the afternoon). Material for boxes and crates should be secured two months beforehand, to be made up during rainy days in April and May. Berry pickers should be engaged beforehand, to secure the best. Women of ambition make the best pickers, and men who are not "above" getting down on their knees, second best; and there are some boys and girls of 13 years and over who may do well if looked after carefully. Best plan of payment is to give 2 cents a quart for steady, all-season pickers, beginning with strawberries and ending with raspberries and blackberries, though the latter can be picked in a fruitful season for 1½ cents.

Each picker is given a stand holding six quart boxes, and as fast as this is filled it is taken to the fruit shed, where the foreman gives the picker a tin check stamped with my initials for each six quarts brought in. At night these checks are called in, and the pickers given credit for the day's work on a berry card. At the week's end each picker is paid off at 1½ cents per quart, the other half cent being retained until the season is over, as "hostage."

The most important part of the business is to secure the best price in marketing. The main qualifications of a good salesman are confidence in his goods as well as in himself, and an honest desire to please his customers, together with a quick and keen perception of business men and manners. Above all other considerations, the berry grower should be within easy reach of a ready market; if he depends upon a distant market, express companies and commission men, he will never make much of a success. I speak from experience. The last year I was at Glenwood (20 miles from Council Bluffs) my strawberry crop of 1,400 quarts netted me, after paying express and commissions, 7 cents per quart. This year, which I think has been an average one, my berries netted me, above commission, fully 9½ cents. Estimating the yield at 5,000 quarts per acre, this difference of 2½ cents would pay $125 per acre in a single year. The saving of crates will pay $50 an acre more, making $175 per acre saved each year by being within 3 or 4 miles of a ready market.

*Native Trees and Shrubs.*—C. E. Bessy gave a very interesting talk on the native trees and shrubs of Nebraska. He finds that nearly all the trees of eastern Nebraska have evidently come across the river from other states, and are gradually working their way westward; those in the northwest have come down from the mountains. Southeast Nebraska has 48 species, northeast 28, northwest 19, southwest 13. Thirteen species are distributed all over the state, among which are box-elder and hackberry. There are ten different oaks, five hickories, two elms, four poplars, the red mulberry, linden, etc., etc.

*Commercial Fruit Growing.*—Mr. Stephens said that the glowing stories told of fortunes made in California in growing fruit had induced many persons to go into that business. No doubt fortunes had been made there, and would continue to be made, but he thought Nebraska a formidable rival to California in this line. We may not have the semi-tropical climate, but we also are not troubled with so many insect pests. If we turn our attention to growing the apple, grape, plum, cherry and the berries, there is no doubt but that large profits can be made. He would not advise planting very large areas.

Cherries should be planted with reference to the probable demand for them near the plantation, as they are perishable, and can not be kept long waiting for better prices. Apples can be planted in any amount, as the market for them is not local, and they can be held an indefinite period until better prices can be obtained. Formerly the cost of caring for an apple orchard the first ten years, or until it was in profitable bearing, was rated at $75 per acre; but now by judicious management and proper selection of varieties, this can be reduced 50 per cent. Strawberries and raspberries can be grown between the rows of apple trees without detriment to them, and the cultivation of both is lessened in cost. This year his Duchess of Oldenburg trees are yielding at the rate of 1,000 bushels per acre, and they average 60 cents per bushel. In 1889 one variety yielded 1,500 bushels per acre. Grapes sell at good prices, rarely below 5 cents a pound. Over 50 varieties can be grown successfully with a little care. In flavor they are not surpassed by grapes grown elsewhere; our climate being not too moist, there is more grape sugar in the fruit here than in other states.

C. Q. DeFrance.

# FOREIGN NOTES.

THE NARCISSUS FLY (*Merodon narcissi*) is reported to be increasing at a rapid rate in the Scilly Islands, and much damage has been done to the bulbs during the past season.

SWEET ROSE, LADY PENZANCE.—This is a charming single variety, with metallic, rosy bronze flowers, yellow at the base of the petals. The flowers are about two inches in diameter, and the foliage fragrant. The plant was obtained by crossing the common sweet briar with the Austrian copper briar.—*Journal of Horticulture.*

SPAIN HAS ABOUT 500,000 acres of cork forest. In localities exposed to the north the cork oak does better than in those exposed to the south, and it is seldom found in calcareous soil, preferring always that of feldspar. It grows and develops in soil of very little depth, and sometimes in very stony ground.—*Gardeners' Magazine.*

FRUIT PRODUCTION IN THE CAUCASUS is receiving attention, and for the first time a shipment of fruit has recently been made to England. It is believed that the region of the Caucasus is capable of great development in the production of fruit, especially apples, cherries, figs and pears.

CYPRIPEDIUM BRAGAIANUM is a handsome hybrid obtained from a cross between *C. Boxallii* var. *atratum* and *C. hirsutissimum* var. *cærulescens* The flowers are comparatively large, the dorsal sepals maroon, passing to green, with white margin; the petals undulate, bright rose with green base, freely spotted with maroon, the labellum greenish yellow, shaded purple brown.—*Lindenia.*

FLOWER CULTURE IN THE ALPES-MARITIMES.—The annual productions of flower culture in this section of France represent a sum of about $3,025,000. Nearly 4,000,000 pounds of orange flowers are grown for the perfume market, 2,000,000 pounds of roses, 314,000 pounds of violets, 294,000 pounds of jasmine, and smaller quantities of tuberoses, jonquils, etc.

VARIEGATED ROSE.—Messers. Hannaford & Son, of Teignmouth, send us leaves of a rose of the type of Charles Lefebre beautifully blotched with gold, and the younger ones flushed with bronze and crimson. The variegation has proved constant for the last four years, and that being the case, the rose appears to us well worth propagation as a variation.—*Gardeners' Chronicle.*

THE FIG promises to become of much greater economic importance than has yet been the case. The fruit is now being utilized in some parts of France and in Algeria in the manufacture of wine, which is said to differ but little from that wine from grapes, and the extract obtained from the fruit and young shoots contains a principle which it is believed will prove valuable as a medicine.—*Gardeners' Magazine.*

PHAJUS HYBRIDUS, VAR. COOKSONII.—This distinct and handsome hybrid is the product of seeds saved from *Phajus Wallichii* crossed with the pollen of *P. tuberculosus.* The plant is intermediate between the two parents and seems to have a much stronger constitution than its parent. The hybrid was submitted to the orchid committee of the Horticultural Society, and obtained the highest award given to new orchids. It is said to have flowered in a little over two years from the the time of sowing the seed.—*Reichenbachia.*

PRIMULA OBCONICA is a flower of rising importance, in spite of the hurtfulness of the leaves to sensitive skins. Mr. Bones, of Chiswick, has worked successfully with the flower, and has obtained varieties that show a marked advance on existing types. The flowers are larger, fuller and less "starry" than the original *P. obconica*, so that a new race of greenhouse primulas is in prospect.—*The Gardeners' Magazine.*

HIMALAYAN RHODODENDRONS are fast proving themselves to be the coming flower for house decoration. The flowers can be cut with long stems, as, when established, the plants make growths from fifteen to twenty-seven inches long in a season. These, when bearing three or four shoots, carrying each a truss of bloom with from three to ten flowers in each, make a grand display. I can particularly recommend the following for cut flowers: *R. fragantissimum*, *R. lævigatum*, *R. Edgeworthi*, *R. ciliatum*, etc.—A. EVANS, in *The Garden.*

FRENCH SUGAR BEETS.—The deficit in the French beet crop is estimated at 1,500,000 tons, and this will probably seriously affect the sugar trade. The industry is, to a great extent, subsidized by the government. At present there are 413 factories at work, with steam up to 72,000 horse power, giving employment to 25,000 workmen, among whom about $6,000,000 are annually distributed. The beet crop is the second most important in French agriculture, and its failure—which means a deficit of 600,000,000 pounds of sugar—is attributable to the combined effects of a wet spring and a sunless summer.—*The Garden.*

AGRICULTURAL EDUCATION IN WURTEMBURG is cared for by numerous schools and societies, and appears to be fully appreciated by the peasants and others. Almost every institution of this sort had greater demands made upon it in 1889 than in the previous year. The number of pupils in the schools increased so that new schools were established. The travelling teachers of husbandry, as well as those especially devoted to orchards and vineyards, were in great request among local societies and by the communal authorities. Altogether, some 23,400 persons attended agricultural schools or lectures on husbandry during the year 1889.—*Nature.*

# BRAINS IN BOOKS.

A MEATY REVIEW OF THE LATEST WORK OF THE BRAIN WORKERS IN HORTICULTURE.

TYPICAL ELMS AND OTHER TREES OF MASSACHUSETTS. *By Lorin L. Daine and Henry Brooks, with an Introductory Chapter by Oliver Wendell Holmes. 4-to; 58 plates. Boston: Little, Brown & Co.* This superb volume is a chronicle of the great and historic trees of Massachusetts, illustrated by the most exquisite photo-gelatine plates. It is just such a work as we should expect to grow out of the thought and associations of an old state whose people have always lived close to nature; for among such people individual objects in nature come to have a personality. The specimen trees are selected from all parts of the state, and they include, besides elms, such trees as great oaks, chestnut, sassafras, willow, pines, maples, etc. The inspiration of the book appears to have been a desire of Oliver Wendell Holmes, expressed in "The Autocrat of the Breakfast Table" some thirty years ago. It is gratifying to know that the desire has matured while the Autocrat is still with us to introduce it to the public. He writes as a naturalist, describing the various forms into which the elm tree grows, and also in reflective mood in contemplation of our disappearing trees and forests. The letter-press is supplied by Mr. Daine, who is one of the authors of the excellent Middlesex Flora, and who is therefore eminently prepared to treat of the natural history of the trees. The plates are by Henry Brooks, who must have been inspired by an indefatigable zeal to have selected with so much care the times and seasons for his work. Only those who have tried to photograph large trees at their best can appreciate the labor which his task has involved. This beautiful book fills an unique place in our literature, but it ought, at the same time, to open a field for other similar efforts.

THE PRINCIPLES OF AGRICULTURE FOR COMMON SCHOOLS. *By I. O. Winslow. American Book Co. Pp. 152. Illustrated.* This is designed for pupils as young as twelve or fourteen years. It is well written and well made, and the information appears to be exact throughout; but we fear that it will never win its way in the common schools. Of course, the methods of teaching agriculture to the young are yet entirely experimental, and we cannot pronounce definitely upon the relative merits of different systems. But this book will be "dry" to school children. It is too stiff throughout, contains too many bare and isolated facts, is too much after the style of the "natural philosophy." The pupil will be obliged to memorize it. It will not teach him first of all to observe. We believe that a book on agriculture for the young must be written from the *field* side, not from the *laboratory* side. There is very little of the vital, throbbing, practical aspect of agriculture in the book. Youth, in our modern system of education, are taught first to see and to appreciate, and later come the reasons and abstract facts. In the hands of a bright and sympathetic teacher the book can be made to serve a very useful purpose, for it is clear, concise and methodical; but such teachers for agricultural subjects are scarce. To every farmer we recommend the book, for it will give him a better understanding of the forces with which he has to deal than any other book of equal length. The book has seven chapters, devoted to The Substances of the Earth, Land and Water, The Atmosphere, Plants, Fertilizers, Cultivation, Animals.

PRACTICAL FARM CHEMISTRY: *A Hand-book of Profitable Crop Feeding. By. T. Greiner, La Salle, N. Y. Pp. 163.* The title of the book is a misnomer, for it is not a manual of farm chemistry. It does not discuss the physiological chemistry of plants or animals, nor the chemistry of animal foods. It is a chemistry of manures and their application, and it is all the better for the limitation. It is the first attempt among us to place in small compass a very popular account of the complex relations of soils and plant foods. It goes over much ground, treating of the leading elementary substances, the chemical characteristics of the soil, and the various kinds of fertilizers and how best to apply them. The treatment is lucid and methodical and every intelligent farmer can follow it. The author does not appear to have sufficiently imbibed the recent teachings concerning the *life* of the soil, but regards soil largely as a mere mechanical mixture of many ingredients. Nitrification, for instance, is dismissed as follows: "Nitric acid is also produced in the soil from nitrogenous substances by means of a low form of organism. Scientists usually tell us of a vegetable ferment, and then leave the matter to our imagination." The action of this 'vegetable ferment' has passed beyond the realm of imagination into one of fact, and there can be no adequate discussion of soil fertility without a consideration of it. It has very recently given a new meaning to tillage itself, and it is overturning many of the older notions. It is true, as the author remarks in his introduction, that "the farming of the present day is changing more and more to a process of manufacturing crops out of raw materials largely supplied by man," and that "the soil only serves us as a medium and implement of manufacture." But this manufacture is not the lifeless one which the volume seems to contemplate; and it is by no means certain that we can add up the results which so many pounds of this and so many ounces of that will ever produce, even when all the chemical conditions are known. There are a few other portions of the book which strike us as not quite abreast of the latest teachings. This is particularly true of the dis-

cussion of carbon, on page 20. It is stated as an undisputed fact that carbon is taken up by the roots, but the later vegetable physiologists dispute it, and the experiments of Moll and others appear to prove that it is taken in only by aërial parts. Asa Gray, it is true, persisted to the last, upon philosophical grounds, that the roots do take in carbonic acid, and some botanists and chemists are of the same mind; but the question is by no means a settled one, and all reasoning upon it for the benefit of the farmer must be cautiously done.

We are not censuring the book as a whole, for we like it and recommend it. We know of no little treatise so useful to the novice in matters of crop-feeding.

THE CAULIFLOWER. *By A. A. Crozier, Ann Arbor, Mich. Pp. 230. Illustrated.* This adds another to our very short list of good manuals on special crops. Mr. Crozier has grown cauliflowers for market, and he is a well-known botanist and experimenter. He has, therefore, brought together in concise and handy form all the most practical information concerning the cauliflower, and it will be strange if the book does not extend the interest in this excellent vegetable. The cauliflower is a crop which is thought to be difficult to grow, but Mr. Crozier declares that it is more easily grown than celery. But certain rules must be followed closely, and these are fully explained. "It is a waste of time," for one thing, "to attempt to have cauliflowers head in our hot summer months, and until our markets are better supplied than they now are with vegetables, it will not often pay to do much with the spring crop." While this statement may be rather too strong, it is nevertheless good advice, and ought to do much to counteract the inconsiderate advice often given by dealers. The limitations of climate are among the most important points in cauliflower culture, and gardeners have not yet learned what they are. Foreign gardeners usually attempt to follow the methods of European countries, and failure results; and these failures discourage native gardeners. Thus it has happened, as Mr. Crozier thinks, that the cauliflower receives less general attention now than it did forty years ago.

The book covers the whole subject of cauliflower and broccoli growing, even to cooking, botanical features and history. It considers the whole country, from Alaska and Puget Sound to the south and to New England. The chapter on seed growing is excellent, and that upon varieties is the best discussion of the subject which we know. We fail to find in the book any reference to the club-root of cauliflowers—an omission which detracts much from its value.

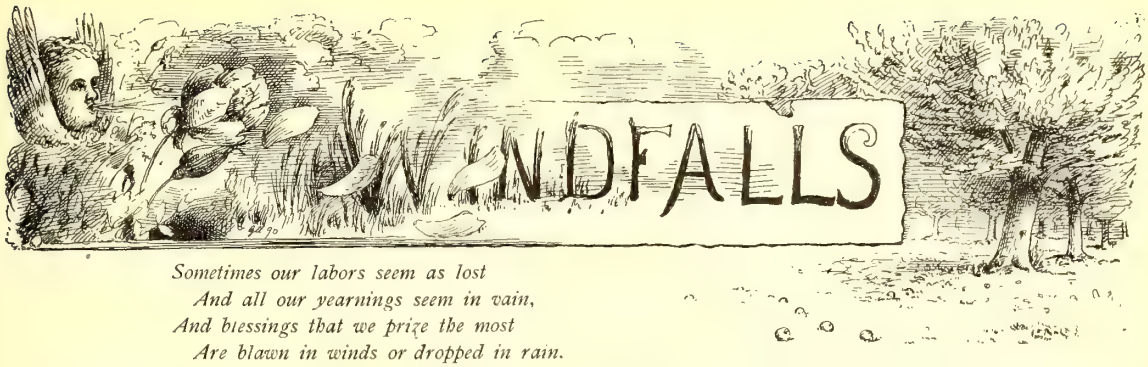
INSECTS AND INSECTICIDES. *By Clarence M. Weed. Pp. 281. Illustrated.* Everyone who grows a plant or raises stock should own this attractive volume. It is eminently a practical and useful book. It describes and figures all the worst insects met with upon the farm and in the garden, including those which attack domestic animals; and household pests are also considered. Everywhere the most approved preventives and remedies are given. It is concise, clear, well-printed, and ought to find a large sale. The author's experience in the direct study of economic entomology gives weight to all the recommendations.

OUTLINES OF ENTOMOLOGY. *By Miss Mary E. Murtfeldt, Kirkwood, Mo. Pp. 135. Illustrated.* This little manual is "prepared for the use of farmers and horticulturists" "at the request of the secretary of the state board of agriculture and the state horticultural society of Missiouri." Its aim is to give a pleasant account of insects in general, with illustrations drawn from familiar examples, and to give the farmer sufficient entomological information to enable him to understand the many writings of the day. We think that the book is needed and that it is well adapted to its purpose. Taken in connection with one or two works on economic entomology, like Weed's, Saunders', or others, it makes an invaluable addition to any farmer's library; and to the young student of natural history it will be entertaining. The author is well known as an entomologist.

A SYLLABUS OF HORTICULTURE FOR THE USE OF CLASSES. *By E. S. Goff. Pp. 110.* Professor Goff has put together his lecture notes into a convenient form for use and reference, and the result is a little volume which is adapted to students in some other institutions; and it will be useful to anyone who desires to acquire the underlying principles of plant nutrition, growth, and behavior. The book is, strictly speaking, not so much horticulture as botany, but it occupies an open field.

THE CHOCOLATE PLANT AND ITS PRODUCTS. *By Walter Baker & Co. Pp. 40. Illustrated.* This is a most dainty and attractive brochure. It discusses the early history of chocolate and gives fac similes of several curious old prints. The manufacture of chocolate and cocoa, their physiological effects, and the latest culinary advice, are considered. The book is printed upon extra heavy paper and is bound in embellished covers.

L. H. B.




*Sometimes our labors seem as lost*
*And all our yearnings seem in vain,*
*And blessings that we prize the most*
*Are blawn in winds or dropped in rain.*

**Mariana Stock for the Peach.**—The Mariana plum has recently been recommended as a good stock for the peach. Stark Bros., of the Stark Nurseries, Louisiana, Mo., write us, however, that the peach does not make a permanent union upon Mariana. Peach buds take well upon it, but many of them perish during the first summer and others the next year. The white fleshed peaches appear to survive longer than the yellow fleshed, but few will live to produce fruit. Others have had similar experience. The Starks are strong in their advocacy of the Mariana stock for prunes, plums and apricots, however, particularly for arid regions. They have large orchards near Denver upon Mariana roots, planted in 1888, and now loaded with their second crop. Lombard, Prune d' Agen, McLaughlin, Imperial Gage and others thrive there admirably upon Mariana wholly without irrigation. It is interesting to know that the Japanese plums, *Prunus Simoni*, Pond, Shipper's Pride, Bradshaw and many of the natives are not hardy in that climate.

**Japan Plums in Texas.**—This section is to be a great fruit country. It was considered only good for pasture until a few years ago; very little had been done in horticulture or general farming; both are now in their infancy. I planted in the spring of 1887 some Kelsey plum, one year old stock. They have done splendidly. They produced some fine fruit last year. This year the crop was very large for the age of the trees; some which I measured, were 8 inches in circumference. I feel so well pleased with them that we shall plant about 1,000 trees of the Japan kind next winter. Grapes have also done well with me.—H. HELDEMFELS, *Bee Co., Texas.*

**Strawberries in Maryland.**—In this county the strawberry crop was a partial failure, the late frost almost totally destroying some varieties on high land. On this farm the different varieties proved to be about as follows: Michel's Early equaled Crystal City and Hoffman in earliness, and was larger, of better quality and twice as productive as either; a fairly good shipper and a good grower. It is our best early variety. Lovett's Early is a good grower, and on our spring set plants the fruit seemed of fair size, good shape and solid. Stevens, a good grower, early as Hoffman, about same size, equally as solid and more productive. Alabama is a little later and a little larger than Stevens, otherwise about the same. Lady Rusk, spring set plants have seen no fruit; plants grow well. Edgar Queen resembles Bubach No. 5; a better grower. Tippecanoe grows well, is a good yielder, of large size, fine form and flavor; valuable. Felton rusts badly; a few large berries; not profitable here. Mrs. Cleveland is one of the finest plants we have; fruit medium to large; good quality and productive. Florence is no good. Great Pacific promises to be valuable; is thrifty, productive, of large size and fine form. Of Parker Earle we only had a few bunches in fruit, but I think such large quantities of berries were never before seen to the plant as were on these; size medium to large, quality good; season medium to late. Crawford is one of our best late kinds when given good soil and high culture; will not bear neglect. Saunders spring-set plants were vigorous; berries large and fine. Beder Wood (Racster), spring-set plants promise well and gave some very fine fruit. Shaw is Sharpless or Great Ontario renamed. Viola is old Monarch of the West renamed. Bubach No. 5 is one of the best; gives a large yield of large berries that command a good price; is a little soft and must be well handled and picked often to give best results. Haverland is my choice of all the berries I have seen; if confined to one variety it is the most profitable market berry on my farm; large size, fine form and color; a good carrier and immensely productive. Bessie is a new variety from Alabama that promises well from spring set plants; a sturdy, free grower; fruit large size and early. Eureka is not much good here; moderately productive and of large size, but too soft for practical purposes. Daisy is moderately good, but there are many better. Gandy is a good late sort of fine flavor and large size; season late, but short. Pearl is a fine berry; early, above medium size; good form and color; solid and a good market berry; rusts in summer but does not seem to affect the fruit. The crop of Jessie was all killed by frost; in three years have found it of little value here. Pineapple is good quality, irregular in shape; color of brick dust; soft, and of little value. Warfield No. 2 is medium size, well-colored, immensely productive and valuable for market; one of the most certain to bear a full crop. Niama is no good. May King is usually a good berry, but a failure this year, late frosts destroying the fruit. Hoffman is one of the best shippers in cultivation;

medium size, very early, hence it is often profitable, although it takes good culture to get what one might consider a half crop.—W. T. ALLEN, JR., *Wicomico Co., Md.*

**Three Good Michigan Peaches.**—"By the courtesy of Mr. C. Engle, of Paw Paw, we have enjoyed the sight and taste of a basket of Engle's Rareripe peaches. The variety is a seedling of Early Crawford and was originated by Mr. Engle, who has done considerable work of great value in producing new peaches and grapes. It is very much like its parent in shape, in color of flesh and skin, and in flavor, being certainly its equal in all these respects. But it has the great merit of being hardier and earlier. Mr. Engle began shipping the 13th of August and ceased the 25th. He had 500 baskets which sold for 57 to 75 cents per basket, most of them going at 60 cents. Because of its season, fine quality, and handsome appearance, we know of no more desirable market peach."

"What is known as the "Early Michigan" peach was originated by J. T. Husted of Lowell, only seven years since, when he called a committee of the farmers together to name two varieties of very promising early peaches which he had just brought into bearing. Secretary Brown and several other members of the present Grand River Valley Horticultural society were members of the committee, and they named one the Husted and the other the early Michigan. They are nearly identical, and are the earliest freestone peach raised in the state. They are both hard and hardy. That is, the trees are not subject to disease or winter killing, and the fruit bears handling and shipment remarkably well. Its beautiful appearance and fine quality were testified to by every member who was at the meeting yesterday. —*Allegan (Mich.) Gazette.*

**A Curious Olive Branch.**—In the summer of 1891, the National Encampment of the G. A. R. met in De-

troit, and for months previously the city was preparing for the grand event, and vast crowds expected. Much was done in the way of floral adornment, especially on the Island Park, composed of 750 acres. For once, the city fathers were wise enough to appoint for superintendent of the park, a real gardener, instead of a politician, and the result was a great increase in flower beds and floral designs, especially for the G. A. R. There are five greenhouses, each 18 by 90, and 145,000 plants were sent out to adorn the different parks in the city, and especially for Belle Isle, as the island park is called. Mounds twenty feet high, surmounted by palms, had different symbols around the sides. Ribbon beds, scroll work, lettering were on every hand. In front of the Casino was the arch of peace, made of alternantheras and echeverias. The arch was first made of boxes and fitted together; then taken apart, filled with earth, and the five thousand plants put in. Being so high in the air, the earth dried so rapidly, that the arch had to be watered with hose every few hours in very warm weather. The lettering was very distinct, and around the base of each column was coleus, its intense red color set off by the grass plot. But the most interesting exhibit was in the greenhouse. Florida sent a car load of specimens in the plant line, some of them enormous. Among the rest was a century plant that taxed the strength of the working force on the island to put it in its place among the ferns and begonias. It was labelled, "An Olive Branch from an ex-Confederate." As long as that century plant lives and blooms, Michigan will cherish kindly feelings towards Florida. And may it live, in all its twisted ugliness, for a thousand years! Another curious plant that came as a companion was a cactus, shaped something like a human foot. The smaller part was in the ground of a large flower pot and looked like a heel. The other part spread out, and four round bulgy looking toes grew out of it!—A. L.

**Oonshiu and Kishiu Oranges.**—From an interesting letter from Kumamoto, Japan, to H. E. Amoore, of California, by him sent to us, we make some notes. The writer was much pleased to learn of the progress made in planting the Oonshiu orange in America. He hoped Americans would learn to propagate and plant this orange properly. The Oonshiu and Kishiu oranges, he says, are the best in his country. He thinks it is true that the first Kishiu orange tree was grown from seed brought from Koda, in Higo. The province of Higo has many orange fields of the varieties Koda, Kawachi, Oama, and these fruits in quality all excel those of other provinces.

**Onions in the South.**—I have been familiar with market gardening in Maryland for more years than I care to acknowledge, but I have never seen any one there sow onion seed in March and transplant them. From time out of mind Silver Skin onions have been grown there from sets raised the previous year and planted in fall for early green onions or in spring for ripe ones, and if any one sows onion seed in March and transplants them, he does what seems to me to be an unnecessary thing, for onion seed sown in Maryland (particularly if Italian) in March, will make a fair crop without transplanting, and would, I should think, make less by transplanting at that time. Onion seed sown in Maryland and southward early in October, and transplanted in February and

March will make a fine crop and much larger bulbs than if left as sown. One great advantage in this transplanting is that they are set in freshly worked and manured soil, and if lifted on the tip of a digging fork, and not "pulled," the comparatively uninjured roots will at once take hold of the fresh soil and grow much more vigorously than if left where sown. Where land is plenty and human labor dear or scarce it will not do to set in close rows. For all such crops it is better to run furrows with a plow, wide enough apart for a mule to draw a cultivator through. In these furrows sow the bulk of the fertilizer used and then lap two furrows together over it. Now run a hand roller down the sharp ridge thus made so as to leave a flattened ridge but slightly above the general surface. A garden line stretched along the center of this bed will keep the row straight in setting the plants. Rows in a truck patch, made in this way, for sowing seeds of early stuff or setting plants are much better than lines on a flat surface, being less liable to injury by early spring rains, and being a little above the surface, admit of horse culture at an earlier stage of the crop. The fertilizer being right under the crop is quicker in its action than if used broad cast, just as it should be for early crops. Fine crops of Italian onions are grown here from seed sown in February and not transplanted; but fall sowing and transplanting will make larger bulbs. —W. F. Massey, *N. C.*

**A Pit for Vegetables.**—A pit which is accessible in all kinds of winter weather is a valuable adjunct to the kitchen garden, for, as a rule vegetables keep much better and retain their flavor more perfectly when stored out-doors than when kept in a cellar. If the pit is so constructed that it can be readily entered, it will be of value to the house for storing many things which prove almost worthless if stored in the cellar. Last fall I made a small pit as follows: A well drained corner of the garden was selected and the pit dug 4x8 feet by 4 feet in depth. This was lined with one-inch chestnut boards, nailed to locust corner posts. The roof was made of heavy oak boards, having a pitch sufficient to shed the moisture as it drains through the soil. A man-hole eighteen inches square by twenty inches high is made in one of the lower corners of the roof. The earth that had been dug out was thrown upon the roof, forming a good sized frost-proof mound. A moveable wire screen of half-inch mesh is fitted into the man-hole to keep out mice, rats, etc. A water tight trap-door closes the entrance; a short ladder is used in getting in and out. In this pit we have kept cabbage, turnips, beets, potatoes, celery, apples, etc., in the most excellent condition; the trap-door had been propped open for ventilation nearly the whole winter. Nothing had been frosted or injured by the cold. As this pit is so simple and of easy construction, there is no reason why every garden should not have one.—John F. Rupp, *Penna.*

**Succory or Chicory** (*Cichorum intybus*).—In the June number (page 380) chicory got handled about as badly as it could be. As a weed, possibly it did not deserve a better treatment but in regard to its medicinal properties it certainly deserves a place in every house. In Father S. Knespp's list of herbs he says, "Tea of chicory (*Cichorium intybus*) will take the phlegm and bile from the stomach, purify the liver, spleen and kidneys through the bladder, relieve dyspepsia and improve digestion, by taking for three or four days, every morning and evening, one cupful of this tea." For pressure on the stomach or painful inflammation on the body, scald the chicory—stems, leaves and flowers—wrap in a cloth and apply to the stomach or the inflamed part. Renew the application two or three times a day. The root answers the same purposes as the stalk. It ought to be gathered while in blossom, cut into short pieces, and dried in the shade.—H. A. O., *Philadelphia.*

**New Pansies.**—The old English and Scotch strains that the German seedsmen have taken hold of and subdivided into ever so many varieties remain practically the same under their new names, and I do not see that any improvement has been made in them except in the catalogues where they are rechristened. A really new strain is the Trimardeau, originated by a florist near Paris, France, but it has been greatly improved since its first production. These pansies are very large in every way, with very hardy flowers and foliage, enduring well the extremes of heat and cold, and they give general satisfaction all over the country. Another new strain, also of French origin, is the Odier, or five spotted varieties, which of late years have been greatly improved by the well-known specialists, Cassier and Bugnot, the latter especially introducing new shades of color and flowers which would have been thought impossible a few years ago. These last strains, however, are by no means as hardy as others, owing, I suppose, to closer breeding. These two races are the only really new varieties that have been introduced within the past few years, and that are, in my opinion, of any merit, and I have come to this conclusion after having tried within the past five years everything of not in the pansy line.—*Denys Zirngiebel, before the Society of American Florists.*

**New Hardy Roses.**—My observations upon the rose are chiefly with a view to their adaptation for garden purposes. I can speak of but few this season. Augustine Guinoisseau seems to me an acquisition to the La France group, and likely to prove a valuable addition to this class of roses. The color is a pale rose or cream, and apparently it flowers as freely as La France, the plant making a similar growth. We have now a trio of beautiful flowers; namely, La France, Duchess of Albany and the above, that will undoubtedly prove of great value for summer bedding purposes. If we could add to these a pure white, the group would supply a fine quantity of color for the garden. Gustave Piganeau has a flower of the largest size; color, bright carmine lake; habit, good; petal, firm. I confidently expect this rose to prove an acquisition. The flower is similar to that of the Countess of Oxford. Jeannie Dickson has a striking flower of a bright, cheerful color, rosy pink, and from a single bloom, I am favorably impressed with it. It is another addition to the scentless class of roses, and like the Baroness Rothschild, its

strength will make it a fine exhibition rose. Lady Arthur Hill is another of Dickson's new roses; the form of the flower is rarely equaled, the color rosy lilac, and it appears to be a free bloomer.—*Wm. H. Spooner, before the Society of American Florists.*

**Azaleas for Forcing.** —Vervæneana bears a large double flower of a rich, rosy pink color, broadly margined with white and with a carmine blotch. It is very distinct and free flowering, and it forces well; indeed, it is one of the best of its class. Imperatrice Victoria is perhaps the most beautiful of the double-flowering azaleas, with flowers of rosy pink, banded with pure white. The plant requires careful attention during the hot summer months, or the foliage will turn brown and drop. Madame Louis Vervæne is a most distinct variety, with flowers pure white, striped and spotted with rosy carnation tints. Triomphe de Mont St. Amand bears very large double flowers of a clear rose color, with pure white ribbon and a bright carmine spot on the upper segment. The best of the older varieties are Madame Vandercruysen, Simon Mardner, Empress of India, Emperor of Brazil, Bernhard Andrea, Sakuntala (if Easter is late), and Deutsche Perle (if Easter is early).—*James Dean, before the Society of American Florists.*

**Aristolochia Grandiflora** is now finely in flower at Kew, a plant of it having been kindly presented by Mr. Sturtevant, who found it two years ago in a garden on the Hudson river under the name of *A. pelicana* (see *Garden & Forest*, Vol. III., p. 596). Until Mr. Sturtevant's plants came I do not believe the true *A. grandiflora* had been in cultivation in England for many years, the commoner *A. ornithocephala* being generally grown under that name.

In the house here devoted to *Victoria regia* there is a very vigorous plant of *A. grandiflora* with about twenty flowers and buds upon it, and the large, long-tailed, extraordinary-looking blooms hanging from the roof over the great tray-like leaves of the Victoria have a particularly striking effect. As a stove climber for large houses this aristolochia has quite exceptional claims. It grows very freely in a moist, unshaded house.—*Garden & Forest.*

**Spirea Thunbergii as a Flowering Shrub.**—In the article, "The Gardens of Newport," page 517, I notice that the writer, speaking of that most charming Japanese shrub, *Spirea Thunbergii*, describes it as a beautiful species of low growing foliage shrub, which it certainly is, and then goes on to say that its blossoms, which appear in early spring in advance of the leaves, are of little account. With due respect to the opinion of Mr. Davis, we must ask him to once more look upon this beautiful shrub when in blossom and then reflect. We class it among the foremost group of flowering shrubs, as it is one of the most valuable. Graceful as is its foliage, which your correspondent so well describes, so are its pure, snowy white masses of flowers, which appear very early in spring; in fact it is the first white flowering shrub of the season. When the forsythia with its golden blooms, and the *Pyrus Japonica*, or flowering quince, with its fiery crimson blossoms, announce that spring is at hand, then this unique and most charming spirea makes up the glorious trio. Not enough can be said in praise of this plant with its two distinct charms; viz., its distinct character as a flowering shrub and again as a foliage plant. Our motive in calling attention to these facts is not to criticise, so much as to defend the true merits and value of one of our noblest hardy shrubs, and to correct what we think is an error, though perhaps Newport is not really the Newport in early spring that it is in midsummer, for few people are there to see it bloom. This may account for the error. We should not forget to call attention also to the excellent quality of this *Spirea Thunbergii* as an early forcing shrub if taken in with a ball of earth. It can be prepared in late autumn or any time during the winter, after it has sufficient frost, and put into a temperature of from 60° to 90°, and can be had in flower at from two to four weeks' time.—Henry A. Siebrecht, *New Rochelle, N. Y.*

**Begonia Glorie de Sceaux** is a distinct and beautiful warm greenhouse plant. It is distinct from any other known variety, and is one of the most valuable sorts of recent years. It is a wonderful flower producer during winter. Its manner of growth and foliage are all that can be desired, the leaves being of a dark bronzy plum color with a metallic lustre. The bloom is borne in large compact trusses, the florets are large and perfect in outline, and in color a delightful shade of pink.

To grow this begonia to perfection it should be given a compost of two-thirds well decayed turfy loam, one-third decomposed cow manure and a good sprinkling of sharp sand. Mix well and use the compost rough. In potting use porous or soft baked pots, let them be proportionate to the size of the plants and see that they are well drained. If the pots are one-third filled with drainage it will be none too much. During the winter season or from October to May the plants should be given a light sunny situation and a temperature of 55° to 60°. Water should be given carefully whenever necessary, but not to make the soil sodden. If the pots are well filled with roots, liquid manure may be used once a week.

About May 15 the plants should be set outside in a deep well enriched border in a partially shaded situation where they may be permitted to remain until the middle of September when they are to be taken up and potted. Propagation is readily effected by cuttings, and if the young plants ars liberally treated nice flowering specimens will soon be produced.—Chas. E. Parnell.

**Roses in the South.**—Here in Raleigh the tea roses, and all the everblooming roses, seem more at home than anywhere else on the south Atlantic slope. Raleigh roses are noticeable not only for their abundant bloom, but for their massive growth and the luxuriance of their foliage. Our tenacious red clay soil seems to suit them to perfection. I was particularly struck on a recent visit to Charleston and lower South Carolina, with the impoverish-

ed appearance of the foliage on the roses there. Marechal Niel and other climbers grow there to an immense size, but the thin and puny character of the foliage of all roses in the hot sandy soil was particularly noticeable after seeing the rank greenness of our Raleigh plants. The giant Marechal Niel rose on Dr. Shepard's laboratory, in Charleston, probably the largest in America, hardly casts an appreciable shade with its thin and sparse foliage. The red clays on the granite formation of the Piedmont country of the south grow much finer roses than the hot, sandy lands of the coast.—W. F. MASSEY, *N. C.*

**Perennials as Bedding Plants.**—After estimating that 900,000 plants are annually used in decorating the parks and public squares of Paris, G. Lebrun, in *Le Jardin*, deplores the fact that annuals are so largely used for this purpose and in private gardens, and gives the following list of perennials mingled with a few annuals and biennials which are suitable for bedding purposes. They are arranged in the order of flowering.

*Helleborus niger*, galanthus, narcissus, *Fritillaria imperialis*, tulips, lilies, irises, anemones, wallflowers. *Centaurea montana*, *Hemerocallis fulva*, roses, larkspurs, single and double dahlias, *Lathyrus odoratus*, herbaceous and tree pæonies, columbines, perennial phlox and *Phlox Drummondii*, gladiolus, *Pyrethrum roseum*, *Tradescantia Virginica*, saxifrage, *Gaillardia Lorenziana*, potentilla, veronica, campanula, digitalis, asters, zinnias, antirrhinum, *Coreopsis Drummondii*, *Silene inflata*, *Rudbeckia maxima*, pentstemon, *Lunaria biennis*, pinks, *Agrostis elegans*, etc. For the back and centers of beds, spiræas, honeysuckles, lilacs, syringas, berberry, deutzia, laurel, privet, etc. This collection gives a succession of flowers for all the open months and demands very little care.

**Ipomœa Pandurata.**—Among the "grand novelties" offered by seedsmen last spring, *Ipomœa pandurata* takes a leading position as a "most beautiful, rapid-growing vine, producing a great mass of handsome and graceful foliage, and thousands of large, white flowers, larger and finer than the ordinary moonflower, and which keep perfect several days before fading."

The identity of this plant with one of our worst weeds has already been mentioned by several papers. An article on this subject in the *Ladies' Home Companion* for March 1 was the cause of an inquiry sent to John Lewis Childs, regarding the truth of the *Companion's* statement. In the *Mayflower* for August, Mr. Childs replies as follows: "In this case *Ipomœa pandurata* is undoubtedly confounded with the old Kentucky hunter or bindweed (*Calystegia sepium*), which is a bad weed, though bearing a profusion of large, beautiful blossoms. The vines of *I. pandurata* spring from a large, tuberous root, which is perennial. It is quite impossible for this to become a troublesome weed, as its roots have no more power to 'spread' or 'run' than have the tubers of a pæony or dahlia."

Few people have sufficient knowledge of botany to know whether these vining weeds are *Ipomœa pandurata* or *Calystegia sepium*, and might believe that the "hardy tuberous-rooted moonflower" of the seedsmen is something different from the vines which infest their farms. That the reader may know for himself which of these plants grows on his premises, we give the distinguishing characteristics of each, and illustrate them herewith.

IPOMŒA PANDURATA.

*Ipomœa pandurata* is a "troublesome weed," and one

that is not easily destroyed. The name, pandurata, is taken from an occasional form of the leaf, as shown in the illustration, known as "panduriform." But the most common form of leaf—in some localities the only form—is heart-shaped, nearly like that of the common morning glory. The flower is large and white, with a purple throat. It opens in the night, and usually fades the next day. New buds develop daily, and a succession of flowers is maintained; but instead of bearing thousands of blossoms at one time, rarely more than ten or a dozen flowers appear on a single plant. In some localities, notably in southern Pennsylvania, these plants are so plentiful that they make it difficult to till the soil. Their large tubers grow two or three feet into the sub-soil, far below the reach of plow or cultivator. It is almost impossible to exterminate them by cultivation.

CALYSTEGIA SEPIUM.

The *Calystegia sepium*, which Mr. Childs says the *Ipomœa pandurata* is "undoubtedly confounded with," is a plant of entirely different habit. Its vine is more slender and always climbing, whereas the ipomœa frequently runs along the ground. The form of leaf is quite different, as may be seen by comparing this with the two illustrations. The flower is not so large as that of the ipomœa, and instead of pure white it is decidedly tinged with pink, especially when old. The throat is not purple, but pure white. This characteristic alone is sufficient to distinguish the one from the other. At the base of the flower, and completely enclosing the calyx, are two large, loose bracts not found on the ipomœa. It is a bad fraud, perhaps unintentional, but a fraud for a' that.—GEO. H. SHULL, *Ohio*.

**Box Borders Redivivus.**—In your beautiful illustration of a charming Newport garden page 518, I notice the grand forms of trained box or tree box (*Buxus arborea*), also *B. sempervirens*, and varieties such as rotundiflora, thymifolia, macrophylla and myrtifolia. Also *Argenta variegata*, or silver edged, and *Folia aurea*, the golden tree box. These varieties are quite distinct from the box formerly used so much for edging or bordering in flower and kitchen gardens. Years ago no nice appointed garden was complete without the formal box edging. This is *Buxus fruticosa*, of which there are two distinct varieties, one being termed the English, which is a very stiff form; the other is the old Holland Dutch variety. This is more soft and of a denser habit, and therefore preferable to the English. Your correspondent in his remarks upon the box and box edging, says that these have of late gone out of use on account of the introduction of new sorts, and partly on account of the fact that such stiff and angular pathways are now seldom tolerated. Perhaps your correspondent is not aware, however, that of late, within the last two and three years, some of our ablest landscape architects have again introduced this old fashioned style of box edging, but in the more modern forms of English geometric and old Dutch box gardens, and in the modern flower garden as edging, because they have not found anything so well adapted for that purpose; nor has anything yet been introduced to take its place. It is still a favorite because of its sterling qualities of shapeliness, tidiness, its close and dense growing habit, its adaptability for being trimmed into proper shape, its freedom from insects, and lastly its evergreen and fresh appearance, even in mid-winter when all else is bare and bleak, which alone is enough to give it the prestige which is now accorded it. I have had the pleasure of seeing it introduced of late in some of the largest and choicest pieces of landscape art in this country, and to my personal knowledge there are now growing for this very purpose thousands upon thousands of yards. Of course it is not used in the

same old-fashioned way, that is, to have every path in the flower and kitchen garden walled in with hedges of box, but for geometric designs and artistic flower gardens, nothing else is so well adapted as box edging. All that is required to keep it in excellent order is but to see that it never dries out and that it is always trimmed at the proper time. It never needs protection from frost, providing it is well established before winter sets in, and if not well and firmly rooted a slight shading of of hay or small evergreen branches are sufficient protection. In planting box edging, 8 to 9 inches long or tall is plenty, one half of which should go into the ground and be well fastened and made firm in the soil.—HENRY A. SIEBRECHT, *Rose Hill, New Rochelle, N. Y.*

**Interesting Combinations.**—An attractive large bed along one of the principal walks at Kew is made up of compact bushes of *Olearia Haastii* and tiger lilies. They are in flower together, and the gray foliage and white flowers of the olearia are a capital foil to the bright orange of the lilies. Another bed is formed of small bush rhododendrons and *Lilium Canadense;* another of American azaleas and *L. superbum*, while *L. auratum* is grown in large quantities among various kinds of shrubs. The effect of these large masses of lily-flowers could not be easily surpassed, and their perfume makes the whole garden pleasant. *L. candidum*, which is usually a failure at Kew, has done well here this year. *L. longiflorum* is also very fine; in fact, the lilies generally are better than they have ever been. This is probably due to the moisture and coolness of the present summer.—*Garden & Forest.*

**Our Garden.**—When we were married, and moved out here, the door-yard would have discouraged almost any one, it looked so bare and unpromising. We consulted together, however, and came to the conclusion that work was needed even more than money, and as we were young and expected to make this our home for life, we determined to try what could be done. The yard was covered with hard-pan that had been thrown out of the cellar, and nothing would grow in that; so John dug it out to the depth of eighteen inches and carted it away from where we wanted the beds to be and filled the place up again with rich garden soil. We had a very little lawn, which was carefully seeded, manured, raked, and clipped, until we had a fine, close turf. We have never found anything better for the grass than wood-ashes spread on broadcast.

Our little house had two unprotected south windows where the sun poured in without mercy in the summer, but a little work and care transformed these into bowers of beauty. John made for each a "hood"—I don't know what else to call it—of strips of lath fastened to the boarding of the house at the bottom, and pointing out until at the top it extended three feet from the house. This was roofed with slats like the sides, and now in summer both are covered, one with grape vines and the other with cinnamon vines, whose bulbs are planted out each spring. Around the yard was built a plain picket fence on one side, that next the wood-pile six feet high, and on the three others, three feet. At the foot of the high fence another bed was made and filled with the richest soil we could find; in this we planted roots of grapes, American ivy (Ampelopsis?), running roses and a beautiful vine with a pure white-flower shaped like a morning glory. Now the wood-pile is completely hidden, and our little garden is bounded by a bank of foliage and flowers, thrifty and beautiful.

I wanted some flowers that I did not feel able to buy, so we invested what money we could spare in seeds of iris, hardy phlox, gladioli, dahlias, etc., and with lots of care we had a fine lot of plants ready for setting out when the weather was suitable the next spring. This fall we intend to invest what we can afford to spare in hardy bulbs, and next on the list will be hardy roses. Of course, we have lots of varieties collected in other places and ways; but we have never regretted the work we have done, and we can do lots more in the near future.—FLORENCE H.

### Harvest Song.

Laugh out, laugh out, ye orchard lands,
With all your ripened store;
Such bounteous measure nature yields;
What could heart ask for more?

With earth's broad lap abrim with food,
The azure skies above,
The heavens whisper, "Earth is good;"
Earth answers, "Heaven is love."

The winds that wander from the west
O'er fields afar or near,
Find plenty nowhere manifest
In richer stores than here.

The golden rick, the bursting bin,
Of rich and ripened grain
Bespeak the wealth which all may win
In industry's domain.

The corn fields set in grand array
Of solid rank and row,
Are streams of wealth, which set this way
And soon shall overflow.

Laugh out, laugh out, ye ripened fields,
With e'er-increasing mirth;
The joy your bounteous measure yields
Shall bless the whole round earth.

*Dart Fairthorne, in Harper's Bazar.*

**Florida Camphor.**—I regret to see the article on "camphor production in Florida" in the columns of THE AMERICAN GARDEN, which usually is so free from such. "Well, well, well!" If the article "has any saving grace, it is the enormity of its claims," as you so well put it in regard to nut culture. It is just such "prophylactic" (*vulgare*), to quote from the article, which has retarded immigration to the state. Fifteen or sixteen years ago just such claims were made for the *Eucalyptus globulus*. No one now puts them forth. Even the land agent is not fool enough to longer talk of "the marvellous growing eucalyptus" which "would thrive on any sort of land." One intelligent Englishman gave a barrel of water a week to a eucalyptus tree, and when 52 weeks from the seed it was 18 feet high and its branches had a spread of 12 feet. This growth is not marvelous in the

light of the claims of chemical science, as stated in those papers at Washington last month before the "Society for the Promotion of Agricultural Science" on the benefits of water to induce tree growths. I am a believer in those papers, but not to the extent of excluding other plant food, or accepting that "rain falling is the worst form in which water can be applied to the soil." I regret the camphor article, because the power of the press is enormous—an over statement hurts a state as well as an individual. Could our friends state just what is done in the state, and show the net results from the sales of a few years, the state would be the gainer. No industry can thrive on paper only. For some years I had charge of the two largest camphor trees in the state, so far as I know. They are not very rapidly growing trees. A loblolly pine of the same age beats them two to one. I never expect to see a camphor tree "12 to 14 feet in diameter."

South Florida's great industry, more and more, I believe will be fruit growing; chiefly citrus fruits. To the man whose tastes lead him to such avocations, the field is broad and I have no doubt of the successful results of honest labor in these lines here. The differences between the producers and the railroads will adjust themselves in time. Both parties are reasonable men. Each must work, and will work, in time, for the success of the other.—Lyman Phelps, *Florida*.

**Change the Water in Flower Vases.**—A lady visitor at a home of wealth and taste, noticed that the water in the vases was impure, and, as she tells the *Tribune*, "knowing by experience how fetid and offensive water becomes from decaying stems of plants, I spoke to my friend on the subject, believing that the standing water in so many open receptacles was positively unhealthy. 'How often do you clean the vases completely, James?' the hostess inquired. 'We wash everything once a week, ma'am,' he answered respectfully; 'the rest of the time I only take out the flowers that are faded and replace them with fresh ones.' 'Just take out those,' she directed, pointing to a big yellow bowl filled with purple irises. As he lifted the wet mass from the dish the odor was so sickening that it filled the whole room. Now here, I thought, is surely a question for a physician, and yet I have never heard it mentioned. Wherever houses are profusely decorated with flowers, this stagnant water is presumably standing constantly in living rooms, and people are continually breathing what, even out-of-doors, under the fresh winds of heaven, is generally accounted unhealthy."

**A New Species of Maize.**—Botanists have recognized but one species of Indian corn, the common *Zea Mays*, the origin of which, however is entirely unknown. Dr. Sereno Watson, of Harvard, has just described a second species, *Zea canina*, or "dog corn," from Moro Leon, state of Guanajuato, Mexico. It grows wild in that region. As grown in Massachusetts and New York, it resembles field corn in general appearance, but the stalks branch and give the hill a bushy appearance. The branches of the stalk often become three or feet in length, and bear an ear or rudiment of one in every axil. Sometimes a half dozen perfect ears are borne upon a branch. The ears are small, four to twelve-rowed, and they break off very easily at the joint with the stem. The kernels are about a fourth inch long, white, hard and smooth, ovate, acutish and narrowed at the base. Dr. Watson, at first thought that this may be the original of common maize, but he now thinks that it is wholly distinct.

**Camphor Tree in North Carolina.**—Noting the article on camphor production in Florida reminds me to say that in the garden of Allen Warren at Greenville, North Carolina, is a fine young camphor tree now six years old. It has only been injured by the cold once, and that was in the sudden and severe freeze of March 3, 1890, following a very warm February when all vegetation had become active, and trees of well-known hardiness like our common pears had started into full leaf and were cut almost as badly as the camphor tree. Camellia trees near by were not hurt, as they had not started new growth. While it is not probable that it can be made of commercial importance this far north, it is interesting to know the hardiness of this handsome evergreen. The aromatic leaves could be used to advantage, I would suppose, in keeping moths from chests and drawers.—W. F. Massey, *N. C.*

**True, Way Through.**—I am one of a great company that buys fruit by the basket, bag or barrel, and all this great company have been deceived, cheated and beguiled times without number. The largest berries, peaches or apples would be on top, while the small and the rotten, or worm eaten ones would be underneath, until we, as a great company, begin to expect it. But there was to be a revelation, and it came in a peach basket. It was not covered with dazzling tarletan, to deceive the eyes of the very elect. It was a plain clean basket, with two thin pieces of lath nailed across the top to keep the peaches in, and such luscious fruit, "all on top," said I, with an unbelief founded on experience. The great company won't believe me, but every peach in that basket was uniformly good, to the very last one. There was a modest name and address stamped on one of the laths; I will not tell it, for the great company would tear him from the bosom of his family and exhibit him in a museum as a freak. I never heard or saw his name before, but every basket, bag or barrel with it on I shall take on the spot if I want the fruit, and pay the price, without a question. Furthermore, I shall go to the commission fruit stores, inquire for that man's packages and buy no other, even if he puts an extra dime on the price. We are willing to pay a little more to be assured that the fruit is true, way through. And if some of his cheating brethren, who think they are advantaged by the same old plan of setting a good front for a bad interior, want to get where their fruit will be taken without question and with higher prices, let them emulate this honest man. —A. L.

# THE QUESTION BOX.

☞ *It is the privilege of subscribers to ask us any questions about gardening in any department. All will be answered by specialists..*

* * * *If answers are desired by mail, stamps for return postage should be enclosed.*

* * * *Readers are invited to answer briefly any questions in the Box, whenever their experience leads to a different conclusion than the printed replies.*

67. **Begonias Dropping their Buds.**—I have followed the advice carefully of your begonia number, and have very fine plants as far as foliage goes but the buds drop without opening. Some of the plants I have kept rather dry and some rather moist, but in each case the buds dropped. Is our climate too hot or what is the matter? Common begonias bloom well here but their varieties do not.—Mrs. S. B. Strout, *Evergreen, Ala.*

68. **Questions about Roses.**—(1.) Summer pruning, in what month shall it be done? (2.) Water to keep alive, till when? (3.) What month do they begin to show their bloom after resting? (4.) Those blooms that have been pinched back during the summer months, will they bloom again on the same stems? When must one cease pinching back? (5.) Ought I to manure around roses when I begin to water after they have rested during summer months? (6.) Shall it be old or new manure as a mulch or dug in. How much to each tree. (7.) Winter pruning, when pinch back, for how long? What manures to be applied during that period? Will it be as a mulch or to be dug in? Old or new manure? (8.) When you cut off a rose, should you cut it down to within two eyes or leaves? I wish to have my flowers as large and perfect as possible. Parsons recommends weak wood entirely cut out and all strong wood toward the *last season* should be cut down to two eyes; does he mean this year's wood? If not, what is the use of this year's wood? All my roses are grown in the open air.—Mrs. S. A. W.

Ans. (1.) Summer pruning should be done just after flowering.

(2.) Water should be given only when the natural supply fails.

(3.) Bloom will begin about two months after resting.

(4.) Bourbon and China roses, with their hybrids, will make second and third flowering, in some cases an indefinite succession, as long as the season lasts, if cut back, not pinched in, after the first crop is taken off; this cutting in would stop only at the end of their growth.

(5.) Manure should be given just before the plants begin to grow; when in full growth liquid manure can be given, taking great care not to make it too strong; the ground should be kept free from weeds, and well hoed.

(6.) Well-rotted manure only should be used, If the winter weather is at all trying to the plants, give a good mulch in the autumn, *i. e.*, when growth starts, and dig it in in spring, *i. e.*, when growth begins; the quantity will vary with the age and vigor of the plant. Give as good a dressing as you would to a field of potatoes entered for a prize.

(7.) I should not pinch back roses except when small and weakly; then it is done by removing the flower buds as fast as they appear, and should be continued until the plant is vigorous. The manure given would be as described above; never use new manure except in liquid form to plants in good condition.

(8.) When gathering roses, it is a good plan to cut back the shoot to two eyes. All weak wood should be cut out when the winter pruning is done. and the strong wood cut back, *i. e.*, the wood made during the previous season's growth; if cut back to two eyes the size of the flowers is likely to be increased. This "cutting back" and "removing the weak wood" is "winter pruning," and is done just before growth begins; the wood cut off is largely, if the plants have been well cared for, of the last season's growth or one year's wood, *i. e.*, wood one year old. It may seem rather hard to cut off so much of the plant, and it may not be necessary in open air cultivation in California; discretion must be used in this as in all the details of gardening.

69. **Sub-Irrigation in Gardening.**—I have tried it on a small scale with three-inch drain tiles laid about sixteen feet apart, and found it to do fairly well for orchards, but it takes too much water to use on a large scale when one has to rely on windmill and well water, limited, only. For my kitchen garden it did not do as well. I have the tiles eight feet apart now, but consider it a failure; tiles are laid about eight to ten inches under ground.—H. H., *Beevills, Texas.*

Ans.—As the method of sub-irrigation is precisely the reverse of draining, it is necessary simply to reverse the process. Looking at it in this reasonable way, it is clear that a mistake has been made in using too large tiles. The idea is to pour water into the land instead of drawing it out, consequently the plan is to lay the tiles exactly as if we were going to drain the ground. We should then lay one-inch tiles and connect these with larger ones of such a size as will supply the water required. The three-inch tiles should be at the head of the system, and the one-inch to distribute the water. The depth is right, but in all cases should be at a safe distance below the surface to avoid contact with the plow. The water escapes through the crevices between the tiles. There is a patent on such a system of drainage, but it includes perforated tiles, which are, however, unnecessary for the purpose. It is not claimed, as I believe, that the simple flowing of the land is covered by the patent. The method has been largely used in Florida, and has been found practicable and useful there. It is obvious that the three-inch tiles would cause trouble, as a pipe large enough to supply nine of these pipes would have to be nine inches in diameter. Either a very large supply must be had or the water would not be sufficient to fill all the smaller ones. A large windmill would be required to supply all the water. It is an instance of

the necessity of being right before going ahead.—HENRY STEWART.

70. **Pear Blight.**—What is the best mode of killing?—J. F. M.

ANS.—The best mode, so far known, is to cut off well below the affected part the diseased branches and burn them. Dip the knife-blade in coal oil or turpentine every time a diseased branch is cut away to prevent inoculating other trees. Begin cutting at *very first* appearance of disease.

**Best Six Grapes.**—What are the six best varieties of grapes for Dallas?—J. F. M., *Texas.*

ANS.—The following in italics, followed by second and third choice, are my selection of six grapes from among the older varieties for the region of Dallas, Texas: *Moore's Early*, first early black; *Delaware*, or Brighton, early red; *Moore's Diamond*, or Niagara, early white; *Concord*, Worden or Eaton, later black; *Triumph*, or Missouri Reisling, late white; *Herbemont*, or Diana, late red. To these, for very late black, would add Highland. Among more recent introductions, and more especially suitable, owing to having originated in the south, would name, as having proved very successful after fruiting five or six years on many vines, and in many places, the following: *Brilliant*, early, fine large red; *Rommel* and Campbell, early, fine white; *Hermann Jæger*, medium late black. The Moyer, as a very early, fine red grape, a seedling of Delaware, with larger berry of recent introduction, so far promises very well here. It is very proper to say that of the above varieties, some suffer severely from black rot some seasons, but this may be fully prevented at a small expense by the use of copper solutions sprayed over the vines early in the season, just before and after flowering. By such application many of the finer grapes can be successfully grown in your region, but avoid the vinifera (or "California varieties," as they are often termed), as the phylloxera pervades black-land regions and will destroy the vines. Such varieties, however, flourish in the arid regions of Texas in the granitic soils, where irrigation can be applied. The varieties named above, which are most subject to black rot, are Brighton, Moore's Diamond, Niagara, Concord, Worden and Eaton. The Ives Seedling, black, and Perkins, red, resist the rot well and bear heavily, but are miserably poor in quality, and hence should be discarded. For very fine late red wine grapes that do not rot, plant Cynthiana and Black July (syn. Devereux). For a very late fine white or amber wine grape, free from rot and very prolific, the Hermann is very successful. The Le Noir (syn. Jacques or Black Spanish) is vigorous, very prolific and successful in Texas as a red wine grape, but subject to anthracnose and black rot.—T. V. MUNSON.

**Marechal Niel Rose.**—Is this hardy in central Missouri?—Mrs. JOHN E. MOHLER.

71. **Christmas pears.**—W. M. C., *Alabama.*—I would most sincerely recommend the Lawrence as a Christmas pear instead of Winter Nelis.—N. L. C. MOORE.

**Chinese Lilies.**—Will these flower well if grown in clear glass globes?—H. A. M.

**French Lilac.**—N. J. S.—The flowers you send under the name of French lilac are a common white perennial phlox.

**Palm Seeds.**—N. L. M. C.—For these seeds write Siebrecht & Wadley, New Rochelle, New York.

**Seedling Rhododendrons.**—N. L. C. M.—For seedling rhododendrons and magnolias address Gillette & Horsford, Southwick, Mass.; Reasoner Brothers, Manatee, Fla., and Thos. Meehan, Germantown, Pa.

72. How should I treat the African lily?—C.

ANS.—The blue African lily is well adapted for the lawn when planted in large clumps. When growth is starting, give them plenty of water until their foliage is perfected. They are also fine for pot-culture.

73. What is the proper way to handle hyacinth bulbs after flowering?—L.

ANS.—If it is necessary to move the hyacinth bulbs after they are through flowering, wait until the foliage begins to decay; then take up the bulbs and put them in a cool, dry, airy closet or cellar to dry. Remove the stalks from the bulbs when they are well dried, and place the bulbs in boxes on shelving, covering them with sand. Kept in this way they will be sound and plump in the fall when you wish to plant them. Remove the old roots and loose scales just before planting them. This is a memorandum it will be well to keep in mind for next season.

Fig. 1.—Spray of Norway Pine (*Pinus resinosa*).

One of the most attractive of the native American Pines. (See page 646.)

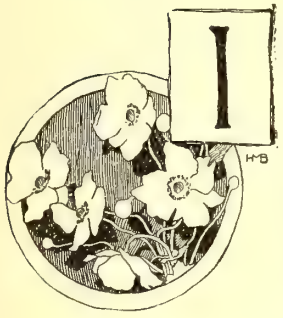
# The American Garden

NOW COMBINED WITH

POPULAR GARDENING AND FRUIT GROWING.

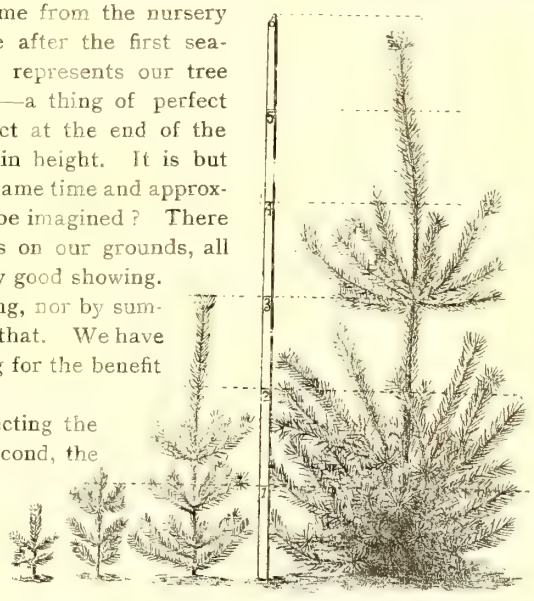
*Vol. XII.* *NOVEMBER, 1891.* *No. 11.*

## QUICK GROWTH IN TREES.



IS THE READER among those who fancy it takes a long time, many years, to obtain telling effects from tree planting? We are not. Let us tell you why. On our experiment grounds at La Salle-on-the-Niagara are several scores of beautiful pine trees, from five to six feet high. They were planted in May, 1889, twenty-seven months previous to this writing. At that time they were small seedlings ten to twenty inches high; to-day they are of a man's height, with massive, spreading foliage, such as results from healthy growth in uncrowded quarters. In a year from now, say three years three months from planting, it is expected that many of them will be fully ten feet high, with dense bottoms six feet across.

Let us particularize regarding growth in the case of that beautiful lawn tree, the white pine. We take this kind as an example because at planting time the trees were among the smallest of the lot—to-day they are of the largest. To the left is seen the little seedling ten inches high, as it came from the nursery in May, 1889. The second figure shows the same after the first season's growth had been completed. The next figure represents our tree in the handsome form it had reached a year ago—a thing of perfect beauty at that date. To the right is shown our subject at the end of the present season's growth. It reaches nearly six feet in height. It is but one of eight white pines in a mass, all planted at the same time and approximately of the same size. Can anything handsomer be imagined? There are many hundreds of other trees, shrubs and vines on our grounds, all planted at the same time, which now make an equally good showing.



At planting, May, 1889. Size, Aug., 1889. Size, Aug., 1890. Size of White Pine, Aug., 1891, 27 months after planting. Figures indicate feet.

How was it accomplished? Not by high manuring, nor by summer watering—it was as a result of less expense than that. We have mentioned the secret before, but it will bear repeating for the benefit of the tens of thousands of new readers this month:

First, the planting was carefully done, not subjecting the roots to the air a moment longer than necessary. Second, the trees being set into ordinary garden land, each one was treated to two shovelfuls of compost at planting time; said compost was nine months old and consisted of two parts rotted sod, one part manure. It was worked in with the soil around the roots. Third, the surface of the beds (cut into sward) has been kept neatly cultivated and as clean as a clean cornfield since the day of planting. To sum up: The trees were given the simple decent treatment we give our corn patch. Such treatment to newly planted trees always gives surprising results.

# PINES, HEMLOCKS AND SPRUCES.

A SUGGESTION FOR WINTER STUDY.

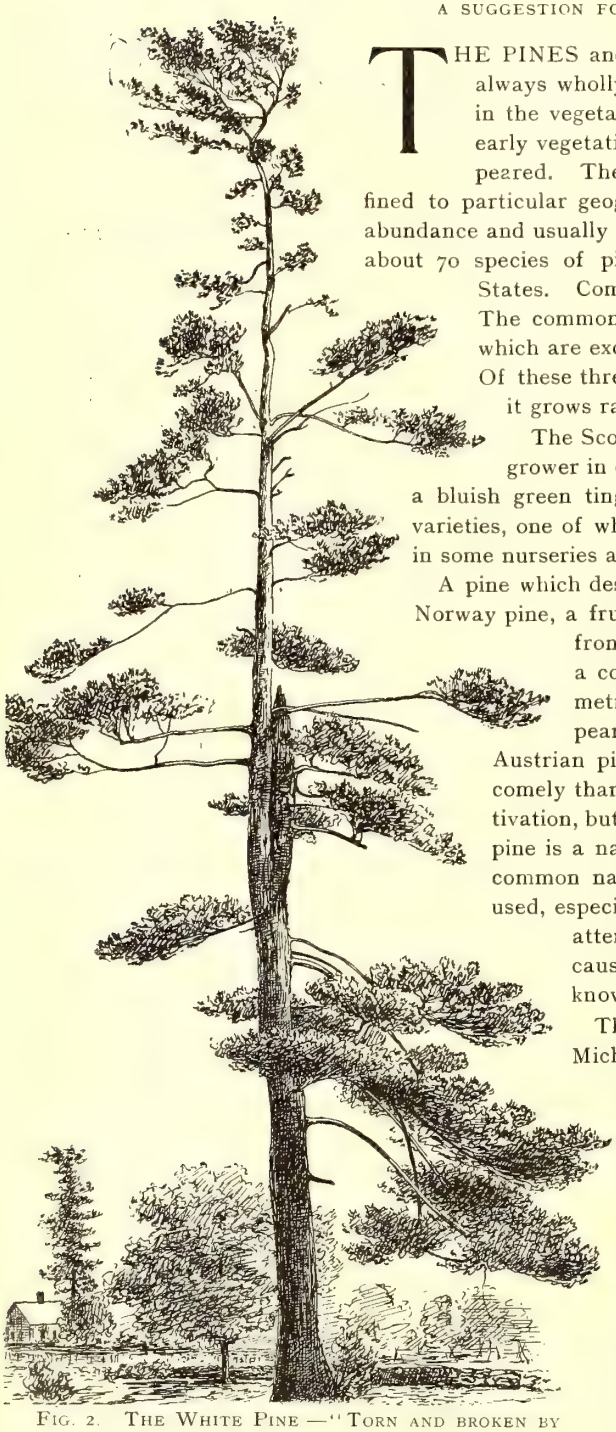


FIG. 2. THE WHITE PINE —"TORN AND BROKEN BY STORMS AND DISFIGURED BY AGE."

THE PINES and their allies are always interesting because they are always wholly unlike other plants. They form a distinct group in the vegetable kingdom. In fact, they are the remnants of an early vegetation, the greater part of which has long since disappeared. They are widely distributed, and yet they are mostly confined to particular geographical or geological regions, where they grow in abundance and usually to the exclusion of most other trees. There are only about 70 species of pines known, and half of these grow in the United States. Comparatively few of them are in general cultivation. The commonest are the Austrian, Scotch and white pines, all of which are excellent for screens and for planting in large grounds. Of these three, the Austrian is the coarsest and least comely, but it grows rapidly and makes a valuable wind-break.

The Scotch pine, known also as the Scotch fir, is a luxuriant grower in every soil and situation. Its leaves are short and of a bluish green tinge. This species has given us several interesting varieties, one of which is of dwarf, wide-spreading habit, being known in some nurseries as the dwarf mountain pine.

A pine which deserves to become better known in cultivation is the Norway pine, a fruiting spray of which is shown about half size in the frontispiece. It is rarely seen in cultivation. It makes a compact, very dark green tree, usually growing symmetrically and shapely without shearing. In general appearance upon the lawn, it recalls both the white and Austrian pines, but has a warmer aspect, and it is much more comely than the Austrian. It appears to submit readily to cultivation, but it is not often sold and is little known. The Norway pine is a native American, and does not occur in Europe. Its common name is, therefore, a misnomer, but it is so generally used, especially among lumbermen, that it would be useless to attempt to change it. It is often called red pine, because of the dark color of its wood. To botanists it is known as *Pinus resinosa*.

The Norway pine affords much of the pine lumber of Michigan, Wisconsin and Minnesota. In parts of these states it is very abundant, occurring in dense forests. In these forests and groves, the trees rise on slender and nearly smooth light brown trunks to a height often of a hundred feet, their supple boles reminding one of palms. There are no handsomer forests in the north than those composed of Norway pines. The species ranges in less frequency as far south as northern Pennsylvania, and it is known in Massachusetts.

The Table Mountain pine is a species which prevails in the Alleghany mountains, and from thence southward to North Carolina. It is a small tree, with short, stout, crowded leaves of bluish hue.

The white pine, or *Pinus Strobus*, is the commonest and best known of the pines. It grows in England, where it is commonly called the Weymouth pine. The solitary white pines remaining from the original forests are among the most conspicuous and striking objects in northern landscapes. They are always picturesque, torn and broken by storms and disfigured by age. They always inspire in us a feeling akin to reverence, and we lament whenever one of them succumbs to the elements or the axe. We should like to see in the country districts a feeling strong enough to preserve all of these scattered sentinels until storms and time destroy them. To the horticulturist this pine possesses much value. Aside from its use as a windbreak it is unexcelled for beauty when planted on the landscape.

None the less picturesque are isolated old hemlocks, although they are very different in expression from the pines, and they are less common. Hemlocks do not persist so long as the pines in deserted clearings and on the windy hillsides. But they are now and then seen standing out boldly against the woods, or forming a rough and rugged cluster along some gorge or wild roadway. Yet the young hemlock is the most graceful and comely of all our evergreens. It takes rather unkindly to cultivation, however, especially when first transplanted. The hot suns are apt to burn it, and the high cold winds of winter disfigure it. But when once established in a partially

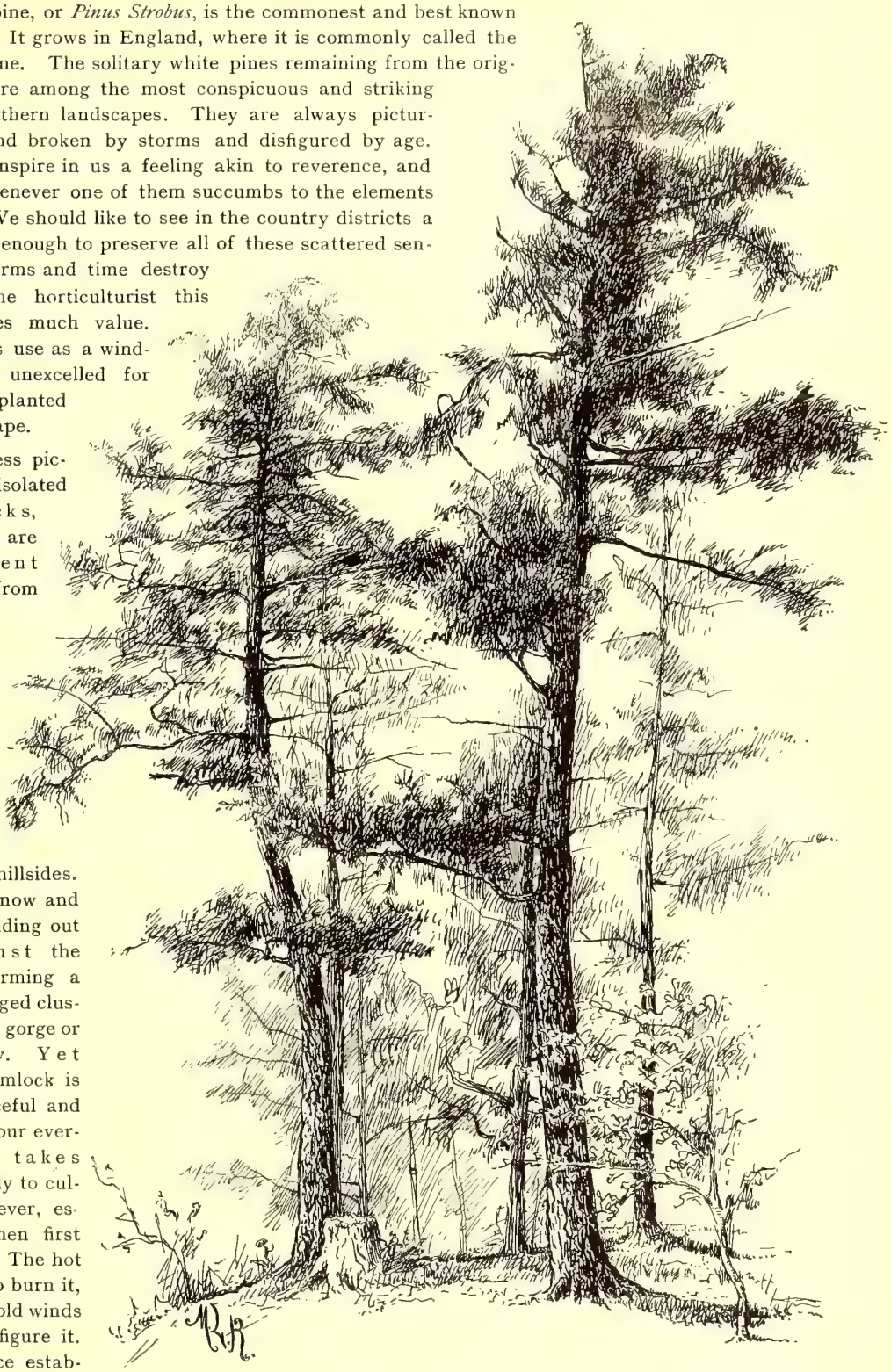


FIG. 3. HEMLOCKS.—"A ROUGH AND RUGGED CLUSTER."

protected place, no evergreen can excel it in grace. If specimens are removed from the woods to open and sunny grounds, care should be taken to select those which grow in full or partial sunlight. But it is better to plant them in some half shaded location in the grounds. There are several good named varieties of hemlock in cultivation. A weeping form known as Sargent's weeping spruce is one of the choicest and most ornamental of all evergreens.

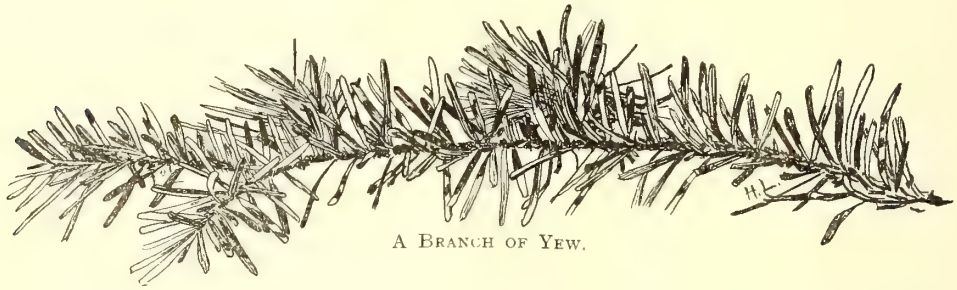
Many of the spruces are well known, and it is not necessary to allude to them at length at this time. But enough attention has not been given to some of the named varieties, and this is especially true of some of the weeping ones. Fig. 4 shows an excellent weeping Norway spruce, standing about 12 feet high. Nothing can be more picturesque and odd than a specimen like this. A number of these mourning trees, like widows in their weeds, would lend a too somber aspect to the lawn, but one or two trees, well placed, would add greatly to the variety and interest of large collections. In marked contrast with the somber appearance of the last named is the charming white spruce (*Abies alba*), a species quite too rarely met in cultivation. The habit is more compact and symmetrical than the better known Norway spruce. The foliage is silvery gray. Its general aspect while young is highly ornamental.

A great beauty of all coniferous evergreens is their varied habit of holding snow. Nearly every individual pine and spruce holds its masses of snow in a different fashion, and every storm, coming with a different force or from a new direction, presents

FIG. 4. WEEPING SPRUCE.

a new picture. Here is a suggestion for a winter study that will be most interesting

L. H. BAILEY.



A BRANCH OF YEW.

*"Ho! ho! the burly pine! Hurrah! Hurrah for the pine! The oak may be king of the lowlands, but the pine is the king of the hills—aye, and mountains too.*

*"Ho! ho! the burly pine! How he strikes his clubbed foot deep into the cleft of the rock, or grasps its span with conscious power! There he lifts his haughty front like the warrior monarch that he is. No flinching about the pine, be it ever so stormy. His throne is the crag, and his crown is a good way up in the heavens; and as for the clouds, he tears them asunder sometimes, and uses them for robes. Then hurrah again for the pine! say I."* * * * *

—ALFRED B. STREET.

[*Continued from Popular Gardening.*]

# TASTE AND TACT IN ARRANGING HOME AND OTHER GROUNDS—XIII.

HE grounds to which the accompanying plans relate comprise an area of four and one-half acres, situated near St. Catherines, Canada. The buildings, trees, drives, walks and other features set forth in the first diagram, were on the place at the time assistance was sought, for improving the grounds, by our correspondent.

That the home is occupied by persons of taste and means is apparent from the nature of the existing improvements. The residence is large and first-class in character. The greenhouse and grapery, the ample lawn, the extended walks, numerous ornamental trees, flower-beds, etc., all speak of the owner's desire to possess a fine garden; but with all the expenditures made to date, the garden is far from satisfactory. What he wants to know, therefore, is, What can be done to surround the home with a garden as handsome and satisfactory as the general circumstances will allow? In answer to this earnest call for aid, let us consider the present arrangement of our reader's place, with a view to discovering its defects, and to suggest certain changes for the better.

First, let it be noticed that the general shape of the place, the location of the buildings, the mill-race crossing the rear parts of the land, are all in fair shape and place for contributing to a fine garden. The very irregularity of the southern boundary should be favorable rather than otherwise, for giving picturesqueness and variety to the place. Other things equal, we always count on handsomer garden effects from plats somewhat irregular in outline than from those of regular shape with right angle corners. Indeed, regularity of form must be looked upon as one of the greatest foes we have to strive against in all handsome garden-making.

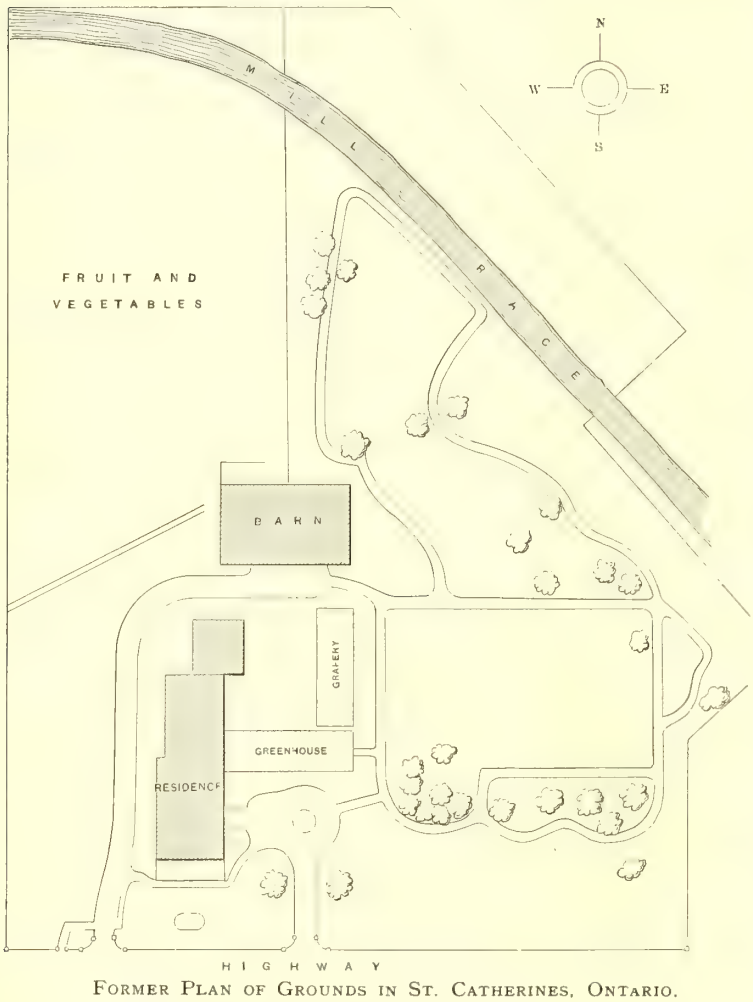
With the main fixed features thus favorable, where are the defects in the first plat to be looked for? These are found chiefly in the arrangement of the supplied features of the garden; namely, the walks, drives, lawn areas, trees, etc. It seems clear that whoever staked out the present walk system had very little idea of what constitutes a pleasing garden walk. Curves were sought, it is true, as may be observed by the first walk back from the highway, and running in the same general direction, but with a poor conception of the beauty that a walk may be made to contribute to a garden. Irregularity in the course of the walks also seemed good in the designer's mind; but see what awkward and meaningless bends were secured, especially in the rear one. The combination of straight courses and right angles with the curves is equally faulty and uncalled for. Then where is provided the ample lawn areas, affording distant vistas such as every garden of size should contain? They are lacking; owing chiefly to the presence of the straight walk across the main lawn centrally, and the unfortunate position of the other walks. A minor defect is seen in the angular form of walk extending from the street to the house at the extreme left of the plan.

In locating the trees, these seem to have been placed more with a view to embellishing the course of certain walks than for handsomely adorning the whole garden. No attempt was made to take advantage of the mill-race of clear water for adding a fine water effect to the garden. The same is true of the embellishment of various parts of the grounds. In all this not the slightest disposition is felt to find fault with the designer of the garden; his intentions undoubtedly were of the best, but clearly his conception of what constituted good principles in garden design were of a very meager character.

From the present plan, let us proceed to consider the improvements the same grounds easily are capable of supporting, as set forth by the right hand diagram. Viewing the plan in general, it is observed that here is provided a great array of garden features and materials, extending to all parts of the area, yet arranged by a plan at once graceful, simple, and abounding in charming and restful garden scenes. In the matter of walks, while the extent of the main ones is actually somewhat less than in the original plan, yet how much more beautiful and satisfactory! The reader is left to imagine the delights of following such a system of graceful paths amidst trees, shrubs and flowers, down through the lawns and across the water to the further arbor and return, as compared with making a circuit of the present arrangement of walks.

Let us proceed briefly to consider some of the improvements that may be suggested to this reader. Plat A represents the front lawn and approaches

from the street. Instead of a large oval flower-bed midway before the house, a clean stretch of lawn with the flower beds towards the margins of the plat is advised. In place of the present awkward walk approach, others, embodying graceful curves and leading more directly from the street to the front veranda, are recommended. To give strength to this conspicuous front plat, the carriage approaches should be further apart than at present, with the added gain of securing pleasing curves in their courses, and of materially augmenting the beauty of plats B and F, as well as A.




FORMER PLAN OF GROUNDS IN ST. CATHERINES, ONTARIO.

For plats B, C, D, the planting, largely in masses, of a considerable variety of hardy growths, is recommended, as shown by the figure. This part of the grounds lies to the northward of the home; hence the free use of hardy evergreens, such as pines, spruces, arbor-vitæs, junipers, is suggested here, with a view to sheltering the home, as well as affording the peculiar beauty, in winter and summer, of this attractive line of growths. Seated here and there on the lawn B, between the evergreens and drive, would be a good place for some bold masses of flowering shrubs, hardy roses, etc., set in beds cut into the sward. To separate plats B and C from the vegetable garden, a Norway spruce hedge is recommended, the same to be penetrated by the garden walk, about midway in its length.

Plat E, in the carriage-turning place, is merely a bit of lawn. Surrounding this part at the sides, front and rear (next to greenhouse) are grass plats adorned with irregular masses of shrubs and hardy flowers, besides some beds of regular shape for tender summer flowers.

Plat F—by the system of walks indicated, by the curve brought into the adjoining carriage-drive, and by a pleasing arrangement of deciduous and evergreen trees and shrubs singly and in clumps near the margins throughout, and the use of some beds of rich summer flowers located next to the street—would assume a most attractive character. Its further parts, to the right, are made to include some of the trees that now are on the grounds, but cut off by an intervening walk. That which would give the plat especial beauty is the open grass plat centrally in the area, and which in bolder form is repeated in the larger plat H, to the rear.

Plat G, including the parts between the glass-houses and barn, and the main walk that extends down through this portion of the grounds, is to be mainly embellished with hardy flowers and shrubs situated on the grass, and near the barn with evergreens. To have a walk extend from this part of the garden to the barn and the rear of the house, and yet to prevent the eye from catching undesirable glimpses of the back yard from the pleasure grounds, an arrangement of the walk around and between shrub clumps could be adopted, such as is figured.

In the large central area of lawn, marked H, we have a crowning feature of the entire garden, the

like of which is wholly absent in the present plan. This is simply an ample grass plat, bounded by graceful walks of irregular course, and embellished away from the center with trees like elms, oaks, maples, birches, lindens, etc., which reach magnificent sizes in time. This plat, essentially the main feature of the garden and surrounded by a great variety of attractive features on all sides, affords the base for endless vistas in all directions over the garden's surface and beyond. The broad open center of this area will, if carried out, contribute more of character and magnificence to the entire garden than any other one feature. The view from the arbor should be especially fine.

I. This is a part which for the sake of variety is designed to be slightly intricate. It would be an excellent spot for locating a rockery or an Alpine garden.

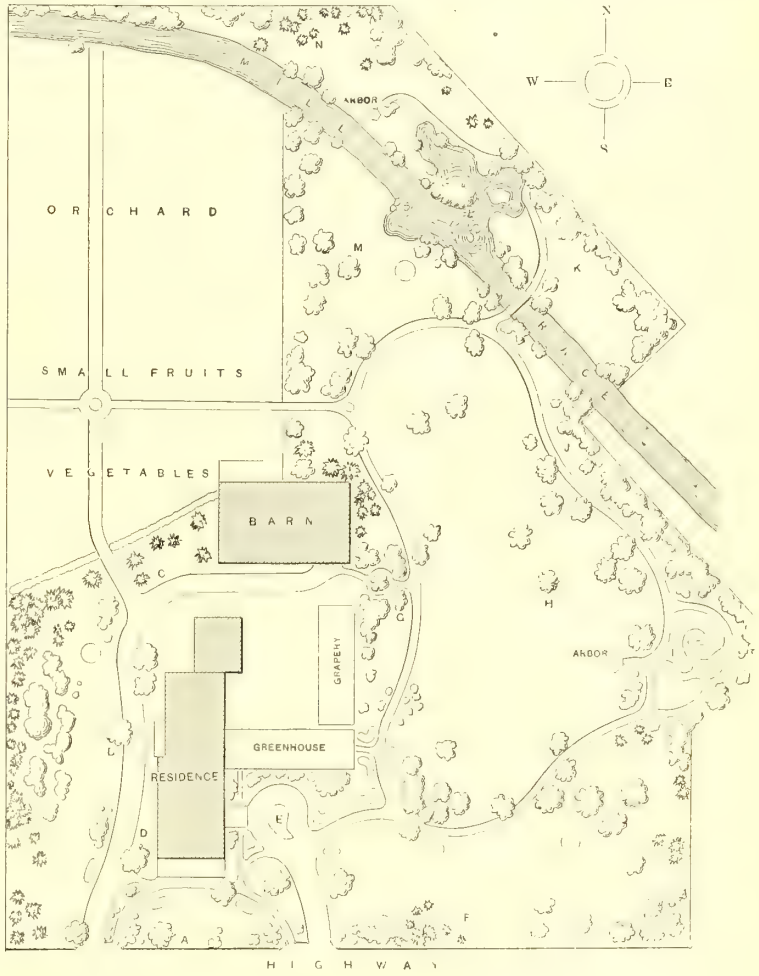
J is a marginal plat, long and narrow, planted with trees, shrubs and flowers in irregular order. This would be a suitable place for accumulating masses of strong-growing, hardy flowers, shrubs, etc.

The portion of the grounds marked K and N lies beyond the mill-race. This, it is suggested, may be made accessible by a footbridge and walk. The planting could consist of a general assortment of hardy growths, including some of the coarser-growing trees like willows, poplars, larches, alders, pines, etc. Here should be the place for introducing a wild garden; that is, a collection of native and other plants that thrive readily in uncultivated places.

L indicates what could be done in the way of an artificial extension of the mill-race to obtain a small lakelet, isles, bays, peninsula, etc., for securing a water view with charming reflections. Of soil excavated in forming the lakelet, a large share might be used in making a small mound at the point where an arbor is shown. With the land being naturally flat, such an elevation, with the corresponding depression gained in making the lakelet, would give spirit and increased interest to the entire garden. It would be the objective point of every one's stroll through the garden. In forming the sloping sides, care should be taken to have these meet the regular surface without any signs of abruptness. Along the margin of the water, and in it, aquatic and bog plants in large variety could be introduced.

Plat M is a simple grass area to be adorned with large-growing trees in the outskirts towards the orchard, and with some shrub and tree groups elsewhere. A small bay extending back from the race is suggested for this point, to break the west line of the water's edge and contribute strength to the lake-effect.

A single unfortunate fact in the present case remains to be noted. It is, that a person, after following the best plan at hand, should find himself so dissatisfied as to undo the work and carry out a new plan at considerable additional expense. In no work is the adage, "Be sure you're right, then go ahead," so entitled to regard as in that of garden-making.




IMPROVED PLAN OF GROUNDS IN ST. CATHERINES, ONTARIO.

# THE ECONOMIC PLANTS OF JAPAN—IX.*

PLANTS USED FOR SALADS AND GREENS.

A VERY long list of plants can be classed under this head. I have notes on nearly one hundred species, and it is probable that there are many others, put to the same uses, which have escaped my attention. The production of sufficient food for the 40,000,000 inhabitants of the empire is an all important question; the margin of surplus food products, over and above what is required for actual consumption, being but narrow even in fruitful years. So it happens that while rice is the staple article of food, it is supplemented by a long and varied list of other vegetable products which, especially among the poor, assist materially in making both ends meet. Many of them are favorite vegetables, which always may be found in their season; others are drawn upon only as necessity compels their use.

Foremost in the list, as of most general importance, must be placed the Chinese cabbage, BRASSICA CHINENSIS, L. (*B. orientalis*, Thunb.); Jap., *Abura-na*, *Nataue-na*, *Chirimeu-na*. No other vegetable of this class is so universally grown, or is represented by so many varieties. It is a kind of rape which has been transformed by cultivation. Certain varieties of it are grown only for their seed, from which an oil is expressed, formerly much used as lamp oil. This class of illuminating oil is, however, rapidly passing out of date, its place being taken by American kerosene.

A free translation of the word *na* would mean greens; and *abura* meaning oil, the name *Abura-na* indicates its use as an oil plant. *Nataue* means rape seed, and *Chirimeu* (meaning crape) refers to the crimped leaves of certain varieties. The term cabbage is a misnomer, as its resemblance to that vegetable is quite remote. The plants are merely bunches of large, smooth, more or less spreading leaves, with broad fleshy midribs. They do not bear their leaves on a well defined stem, as do the cabbage, the kale, etc., but look more like the cos lettuce, the leaves having their origin at the surface of the ground.

They are usually cultivated as a fall crop and grow very rapidly, some varieties attaining a height of two or three feet in two months from the seed. The seed is usually sown early in September. When large enough, the plants are set out in rows like cabbage, the distance varying with the size of the varieties. For rapid growth they require a rich soil, and good cultivators stimulate their plants by applications of liquid manure every eight or ten days. By the end of October the crop is ready for use and it is cut and marketed before frost. In taste, all varieties are much alike. They have the characteristic flavor of the Cruciferæ in a wild form. This flavor is improved by blanching, which is commonly done either by simply tying up the leaves or by heaping the earth up about them. Thus treated, the leaves make a crisp and palatable salad. They are also boiled for greens, and enter into the composition of many dishes. Why might not this class of cabbage find similar uses in this country? It would especially compare favorably with the "collards" so largely grown for the southern markets, and which are merely varieties of non-heading cabbage of tough fiber and strong taste. Some of the larger varieties might also be of value for stock feed.

This species is not hardy; it must be harvested before frost. It is, in fact, chiefly grown for winter use. For this purpose it is packed closely in tubs, with thin layers of common salt scattered through the mass. It soon undergoes a fermentation, which converts it into a kind of sauerkraut called *Natsuki*, which can be kept all winter and drawn upon at pleasure. There are many varieties, the following being some of the leading ones: *Hakusai*, *Shirakuki-na*, *Tojin-na*, *Santosai*, *Mikawashima-na*, *Komatsu-na* and *Uguishu-na*.

*Komatsu-na* is a variety which originated in the village of Komatsugawa, near Tokio, after which place it takes its name. It is often sown very thickly in drills, and cut when three or four inches high. It is then called *Tsumami-na*, which means to take with the fingers. Certain varieties are grown for spring use, and are usually sown between the rows of some other crop as we occasionally sow radishes or cress. The *Uguishu-na* (literally, nightingale greens) is a favorite variety for this use.

The common cabbage of this country in all its forms, and the kale, cauliflower, Brussels sprouts, etc., are all of recent introduction, and are not usually to be found in Japan except near the open ports, where they are grown for the foreign custom. In the interior these plants are regarded as curiosities, and stray cabbage plants are sometimes grown for ornament. The name for cabbage, *Ha-botan* (literally, leaf peony), is suggestive of an ornament. A traveler informed me that he had likewise seen cauliflower grown for ornament, and that it was pointed out to him by the happy possessor as a rare plant of much beauty. Strange as it may be, this whole tribe, so much esteemed here, is making but

very slow headway in gaining the favor of the Japanese. It somehow does not suit their taste. They also grow for greens several kinds of mustard, of which may be mentioned BRASSICA JUNCEA, J. Hooker and Thomas; (*B. Willdenovii*, Boiss; *Sinapis juncea*, L.; *Sinapis integrifolia*, Willd.); Jap., *Taka-na*, *O-garashi*.

This species is not a native of Japan. It is indigenous to Africa and China, from which latter place it has doubtless been introduced. It is a large plant, as is indicated by the native names, one meaning "tall greens" and the other "large mustard." It is hardy, and is usually sown in the fall in rows two feet apart for winter use. The leaves are large, spathulate or obovate, the radical ones often a foot long, the lower portion of the margin dentate, and the upper portion entire or slightly sinuate. It is highly esteemed for salad, and is used all winter long. Certain varieties are also grown for the seed, which are used both for condiment and as a source of oil. It is said to be cultivated in all parts of India for the seed, which is exported under the name of Sarepta mustard seed.

BRASSICA (SINAPIS) CERNUA, Thunb.; Jap., *Karashi-na*, is a species with thick, sharply dentate leaves and rather long petioles; but there are many varieties, showing much variation from each other. These likewise are grown for winter greens.

BRASSICA (SINAPIS) JAPONICA, Thunb. (*S. Chinensis*, L.); Jap., *Midzu-na*, is still another species which perhaps furnishes the most favorite varieties. One of these, which originated in Yamashiro, is called *Sensuji*. It is remarkable for the large number of leaves produced by a single root, and the leaf is narrow and deeply and irregularly cut. All these mustards are sown in the fall and used for greens in the winter, being gathered as wanted. In cold situations I have often seen the rows partially protected by leafy bamboo branches stuck thickly in the ground. The market gardeners on the east side of Tokio make a specialty of this winter crop.

NASTURTIUM OFFICINALE, R. Brown (*Sisymbrium nasturtium*, Thunb.); Jap., *Midzu-garashi*. (Water Cress.) This plant, so well known in western countries, is also a native of Japan, and grows spontaneously in shallow streams. The young leaves are much sought for salad, and it is a common thing to see women and children gather it along small streams and irrigating ditches. Vegetable dealers and peddlers often supply it in its season. It is cultivated in the neighborhood of cities, where the demand cannot be supplied from wild-growing plants. The seed is sown on the edges of streams of clear water, and the only care it receives is to prevent other water plants from crowding it out.

The Marsh Cress—NASTURTIUM PALUSTRE, DeC. (*N. amphibium*, S. and Z.; *Sisymbrium amphibium*, Thunb.); Jap., *Sukashi-tagobo*, is also used for the same purpose. It is a common weed in wet places, with pinnately lobed leaves and yellow flowers. The young plants are gathered in their native habitat, but it is not cultivated.

Another little cruciferous plant which has some value in Japan is the Shepherd's Purse, CAPSELLA BURSA-PASTORIS, Moench. (*Thlaspi Bursa-pastoris*, Thunb.); Jap., *Nadzuna*. Although this plant is almost as common in Japan as it is in America, it is frequently cultivated for its young radical leaves. It is grown in rows like cress, and cut before the stem shoots up and used for salad. Varieties with larger leaves and more rapid growth than the wild plant have been developed, but the leaves of the wild plants are also gathered. It is one of the "seven grasses" which superstition enjoins the common people to eat at the beginning of the new year, in order that they may live the year through in health and prosperity. These so-called "seven grasses" must be eaten at breakfast on the morning of the seventh of January. They are gathered a day or two previous, and on the evening of the sixth they are boiled and chopped a little. The following morning they must be chopped fine before the cock crows or they lose their virtue. The boiled greens as prepared the evening before are then put on a block, and some person of the family chops them with two large knives, one in each hand, while he sings the following chant:

Nihon no tori to,
Todo no tori to,
Uto wa no saki ni,
Nana kusa nadsu-na.

A free translation in English may be rendered thus:

Before the cocks crow in Japan,
And before they crow in China,
We chop these grasses all, by hand,
Seven grasses and summer greens.

Thus duly prepared, these greens are served at breakfast to each member of the household, with the belief that they protect them from all harm during the year. Although the ordinary experiences of life must prove that the immunity conferred by this rite is wholly imaginary, it is a general practice among the common people. The "seven grasses" are not the same in all parts of the country, but vary, so to speak, with the latitude or the plants available. The orthodox list is the following:

| | |
|---|---|
| *Seri* | *Œnanthe stolonifera.* |
| *Nadzu-na* | *Capsella Bursa-pastoris.* |
| *Hakobe* | *Stellaria media.* |
| *Hotoke-no-za* | *Lamium amplexicaule.* |
| *Gogio* | * |
| *Su-zu-na* | * |
| *Su-zu-shiro* | * |

But about Tokio, where all of these cannot be gathered at New Year's time, the following list is used:

| | |
|---|---|
| *Seri* | *Œnanthe stolonifera.* |
| *Nadzu-na* | Shepherd's Purse. |
| *Daikon* | The large radish. |
| *Niujiu* | The carrot. |
| *Na* | Chinese cabbage. |
| *Imo* | The potato. |
| *Gobo* | Root of *Lappa major*. |

Marsh Marigold—CALTHA PALUSTRIS, L. (*Siberica Reg.*); Jap., *Yenko-so*, *Riukinkwa*, is a plant whose

* I failed to learn what these were.

young leaves are gathered and used for greens. The variety *Siberica Rex* has usually but five sepals, and the stems are trailing, with upright leaves. It is common in moist places in northern Japan, and is frequently cultivated in basins for ornament; but I have never seen it grown as a vegetable, the wild plants being abundant enough to supply the demand.

LAMIUM AMPLEXICAULE, L.; Jap., *Hotoke-no-za*, the plant mentioned on preceding page, is not used except as one of the "seven grasses." It is a small plant belonging to the Labiatæ, about a foot high, with opposite sessile leaves and reddish flowers in whorls in the axils.

STELLARIA MEDIA, L.; Jap., *Hakobe*, is likewise a plant used only occasionally as an article of food.

ACANTHOPANAX SPINOSUM, Miquoig. (*A. aculeatum*, Seem.; *Aralia pentaphylla*, Thunb.); Jap., *Ukogi*. This is a thorny bush some eight to ten feet high, which is wild in many parts of the country, especially in the north. The leaves are small, palmately five-foliate, and mostly in clusters like barberry leaves on the short, old branches. On the young shoots there are three prickles below each leaf. The young leaves of this bush are gathered and steamed and eaten as greens; their use is, however, mostly confined to places where it grows in abundance. This plant is also used for hedges.

ACANTHOPANAX TRICHODON, Fran. and Sav.; Jap., *Miyama-ukogi*, a related species likewise common in many places, which also has edible leaves. They are steamed before they are eaten, but are not so commonly used as those of the first named species.

ANGELICA KIUSIANA, Maxim.; Jap., *Ashi-taba*, *Hachijio-so*. There are half a dozen species of Angelica in the country, some of which are cultivated for medicine; but so far as I have learned, this is the only species that is used for food. The young leaves and shoots are said to be gathered for greens. It grows wild near the sea coast in the south, but is rarely if ever cultivated. It attains a height of some three to five feet, and has a coarse, cylindrical, zigzag stem and large, pinnately compound leaves, with broad-clasping petiole. The branches are terminated by umbels of small, greenish-white flowers, which are succeeded by large, oblong seed vessels. The plant has a thick, yellow juice and a pleasant aromatic smell.

AMARANTHUS CAUDATUS, L.; Jap., *Fuji-geito*, *Sugimori-keito*, *Sen-min-koku*. A wild plant three to four feet tall, with long lanceolate leaves and small, red flowers. The leaves are used for greens, and it is occasionally cultivated for that purpose. The seed, also, is gathered and used as a condiment.

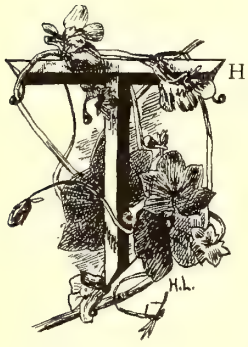
A. MELANCHOLICUS, L. (TRICOLOR, Lam.); Jap., *Hageito*, *Hiyu*. Like the preceding, it is sometimes cultivated for the leaves and seed, and it is commonly used for ornament.

C. C. GEORGESON.

(TO BE CONTINUED.)

# MY GRAPES IN 1891.

LESSONS TO BE LEARNED FROM THIS YEAR'S CROP.



THERE is always something unexpected in the grape crop. While every other crop except strawberries has been near its maximum, the Oneida county grape crop has been a failure. This was not due to frost, but, apparently, to unripened wood and defective buds. There was no failure in fertilizing in whatever did put out blossoms. The extraordinary abundance of plums, peaches, apples and pears makes a shortness in grapes desirable for once. It also brings out a few new facts in the study of grapes that are important and interesting. Some varieties bring out comparatively good points and make us more willing to give them a place in the vineyard.

This year I have had a few bunches on Empire State that came very near being good. Jessica gave me better bunches than usual, and both have borne fairly well, while nothing hangs on adjacent trellises. But they are not even fairly worthy grapes. Jessica is almost a bag of seeds and sugar. Empire State drops from the bunch hopelessly, and also shrivels as soon as ripe. What a pity! The bunches are long and showy, and full of promise. I can understand why some are very loath to discard it.

Duchess is giving me a full crop, and so is Gœthe, and so are a few vines of Concord. To my astonishment, Worden has nothing for me; Gærtner the same. Niagara and Diamond have a fair showing. I am quite cured of all dislike for Niagara. Give it high ground, good soil and plenty of sun, and it is as golden as Pocklington and Diamond. Diamond has not for two years ripened as early as I set it down for in 1889. It is not ahead of Niagara, while on old vines the latter is decidedly earlier than I had estimated. Both are superb grapes, ripening thoroughly with me about September 20.

It is not well to plant too heavily of white grapes. I have more trouble with them than with any other fruit. It is impossible to tell, without tasting each bunch, just when exact ripeness is reached. Most buyers prefer a very sweet grape, like Worden, to an acid, like Duchess, Diamond and Niagara. Many will eat Jessica, which has no character but sweetness, and will praise it as delicious. When planting for market, we cannot consider our own cultivated tastes altogether.

"Each holds its masses of snow in a different fashion." Page 648.

Another grape that for once has borne fairly and shown some flavor is Prentiss. I have eaten some bunches quite good. On the contrary my Brightons have a dead flavor. But going over my vineyard again, picking here and there, and tasting and thinking, I see no reason for changing my mind about most varieties. I would place at the head of black grapes Worden and Herbert; of red grapes, Brighton, Ulster, Gærtner, Salem; of white grapes, Diamond, Niagara and Hayes. I am amazed to read of others for whom Lady gives large, fine bunches. I only wish it would for me; then it should go to the head of the list. Its flavor is perfect, but it bears, year after year, only a few defective bunches.

Our grape-vine growers ought to publish the truth in their catalogues about the almost certain failure of many fine sorts when planted alone. Brighton *must* be planted with some sort like Duchess or Pocklington; so with Lindley, Rogers' 30, and nearly all of Rogers' hybrids.

Grapes very much catalogued and sold largely to unwary buyers, but which ought to be rejected absolutely,

include Early Victor, an irregular bearer, small in bunch, and only sweet in quality: it shrivels after ripening. Jefferson is superb, but *very late*. Prentiss is tender and not of fine quality. Agawam lacks quality, and is late and tough—unless there are two Agawams in market wholly unlike. I am growing two, one as above, the other exactly the opposite. Amber is sour and worthless and late. Woodruff Red is a beastly gross affair without one good point. Golden Gem is really a nice little grape, but not so nice as to deserve culture. August Giant should be planted only on barns, rocks, etc. It is rampant beyond all others. The quality is good, but it ripens very late. Grein's grapes also are unworthy of a place, owing to peculiar acidity. His Golden is worthless.

What we need is more sifting. If our vine growers cannot or will not do it, we must do it ourselves. We need to understand first of all what is wanted. I should say: (1) Of course, good-sized bunches of good-sized berries that do not drop from the peduncle; but (2) we need grapes with fewer seeds. The bother now is with the large and numerous seeds. This is the trouble with nearly all of Rogers' hybrids. Brighton is one of the best on this point. Diamond is another; so also Hayes. There should be a determined effort to create grapes so near seedless as to make them safe for eating. I find persons who are afraid of grapes—afraid to eat them. Still it is, I believe, the most healthy of all our late fruits. If I had a headache, I would eat a meal of grapes. Nature's cooking is superb. She never created pastry.

The anthracnose, which has so sadly added to the miseries of grape growers, can be entirely prevented by the use of copperas. I dissolved ten pounds in a barrel of water and swabbed the vines thoroughly in April. I have seen no signs of the disease since. For two years it had spread itself and ravaged all my vineyards. The solution should be applied before the foliage starts in spring.

The only ideal family grapes we have are Worden and Niagara. These two can be planted by everybody as thrifty, hardy great bearers and superb in quality. Any one who runs them over his house and barn will add to the comfort of his household as much as will come from the wheat field. Any one may grow twenty bushels of grapes on barn and house alone. If you do plant these, plant between them a Brighton always; then you will be happy. They will save doctor's bills and give you pleasure, too!

*Oneida Co., N. Y.* E. P. Powell.

# STRAWBERRY GROWING AT NORFOLK.

THE TRUCKERS about Norfolk and Portsmouth, Va., have developed a method of growing strawberries which is probably not in use in any other berry district in the country. Strawberries with them form a single crop in a rotation, and are not intended to furnish the entire income from the land which they occupy.

The plants are set early in spring between the rows or between hills in the rows of early potatoes, cabbage or other truck crops, so as to make the strawberry rows four to six feet apart and the plants 18 to 24 inches apart in the row.

The cultivation and hoeing necessary for the truck crop is given the strawberries also, and after the harvesting of the former, which occurs in May and June, cultivation is continued till midsummer. No attempt is made to prevent the rooting of runners, and as the cultivator is gradually narrowed toward the end of the season, the rows widen until in many fields they form matted beds four or five feet in width.

After cultivation ceases, a crop of grass and weeds commonly springs up and is mowed down and left as a mulch for the berries. Sometimes when it is mainly composed of "crab grass" it is raked off and cured for hay, and some extensive growers depend entirely on this "volunteer" crop for the dry feed of their horses, as meadows are found but rarely in the trucking region. As the truck crop is always fertilized either with stable manure or some commercial fertilizer, no special application for the strawberry is applied during the first season. Some growers broadcast a "strawberry guano" containing ammonia about 4 per cent. and potash 5 or 6 per cent. over the plants the following spring, and depend on the washing effect of the rain to carry it to the roots, as spring cultivation is not practiced. Commonly, only one crop of berries is taken, and the field is then ploughed and planted with some other crop, as corn or millet, or fitted for a winter crop of kale or spinach. Sometimes the rows are narrowed with the plough after fruiting, and then allowed to send out runners till nearly the whole surface is covered and picked from the second season.

It will be seen that the truckers' method violates two of the established rules for berry growing, viz., clean cultivation during the first season after planting, and prevention of the rooting of runners until the original plants are firmly established. The overlooking of these two rules in the northern berry regions would probably greatly lessen the profits of berry growing, but the truckers find this their most profitable method; and as they are as a rule intelligent and shrewd men, there must be some counter-balancing reason for this apparently shiftless mode of culture. It is this. The Norfolk grower ships his entire crop to northern cities, and as soon as Maryland and Delaware berries begin to ripen,

the expense of long distance transportation takes from him his market. He has found that in the thickly matted row the fruit is earlier to ripen, firmer in texture, and cleaner from sand and dust. The mulch of mown grass and weeds aids in keeping the fruit clean; and as it is thinly scattered and is evenly distributed, its presence does not materially retard the blooming season. Under the influence of the clouded sky and humid air of this sea-pierced peninsula, the effect of dry weather is little to be feared, but an occasional dry April greatly reduces the crop, as the evaporating surface furnished by such an expanse of foliage cause a heavy draft on the moisture of the soil. The effect of this was particularly noticeable in the decreased size of fruit during the present season, and will always prevent the Norfolk method from being practiced in regions more remote from large bodies of water and on land high above the water level.

LILAC FRAU DAMMANN. (See page 664 )

The length of the shipping season varies considerably, but commonly ranges from ten to fifteen days; for, though there are quantities of berries on the plants much later in the season, they do not commonly pay marketing expenses after northern berries begin to appear in Baltimore, Philadelphia, New York and Boston. Frequently not more than one-half the crop is picked, so the extension of the season, except by securing an earlier berry, is not considered desirable.

Concerning varieties, the list is mainly embraced in the one word Hoffman. Starting with wild berries taken from the woods as long ago as 1850, almost all the varieties originating since then have been tested as they appeared.

Wilson was successfully and profitably grown until the earlier Crescent usurped its place only to prove so soft as to be worthless for shipping. Indeed, the moist soil and damp air are fatal to many varieties that are of fair shipping quality in a drier climate.

Crescent was followed by Neunan or Charleston, which was found to be inferior in size and unproductive, and gave way to Hoffman when that variety arrived from Charleston, S. C. about 1886. This variety is estimated as forming 90 per cent. of the crop of 1891, and the proportion of newly-set plants of it is certainly not less, the only others now grown being newer sorts in test patches. Hoffman is a vigorous, thrifty grower, making runners freely and bearing a moderate crop of regular, even-sized, dark crimson berries that ripen early and are very firm, though rather sour and of indifferent quality. It holds its fruit well up, and has few sandy berries. Many of the growers express themselves as entirely satisfied with this berry, as its early ripening gives them the high prices that prevail during the first two weeks in May. Some are searching for a berry that will be as early and of better quality, confining most of their search to the region further south, but thus far without apparent success. Certain it is that the appearance of a firm, early berry of good quality and appearance in the northern berry districts would compel the Norfolkers to adopt it in self-defence or to drop berry

growing; for the Hoffman can not be sold in competition with berries of quality equal even to Sharpless or Jessie. Until such a variety is produced they will doubtless continue to plant their forty and eighty acre fields of the vigorous and handsome, though unsatisfactory Hoffman.

For help in picking season the growers depend very largely on negro labor. Men, women, and children come from the region round about, and from the cities of Petersburg, Richmond and Washington. A few rules concerning the marking of berries, preservation of stem and hull, and payment by a simple ticket system at two cents a quart, is about all the attempt made at systematizing the harvest. Hand carriers containing six quarts each, with a cover to shield the fruit from the direct rays of the sun, are commonly used in the field. Berries are not assorted or rehandled in the packing-house. The seven-quart basket is used and the return crate containing 60 quarts, with a slat-strengthened, division board laid on each of the four tiers of baskets to insure ventilation and avoid the crushing of berries in transit. A 32-quart gift crate is coming into use, and will doubtless take the place of the return crate on account of its lightness, cleaner appearance and freedom from the annoyance and uncertainty attendant on the return of "empties" from distant markets. Many growers place their fruit on sloops and deliver at the steamer wharves in Portsmouth or Norfolk, others have railroad freight stations near by with side tracks where the product of the immediate neighborhood can be loaded on the cars, and a few hauled by wagon to the railroad or to the wharves. No attempt is made at artificial cooling in transit, either on the railroad or boat; for the weather in the north, where the fruit is shipped, is commonly cool enough to insure safe delivery at this time of year.

The yield per acre varies much, as only a portion of the crop is harvested. Five thousand quarts is considered a large yield, and the average is probably not more than two thousand.

Prices have declined very materially since the early days of the business. When the Wilson was at its best it often sold at 50 cents per quart and sometimes as high as $1.50, but Norfolk berries were then the first fruit on the market. Now Florida, South and North Carolina precede, and the novelty of early fruit is gone when berries from Norfolk appear. Wholesale prices this season ranged from 6 to 14 cents a quart and netted the growers about two-thirds of the selling price. The crop is handled almost entirely by commission merchants at 7 or 8 per cent. on gross sales, and the sales are telegraphed to the growers at once so that the condition of the market in the different cities is known when the fruit is shipped.

Though not the *main* crop with most of the truckers, the strawberry crop under these conditions is usually a profitable one.

*Washington, D. C.* W. A. TAYLOR.

## HOW TO GROW STRAWBERRIES PROFITABLY.

IN SEVERAL years' experience I find the grand point for success is to grow the finest berry, let the variety be what it may be, for home or for market. In growing for distant market, firmness, however, is not only desirable but an absolute necessity.

In order to grow the finest berry, the ground should be free from weeds and grass. It should be deeply and well broken. Well-rotted manure should be spread on without stint. If you can not spare forty tons for an acre, put twenty on half an acre.

Another point is to set good strong-rooted plants. It is cheaper in the long run to buy such, although you have to pay twice as much for them. Throw away the small-rooted ones. If you set them, they occupy the ground, and require cultivation, without ever being likely to give satisfaction.

Another point is to be first in market. To accomplish this, the earliest varieties are essential, but situation of the bed has as much to do with earliness of the berry as variety. I have found that the same variety of plants taken from the same bed at the same time, planted on a slope, facing the southeast, will produce berries a week earlier than those planted on level ground, and still earlier than those planted on a northern slope. From three beds planted as stated, I realized 25 cents per quart from berries on the first bed, 6 cents from berries on the second bed, and 10 cents from the last bed.

As soon as the newly-set plants commence growing, begin work with hoe and cultivator, and continue as long as necessary to keep the weeds and grass subdued. Do not be afraid to work them all summer for fear you will kill a few runners. The weeds will do that if you give them a chance and diminish the crop on the runners remaining.

Another important point—there should be no gaps. This of itself often brings disappointment to the anxious growers. Fill the vacancies with the first strong plants obtainable.

No less important is handling and marketing the berries. In picking, care should be used not to injure the plants. Rough handling of the plant greatly diminishes the size and quantity of the remaining berries. Put in nice clean baskets, and, as far as practicable, put in one basket all of one size and color. Let this quality be from top to bottom and give good measure. Do not depend on shipping to large city markets, but try to build up a market at home.

This is often up-hill work at first, but with a little effort the grower can generally succeed in making a market in which good fruits are appreciated, and the grower has neither freights nor commissions to pay.

*Kentucky.* THOS. D. BAIRD.

# POSSIBILITIES OF OUR NATIVE GRAPES.

RECORDS OF PROGRESS AND INDICATIONS FOR THE FUTURE—AN ATTRACTIVE FIELD.

(*Concluded from page 586.*)

VITIS VIRGINIANA, known as the "Posson Grape" in Buncombe Co., N. C., is very small in berry. The clusters are very compound and compact, the seeds small, with depressed chalaza, so far as seen, usually one or two in a berry. Leaves small to medium, of a lively green color, similar to *V. æstivalis*, in its hybrids with *V. cordifolia*. It ripens before *V. cordifolia*, and appears about midway between *V. cordifolia* and *V. cinerea*. The flavor is pure and fine. No hybrids are known. I have collected it from Kanawha River, W. Va., and received it from Roanoke Co., Va., and from Buncombe Co., N. C., always from considerable altitudes—from 2,000 to 3,000 feet. The vine is slender, not rampant, much branched.

VITIS BERLANDIERI. This, from the limestone hills of central southwest Texas, is, like *V. cinerea*, small in berry and large in cluster. The berries are more abundantly supplied with "bloom" (glaucus) when ripe. The leaves differ from *cinerea* in being generally smaller, with more prominent teeth, and dark glossy green on both sides. The species is now regarded with great favor in France as being the best to grow in dry, chalky soils, where it is largely used for stocks. It is often found naturally hybridized with *V. monticola*, and rarely with other species of that region. A few artificial hybrids of it with other species have been made. H. Jæger has united it with *V. rupestris* and *V. Lincecumii;* but the hybrids, so far as known to me, are not valuable without further development. The quality is fine for wine, productiveness is great, but size of berry must be greatly increased, especially to make table varieties. The species blooms and ripens very late, and the leaves remain on till frost kills them.

VITIS CINEREA. This species ranges from central Illinois (Fulton Co.) to the Alleghany Mountains, southward to the Gulf into Florida east, and on the lower Rio Grande to the west. The fruit is very small, in very large clusters, of fine quality. It must be intermingled with large-fruited species to be valuable. Some good wild hybrids of it with *V. Lincecumii* have been found by H. Jæger and myself, and Mr. Jæger and Prof. A. Millardet, of France, have made some interesting hybrids of it with *V. rupestris* and *V. Lincecumii*. *H. Jæger's* (*a*) is a wild hybrid of *V. cinerea* × *Lincecumii*. Berries below medium, cluster large, compact, beautiful; quality very fine, especially valuable for wine. I have already mentioned a good wild Florida hybrid of *V. Simpsonii* × *V. cinerea*, var. *Floridana*, named Ashtabula.

VITIS RUPESTRIS has much promise as a parent for future work. The fruit of the pure species is never attacked by rot. It ranges among low hills and mountains from southwestern Texas to southern Missouri, central Tennessee and reaches southern Pennsylvania. Many wild hybrids of *V. rupestris*, with *V. riparia*, *V. cordifolia*, *V. candicans* and *V. Champirni*, have been found by H. Jæger, myself and others. George W. Campbell has produced several hybrids of this with improved varieties of Labrusca and its hybrids. Prof. A. Millardet, of the School of Science, Bordeaux, France, and some other French experimenters have produced many hybrids with *V. vinifera*, which are really fine grapes in France, but though I have found some of these which I have tested very vigorous, they are more or less subject to anthrax, mildew, etc. Some of the hybrids have been named; one of the best known of which is Huntington (*V. rupestris* × *Labrusca*).

THE RIVER-BANK GRAPE (*Vitis riparia*) of our northern states is commonly looked upon as possessing no merit for the cultivator; yet considerable progress has already been made in improving it. From this species we have reason to look for our hardiest grapes of the future. It is the species most largely used as a resistant stock in phylloxera regions. Judge Grote and Carver are two promising wild varieties picked up in Wisconsin and Minnesota respectively. Elvira is one of the most prominent hybrid offsprings of the species The species is everywhere so common in the north that it offers an attractive field for the young experimenter. Following are some of the improved riparia sorts:

| | |
|---|---|
| Taylor | Riparia × Labrusca, accidental, Ky. |
| Elvira | " × " Rommel, Mo. |
| Amber | Sister to Elvira, " " |
| Montefiore | " " " " |
| Pearl | " " " " |
| Faith | " " " " |
| Transparent | " " " " |
| Wilding | " " " " |
| Etta | Seedling of Elvira, " " |
| 25th of July | " " " " |
| Missouri Reissling | " " N. Grein, " |
| Jæger's 100 | " " H. Jæger, " |
| Noah | " " G. Wassetziehr, Ill. |
| Early Market | " " T. V. Munson, Tex. |
| Blanco | " " " " " |
| Pres. Lyon | " " " " " |
| Rommel | Seedling hybrid with Triumph. |
| Old Gold | Seedling of Elvira, Munson. |
| Elvin | Elvira × Vinifera, " |
| Beagle | Elvira × Black Eagle, " |
| Suelter | Riparia × Concord, Minn. |
| Monitor | "Carver" × " " |
| Beta | " × " " |

The last three were produced by L. Suelter, of Carver Co., Minn., by artificially hybridizing "Carver" (see above) with Concord. They are of good quality, endured in Minnesota 50° below zero unprotected, and bore good crops. Many other varieties of Taylor and Elvira, not named above, have been produced, of useful qualities.

VITIS SOLONIS of Texas is allied to riparia. Among many wild vines found and planted of this species, the Hutchison, from Hutchison Co., Texas, is one of the most prolific and vigorous of that very hardy, vigorous species; and quite a large number of hybrids have been produced, a number quite promising. The vines are beautiful, and very vigorous and hardy. The fruit is very pure, juicy, sprightly, rich in sugar, tartaric acid and coloring matter, making these excellent wine grapes, and the basis for a noble family of grapes for the dry, changeable climate of the western plains.

DOAN'S GRAPE (*V. Doaniana*). This species was first collected by Judge J. Doan on Honey Creek, Greer Co., Indian Terr., about the year 1880. It was found so good that it at once attracted the Judge's attention. He made excellent wine of it, and regarded it in its best varieties as equaling Ives and Concord in quality with no trace of muskiness. Quite a number of varieties were marked and transplanted into Judge D.'s grounds. Two varieties found by the writer on Pease River, Wilbarger Co., Texas, are growing in his grounds, and have born a good fair-sized fruit—good for wine, but needs refining by hybridization for table use. Doubtless there are wild varieties of good quality for table and market. Prof. H. E. Van Deman, U. S. Pomologist, to whom I sent clusters for illustration in my forthcoming monograph, regarded the fruit as among the best of our native grapes. No attempt has yet been made to hybridize it with other species.

I found this species also in Donley Co., Texas, and have received herbarium specimens of it from near Trinidad, N. M., and near Pecos City, Texas. Have frequently heard of the species, with its usual excellence, in Crosby Co. and other parts of the Texas "Pan Handle," where the temperature often sinks suddenly to 10° or 15° below zero. Here is the basis of a group of fine grapes for the western plains, north of where the vinifera varieties can endure.

CANYON GRAPE (*V. Arizonica*). As the vinifera varieties do finely in all the New Mexico and Arizona regions where this is native, it is not regarded as of any value, though the quality is pure and it is rich in sugar. There is a smooth, glossy-leaved form of the species (*V. Arizonica*, var. *glabra*, Munson) found mostly from the regions of Albuquerque, New Mexico, to that of Truxton, Arizona, in the mountain gulches and canons, while the regular cottony form is mostly found to the southward of the A. & P. Ry. into Mexico. In parts of California where the phylloxera invades the vineyards, this species was used to some extent as stocks, but is not now regarded with favor. It is dwarfish even here in northern Texas, where most species grow with much vigor. It is here much subject to downy mildew, and the fruit to black rot. It probably has little or no value. The variety *glabra* may yet prove distinct enough to take rank as a species.

VALLEY GRAPE (*V. Girdiana*). This is the only wild species in California south of the San Bernardino mountains or of Tehichepa Pass, excepting that to some extent *V. Arizonica* is found in the regions west and north of Yuma, but eastward of the Sierra Nevada extension into Mexico. In all the valleys of southern California into Mexico, south of National City, *V. Girdiana* is found in profusion growing to immense size, forming matted canopies of grayish (being cottony) green leaves over the underbrush and medium sized trees.

The fruit is, when fully ripe, very sweet in taste, with a sharp pungency in the skin, but analyses made of fruit obtained at San Gabriel, by Prof. E. W. Hilgarde, showed the species to be far less abundantly supplied with sugar, tartaric acid and tannin (wine properties), than is the fruit of *V. Californica*, of northern California.

The "Anaheim grape disease," which has for several years been devastating the vineyards of southern California, also attacks and destroys these wild vines in places, so that the species does not appear to possess any very valuable properties, the roots being non-resistent to phylloxera.

Quite often wild hybrids of this species with *V. vinifera* are found. One such growing in the grounds of Scott Chapman, San Gabriel, produced clusters often a foot in length, until the Anaheim disease struck it.

The Mission grape, in analysis, clearly shows the characteristics of this species intermingled with *V. vinifera*. Here at Denison it is nearly impossible to keep the vines alive, owing to mildew; besides, they are very sensitive to cold, much more so than *V. vinifera*.

NORTH CALIFORNIA WILD GRAPE (*V. Californica*).—This species differs from *V. Girdiana*, the southern California species, chiefly in the leaves being quite round in outline, almost as rounding as the rim of a horse's hoof, and much less cottony, as is also the young wood. The clusters are small to medium, very compact, berries larger than *V. Girdiana* and covered with a dense, white bloom; seed larger, with chalaza very prominent; while in *V. Girdiana* it is depressed generally. The berries are very seedy and skinny, but the flavor is quite fine. The species is even more sensitive to mildew than *V. Girdiana*, and endures very little cold. It is of little or no value, as wherever it grows *V. vinifera* does equally well, or better. It is found on the San Joaquin, Sacramento, Santa Rosa and Napa streams, and their tributaries in profusion. It is not found among the coast mountains, nor on the east slope of the Sierra Nevadas. It is found along the Klamath (California) and Rogue river (Oregon) valleys abundantly, but this last stream is the limit of its northern range. Even here it grows vigorously and makes dense canopies over underbrush and small trees, and is not a low scrubby shrub as described for this region by Dr. Engelmann, in Bushberg catalogue. That impression probably came from Oregonians terming a species of barberry, "Oregon grape." This is no grape at all. *B. aquifolia* (or *Mahonia aquifolia* by some botanists) is its Latin name. From Rogue river north in Oregon and Washington, and all east of the Sierra Nevada mountains in Nevada, nearly all of Utah, all of Idaho and western Wyoming

and Montana, no wild grapes are reported. In southern Utah *V. Arizonica* is found. But in all that vast region devoid of wild grapes many of our American varieties do well in cultivation.

THE CHAMPIN GRAPE (*Vitis Champini*) of Texas must soon come to the front as a parent of good table grapes. Four varieties taken from the woods are Barnes, Ramsey, De Grasset and Vermorel. De Grasset and Barnes were shown natural size in the frontispiece last month. These, and several others, are very good grapes of medium size in berry and cluster, from the woods in Bell, Lamparas, Llano, and adjoining counties in southern central Texas, where the species is found. For vigor, productiveness, freedom from disease in this climate, and excellent wine properties (and quite good for eating), I know of no other wild species that excels it, save *V. Lincecumii*, occasionally in eating quality. It is pure, rich, tender in pulp; ripens very early, often late; in other varieties, grows very easily from cuttings, and offers a splendid basis upon which to build, by selection and hybridization, a grand family of grapes for both table and wine for the extreme great southwestern valleys, plains and hills; as it is found growing quite as well upon the tops of very limy hills as in sandy lands along streams. It roots very deeply, and severe drouth does not appear to affect it. It is a species of limited distribution, yet may prove valuable over a large area, as its native region is subject to great extremes of wet and dry, heat and cold, with very sudden changes.

Fresh juice of ripe fruit of this species bottled as "unfermented wine" is preferred by every one who tastes, to the Delaware in its prime, prepared in the same way.

MUSTANG GRAPE (*V. candicans*).—This species is found all through the eastern half of Texas, mostly upon the limestone soils, yet it grows equally well in bottom, sandy soils. It grows to great size, going to the tops of tallest trees and forming stifling canopies of foliage over underbrush and medium-sized trees. It bears great crops of large, thick-skinned, pulpy fruit, with a fiery pungency in the skin, and a sweet, but not very palatable pulp. By adding considerable sugar to the juice, quantities of wine are made from this in various parts of the state of Texas, and is considered by the makers as good wine, but it, of course, is not a fine wine. The grape does not develop enough sugar to make wine alone.

*Elvicand*, by *Elvira* × *candicans*, is an accidental hybrid, among several others of same blood with me, of pretty fair table quality, which becomes very sweet when fully ripe, and will undoubtedly make a fine wine. It is like the wild grapes of this species, so far exempt from black rot and mildew, and is exceedingly rampant. This may be a good basis for a family of rot-proof grapes for the southern states.

Several persons have made hybrids of this species with fine varieties, notably Prof. A. Millardet, of France, but I think we have far better material to work upon in other species. Though these would strictly fall under other heads as the mother vines were of other specific blood, yet I place them here owing to their general Mustangy appearance.

LEATHER-LEAF GRAPE (*V. coriacea*).—This is native in central and southern Florida of the combined character of *V. candicans* and *V. Simpsonii* of little or no value in its pure form. The Simpson is a hybrid of *V. coriacea* × *cinerea*. It was found wild near Manitee, Florida, by Mr. J. H. Simpson. Its hybrid nature is plain. This has such a rampant growth that 20 feet apart for the vines would not be too much. It ripens here in September and October, and seems entirely exempt from mildew and rot. Its quality is pure vinous, and would certainly produce an excellent wine. It offers a basis for a valuable strain of grapes for the extreme Gulf region only, as it is not capable of enduring much cold.

THE SCUPPERNONG or CLUSTER GRAPES of the south have already become well-known. *V. rotundifolia* has been long regarded with favor in the southern states owing to its large berries, certain bearing of enormous crops, even in neglect, and freedom from diseases. But even its best varieties can never rank high in comparison with the better "cluster grapes," which succeed in the same localities, owing to the small clusters, thick skin, lack of fine quality and sugar, and falling from the vines as soon as ripe. The chief varieties cultivated are:

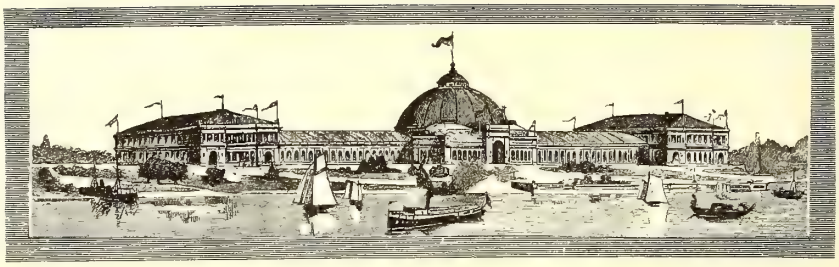
| | | |
|---|---|---|
| Scuppernong, | amber color | South Carolina. |
| Thomas, | black | " |
| Flowers, | " | |
| Tender Pulp, | " | |
| Mish, | " | |
| Pee Dee, | " | |

Some hybrids with other American species and the vinifera have been made by Dr. Peter Wylie and Prof. A. Millardet, of Bordeaux, France. One by Dr. Wylie was, for a time, considered very promising, but with his death it went into oblivion, so far as I can learn. But the fact remains that *V. Labrusca*, *V. vinifera* and *V. rupestris* (most widely divergent species) have been successfully hybridized with *V. rotundifolia*, thus inviting growers to make others, in this most fascinating section of the country, especially needing varieties peculiarly adapted to it. The imagination glows at the thought of what might arise from intermingling the great clustered, fine flavored cinereas, the large berried, large clustered, Lincecumii and æstivalis, with the great berried muscadines. Rot, mildew, late frosts and many other ills might be circumvented, and a tribe of southern fall and winter grapes be secured where we now have nothing of consequence among introduced varieties.

*V. Munsoniana*, in southern Florida, with larger clusters of smaller berries, much more persistent than *V. rotundifolia*, very juicy without pulp, and very small seeds, also offers a very inviting foundation on which to build a peculiar extreme southern family of grapes.

This imperfect account of our native grapes is sufficient to show that the field for useful experiment is unlimited, and that it needs zealous and careful workers. Already wonderful advances have been made.

*Texas.* T. V. MUNSON.



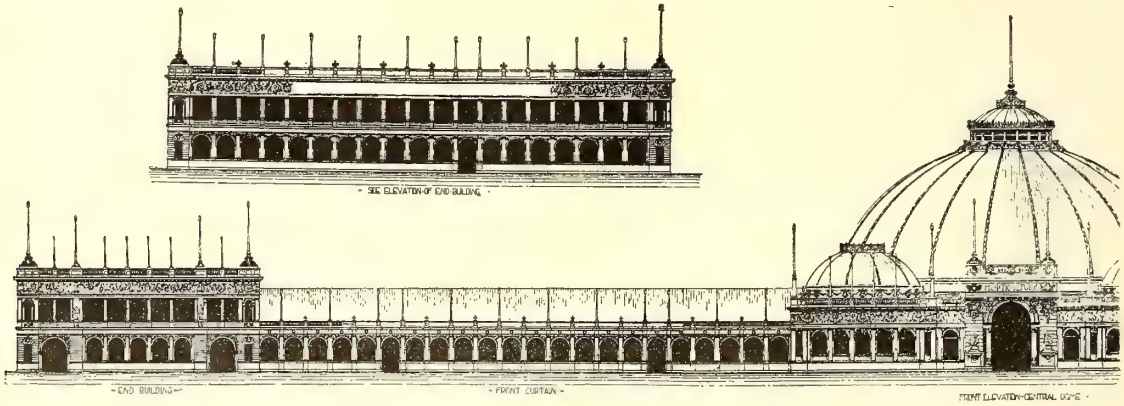
Columbian Exposition—Horticultural Hall Perspective.

# THE HORTICULTURAL BUILDING

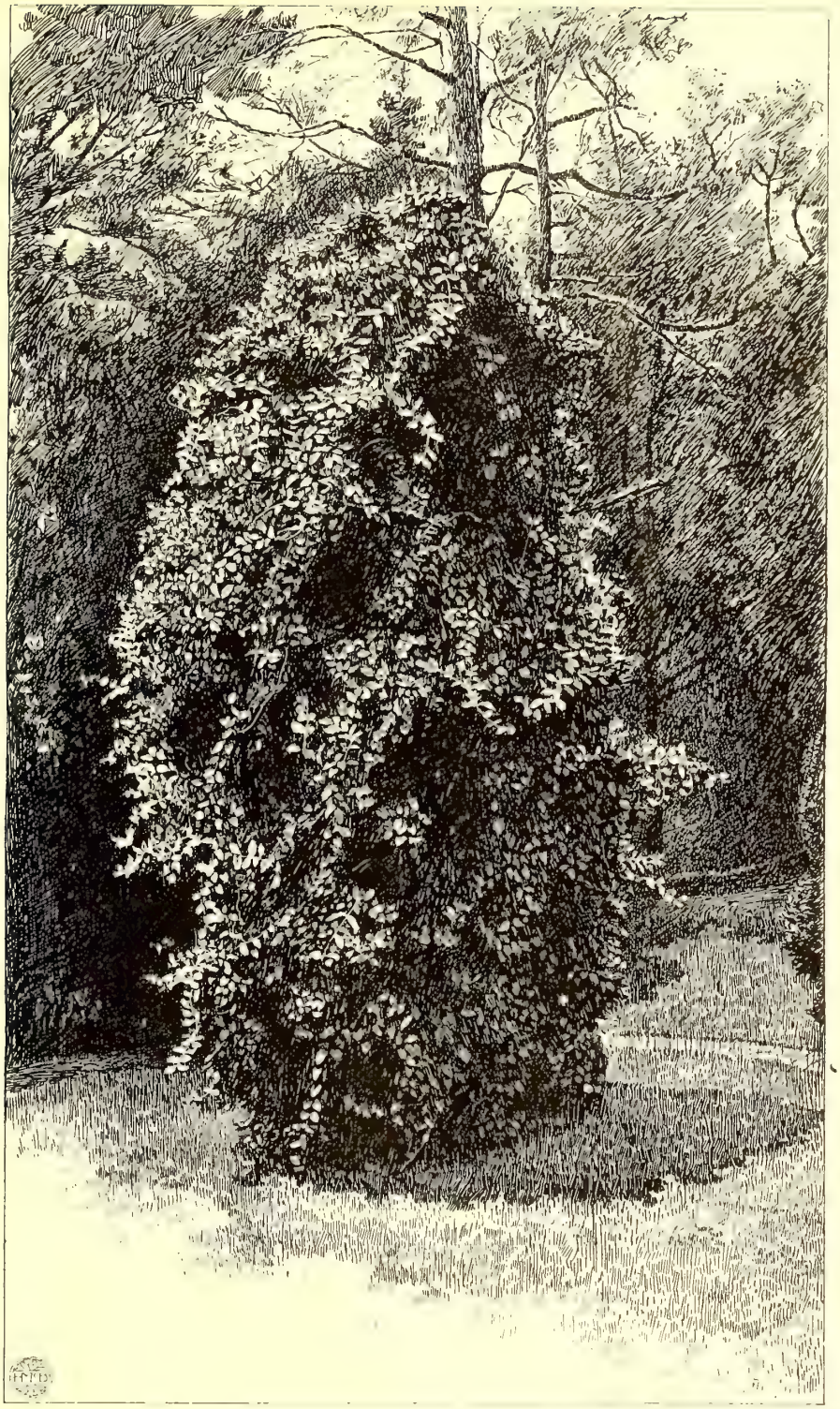
FOR THE COLUMBIAN EXPOSITION IN 1893.

THE horticultural building at the coming World's Fair in Chicago, will be a vast structure 1,000 feet long, with an extreme width of 286 feet. The plan is a central pavilion with two end pavilions, each connected with the center pavilion by front and rear apartments, forming two interior courts, each 88 by 270 feet. These courts are to be beautifully decorated in color and planted with ornamental shrubs and flowers. The central pavilion is roofed by a crystal dome, bearing a resemblance to the dome of the capitol at Washington, and is 187 feet in diameter and 113 feet high, under which will be exhibited the tallest palms, bamboos and tree-ferns that can be procured. There will be a gallery in each of the pavilions. The galleries of the end pavilions are designed for cafés, the situation and the surroundings being particularly well adapted to recreation and refreshment.

In this vast building will be exhibited all the varieties of flowers, plants, vines, seeds, horticultural implements, etc. Those exhibits requiring sunshine and light will be shown in the rear apartments, where the roof is entirely of glass, and not too far removed from the plants. The front areas and under the galleries are designed for exhibits that require only the ordinary amount of light. Provision is made to heat such parts as require it. The exterior of the building is to be in staff or stucco, tinted with soft, warm buff; color being reserved for the interior and the courts. The appropriation for this building is $400,000. It will probably be built for something less than this sum. It was designed by W. L. B. Jenny, of Chicago.



Columbian Exposition—Horticultural Hall Elevation.



A Corner in an old Garden: Lonicera Halleana growing on a stump of a tree.

# VARIOUS LILACS FOR THE LAWN.

BECAUSE the lilac, in some of its species, is among the commonest of lawn shrubs, is no good reason for passing it by when one is making a selection of embellishing material in this line. Rather, it is a reason why we should seek to avail ourselves of the latest improvements afforded by the family, for it may pretty certainly be accepted that a shrub possessing the intrinsic merit of the lilac, and which has been as long under cultivation, would show many improvements from its normal types.

These ideas are suggested by some photographs of two handsome new lilacs taken in the Mount Hope nurseries, Rochester, N. Y., in June last. These we have had engraved, and our artist has done his subjects very fair justice. One, shown on page 657, is known as Frau Dammann. Its white flowers are borne in immense panicles of graceful, picturesque form. The other, shown on this page, is Ludwig Spath, and this differs considerably from the first, in that a chief mark of the flowers and general habit is its comparatively large size. But this is in no wise at the expense of beauty; for nothing can exceed the fine appearance of its bloom, as it contrasts so charmingly with the large, rich foliage. The production of these new varieties was well worth while.

LILAC LUDWIG SPATH.

A fine variety, long in cultivation, is the Rothomagensis. This, by many, is conceded to be the finest lilac in cultivation. It is a cross between the common species, *Syringa vulgaris*, and the Persian lilac (*S. Persica*), most closely resembling the latter, but excelling it in robustness. Its panicles sometimes grow from ten to sixteen inches long and bend the branches to the ground with their abundance.

Josika's lilac (*S. Josikæa*) also called the chionanthus-leaved, is one of the handsomest of the species. The leaves are very large, of wavy surface, and wax-like in texture. It is an upright grower, a fact which suits it well for training to tree form if one fancies having a lilac in that shape. One of its excellent qualities is that it holds its foliage of good color quite late in the autumn. It is also later in its period of bloom than any other sort, thus extending the season of these delightful flowers by some weeks. Its color is a deep purple.

Another large-leaved lilac is Emodi, which was brought from the Himalayas. A peculiarity of this one is that the leaves are very much pointed. Flowers very dark purple.

A remarkable American seedling is *S. cærulea superba*, the blooms of which are light purple in bud, but when fully open a clear blue.

Prince of Wales is a recent variety, having good-sized panicles of purple-lilac flowers; the petals slightly curling near the edge, make the flowers appear striped.

Albert the Good produces flowers of reddish purple, and is considered the best of its color.

Siberian White is an old and distinct species, with small foliage and handsome bloom.

The foregoing are some of the more distinct species and varieties of the lilac. The catalogues of American nurserymen number scores of others, not one of which would be found unworthy of culture. It is really hard to go amiss in making a selection, because all the species are so beautiful.

In cultivating this fine shrub it is well to arrange the plants in bold masses on the lawn or near the boundaries of the grounds. The larger the clumps, the more delight will they afford. Certainly nothing can exceed a good bed of lilacs in beauty and sweetness during the blooming time, and the foliage is always handsome

## SOME HANDSOME NATIVE LOBELIAS.

SEVERAL very fine lobelias are native of this country. They differ greatly in habit and appearance. The following are the best:

Red Cardinal Flower (*Lobelia cardinalis*, L.). This brilliant gem is one of the most beautiful of American flowers, and although now much cultivated, deserves to be far more so. It grows three or four feet high, bearing long, dense racemes of the most brilliant scarlet, so brilliant that the plant can be recognized at a great distance. The flowers are of curious structure, like all lobelias, and about one inch long. The plant grows in clumps, 5 to 15 stems arising from the clump. The plant is practically a biennial, dying after flowering, as do all native lobelias, but offsets spring from the crown of the roots, forming new plants.

It bears many capsules, containing numerous very small reddish brown seed, from which the plant may be propagated, and will flower the second or third year. It is one of the plants that look best in masses by itself. One or two plants will make a fine appearance, but a mass of these brilliant gems needs but to be seen to be appreciated. It is usually found growing in a ditch or along a running stream; sometimes in the river valleys, subject to annual overflows; sometimes in bottoms of shallow ponds that dry up during the dry season. When once growing near the headwaters of a stream, it is found its whole length, the seeds being carried down by the water.

This lobelia is much improved by cultivation, requires a light but good rich soil, but will not stand a long drouth. It flourishes and gives satisfaction where watered, as in city flower-gardens and parks. There are several shades of scarlet, ranging from light to very dark. A white variety is sometimes found. In bouquet making the flowers go well together with yellow flowers, and of these none are better than those of *Hypericum perforatum* or common St. Johnswort, a handsome flower, but a very bad weed. It is one of those plants best adapted to some conspicuous place where a brilliant display is wanted. It would be all out of place where the modest violet would look best. It is beautiful for parks, and especially to plant along the shores of rivers and streams, or on the borders of natural or artificial lakes. For culture, no wild flower is more highly desirable than this.

Great Blue Lobelia, Blue Cardinal Flower (*Lobelia syphilitica*, L.). Another very showy species, usually less tall, two to four feet, but much coarser than the preceding. The flowers are in thick and very dense racemes, and vary from dark blue to pure white. Unlike the first named species, which is smooth, the whole plant is hairy. Though far less showy than *L. cardinalis*, it is nevertheless a handsome plant, a good companion to that species. While I would not advise the planting of so many of these as of *L. cardinalis*, yet small groups here and there in flower-gardens or parks will look well. Grows like the last along streams and lakes, but unlike it is not confined to such localities; is more widely distributed, but less abundant where found; handsome for bouquet-making; August.

Spiked Lobelia (*Lobelia spicata*, Yam.). Very slender; one and a half to three feet high; the stem ending in a very slender and very long spike-like raceme, bearing many small flowers, which range from deep blue to pure white, and are decidedly pretty. The whole plant is delicate, neat and graceful. Grows in sunny localities, in dry, sandy soil, containing a good deal of leaf-mold or humus. If cultivated, it being a modest flower unlike the preceding, it should have some dry, sunny, but retired locality, and the plants should be very close together; pretty in bouquets; flowers in June.

Kalm's Lobelia (*Lobelia Kalmii*, L.). Who has not seen and admired *Lobelia Erinus?* One of my botanical students identified and admired *Lobelia Erinus*, this summer; soon he discovered and identified *Lobelia Kalmii*. In surprise he exclaimed, "Why this is much handsomer than *Lobelia Erinus*." So the flowers are; but the leaves are very small and the foliage is not so pretty as that of *Lobelia Erinus*. As a bedding plant or for vases, unless kept very moist, it can never

take the place of that species. It grows in moist or wet swamps, in rich muck, or in springs or by small streams, requiring a good deal of moisture ; is from 6 to 18 inches high. The stems are very weak and exceedingly slender, the handsome flowers larger than those of *Lobelia Erinus*, and somewhat like them, bright blue, with a white center, not at all racemed as the preceding are, but borne on long, slender (almost hair-like) stalks, remote from each other. When ready for transplanting it is small (one-fourth to three-fourths of an inch in diameter), the crown of leaves forming a revolute tuft, bearing many long white hair-like roots. Well adapted for the river or lake borders, the moist rockery, or the Wardian case. In its proper place this plant is a dainty little gem that will always delight the grower.

*Michigan.* W. A. B.

## SOME HARDY CLIMBERS.

ONE of our prettiest climbers is *Akebia quinata*, though I have never seen it recommended save in florists' catalogues. It is a strong, thrifty vine, forming, after a few years' growth, a tough, woody stem, and requiring no protection. The leaves are beautiful in shape, and frequently remain green throughout the winter. It bears clusters of fragrant chocolate-colored flowers that form a charming contrast to the dark green foliage. It enjoys perfect freedom from insect attacks. Taken all in all, it is a very desirable vine, and will flourish with ordinary care.

Another favorite is *Wistaria Sinensis*, a native of China, whose drooping racemes of lilac-colored flowers can not be surpassed. When given good soil and plenty of water, it is a rapid grower. It is easily propagated by cuttings from either roots or branches. Mrs. Loudon, in her fascinating book, "Gardening for Ladies," tells us of a plant of this species grown in the Horticultural Society's garden in London, which covered a space of 300 feet, and produced in one summer 9,000 racemes, containing, in all, 675,000 separate flowers. This was certainly a sight worth seeing, and hardly to be equaled in this country; for no doubt the moist climate of England had an influence in promoting such wonderful development. Still, our specimens of this handsome vine might be much finer than they are, did they but receive the care and attention which they merit.

Following is a pretty and novel method of training the wistaria as an ornamental object for a lawn: A stake five feet in length is driven firmly into the ground, and to it the young plant is tied. At the top is a small cross-piece upon which the plant is allowed to branch in its own wild way. It is not to touch the ground, being nipped off and twined back over the top. In time, there is formed a graceful and careless mass of green, which, with the pendulous racemes of lilac flowers, presents a striking appearance.

Twining roses trained in this way look equally well, with the added advantage of being within reach when attacked by that aggravating pest, the slug. This method of cultivating the rose is largely practiced in European countries.

A vigorous climber of our own country is *Aristolochia sipho*, familiarly termed "Dutchman's Pipe," from its unique brownish pipe-shaped flowers. In its native woods of western Pennsylvania and the southern states, it creeps up the forest trees to the height of 30 or 40 feet. In civilized life it has been known to aspire toward the eaves of a dwelling had its course not been stopped by judicious pruning. Having broad leaves, it soon forms a dense shade, though, being rather coarse in appearance, it is better adapted to arbors than to verandas. It is a singular fact that though sturdy in growth it is hardly possible for amateurs to propagate it from seed or slips, so that we must depend upon the nurseryman.

Of the loniceras, commonly called honeysuckles or woodbines, we may have a choice of many species, for the finest of which we are indebted to China, Russia, and southern Europe. The one most highly prized is *Lonicera caprifolium*. Its fragrant flowers, with varied hues of red, white and yellow, give it prominence over many others. This combined with sweet briar or eglantine makes an admirable shade for bay windows particularly if they happen to be in the breakfast room, where the delicious perfume may greet one early of a summer morning.

The ampelopsis or Virginia creeper of our own fields and woods is deserving of notice, even though it is so very common. It is a vigorous climber and its foliage of shining green, changing to crimson in autumn, makes it very attractive. Its mode of climbing, also, by means of tiny hand-like appendages. which clasp the wall so tightly as to make it impossible to detach them without breaking, is extremely interesting. The flowers are insignificant, but the purple berries which grow in little bunches all over the vine are attractive. The ampelopsis is very easy of culture, if given good soil.

Among all our native vines in their forest home, there is no prettier object than a *Clematis Virginiana* or virgin's bower, clambering over the tops of rank weeds and shrubs, covering them in mid-summer with a veil of starry flowers. This plant adapts itself readily to new situations, and is excellent for wire fences, rapidly covering the stiff, hard outlines with its flexible stems.

But the queen of all such vines is the *Clematis flammula*, a native of southern Europe. For daintiness and grace it exceeds all others, twining and interlacing its slender branches until it forms a perfect network of green. But its crowning glory is the clusters of delicate white blossoms which fill the air with fragrance.

*Pennsylvania.* MARGARET DALE BROWN.

# ELECTRO-HORTICULTURE.

PROFESSOR BAILEY'S EXPERIMENTS WITH ELECTRIC LIGHT ON PLANT GROWTH—PROMISING RESULTS.

IN THE WINTER of 1889–'90 we undertook experiments at the Cornell Experiment Station, Ithaca, New York, to determine what influence the ordinary street electric light exerts upon plants in greenhouses. Much has been said concerning supposed retarding or accelerating influences of street lamps upon plants. Many have supposed that the electric light can be introduced profitably into greenhouses for the purpose of hastening growth. Still others have supposed the electric lights at exhibition halls to be injurious to plants, and have said that flowers fade quickly when placed near them.

FIG. 1. BENCH OF LETTUCE IN THE DARK OR ORDINARY GREENHOUSE.

For the purpose of our experiment, a forcing house 20x60 feet was set aside. The house is low, with a two-thirds span and a very flat roof ($22\frac{1}{2}°$), and is ventilated entirely from small windows hinged at the ridge. It is heated by steam. This house was divided into two nearly equal portions by a tight board partition. One compartment was treated to ordinary conditions—sunlight by day and darkness by night—and the other had sunlight during the day and electric light during part or whole of the night. In all the experiments the lamp was suspended from the peak of the house, the arc being $2\frac{1}{2}$ feet above the soil of the bench over which it was placed. In the first winter (January to April, 1890) we used a 10 ampere, 45 volt, Brush arc lamp of 2,000 nominal candle power. This was run all night—from dusk until daylight—from January 23 to April 12.

### EXPERIMENTS WITH NAKED LIGHT RUNNING ALL NIGHT—(1890).

The general effect of the light was to greatly hasten maturity, and the nearer the plants grew to the light the

FIG. 2. BENCH OF LETTUCE IN THE ELECTRIC-LIGHT HOUSE.

greater was the acceleration. This tendency was particularly marked in the leaf-plants—endive, spinage, cress and lettuce. The plants "ran to seed" before edible leaves were formed, and near the light the leaves were small and curled. This is well illustrated in spinage, Figs. 3 and 4. The cuts, which are made to the same scale, show Round Dutch spinage when seven weeks old. Fig. 3 shows an average plant from the dark or normal house, and Fig. 4 one from the light house within 7 ft. of the lamp.

The electric light spinage matured and produced good seeds while that in the dark house was still making large and edible leaves with no indication of running to seed. Some Landreth's forcing lettuce was grown in a row nearly under the lamp. For three feet on either side of the lamp, most of the plants were killed outright soon after they came up, and the remaining ones in the

FIG. 3. NORMAL SPINAGE PLANT. FIG. 4 (TO THE RIGHT). ONE OF THE SAME VARIETY AND AGE, FROM THE LIGHT HOUSE.

entire row (35 plants) were seriously injured, the leaves curling and remaining very small. The plants increased in stature, vigor and size of leaves with increased distance from the lamp. Those nearest the lamp made most leaves early in their growth, and they maintained this advantage until about four weeks old, although the leaves were smaller. Five weeks after sowing, the average height of plants within four feet of the lamp was 1.2 inches; between four and five feet, 1.34 inches; between five and six feet, 1.8; between six and seven feet, 2 inches; between seven and eight feet, 2.2 inches. The average height of plants in the dark house at this time was $2\frac{1}{4}$ inches, and the plants were much more vigorous and had larger and darker leaves. The increase in size was not uniform with increase in distance from the lamp.

It chanced that for a time two rows of endive grew parallel to each other in the light house, but one stood in full light while the other was shaded by an iron post an inch and a half in diameter. The result is well shown in Fig. 6, page 670. The row to the left was shaded, and the other received the full light. There was a great difference between the two rows. The average weights of the individual plants in both rows after having grown two months in the light, at the given distances, was, for eight plants in full light, average weight, 49.6 grains; for six plants in shade of post, average weight 93.8 grains.

An average plant in the dark house of the same age weighed 575 grains, and it was larger leaved and darker colored than those grown in the other compartment.

These figures show at once the damaging influence of the naked electric light upon plants near it.

Some young radish plants on a high bench were strongly attracted by the light, and in the morning they all leaned at an angle of from 60° to 45° towards the lamp. During the day they would straighten up, only to reach for the lamp again on the succeeding night. This was repeated until the roots began to swell and the plants became stiff. As the plants grew, the foliage became much curled, and the amount of this injury was in direct proportion to the nearness to the lamp. Those nearest the lamp—within three to six feet—were nearly dead at the expiration of six weeks, while those 14 feet away showed little injury to the leaves.

The experiment shows that the crops obtained in the dark or normal house were about twice greater than those in the light compartment. The entire plants and the tops were almost half lighter in the light house, and the tubers were more than half lighter, while the per cent. of tubers large enough for market, was as 9 in the light house to 26 in the dark house.

Peas in the light house, particularly those in direct light, blossomed about a week in advance of those in the dark house, and they gave earlier fruits; but the productiveness was less, being in the ratio of four in the light house to seven in the dark house. The production of pods (or flowers) was about the same in both houses, but the plants in the light house produced only four-sevenths as many seeds as those in the dark compartment.

### EXPERIMENTS WITHOUT NATURAL LIGHT.

To test whether injury was due to the electric light itself or to continuous light during the whole twenty-four hours, some 10-inch pots were inverted over radish plants during the day and removed at night so that the plants received no sunlight and about 12 hours electric

light. Rubber tubing was conducted underneath the pots and was connected with the hole in the bottoms in such a manner that perfect ventilation was secured and yet no light admitted. Seedling radishes, which had never received sunlight, made a slender and sickly growth, assuming a faint green color, but died in three or four weeks. None of the radish plants succeeded in making a third or true leaf.

FIG. 5. SIX BEST TUBERS OF SCARLET FRAME RADISH FROM DARK AND LIGHT HOUSES.

Another series of tests was made by covering well established plants in the beds. A tight box 18 inches square and a foot high was placed over certain plants during the daytime, and was removed at night and placed over contiguous plants of the same kind. Thus one set of plants received only electric light and one only sunlight, and inasmuch as both were covered during half of the twenty-four hours, any error which might have arisen from the covering itself—as lack of ventilation and increased heat—was eliminated. February 7th certain radishes in the light house which had been planted two weeks were covered. In eight days some of the plants which were covered during the day were dead and the remaining ones were very weak. At the same time, those which were covered during the night had made a better growth than they had before and better than contiguous plants which had not been covered. An examination of the leaves of the plants receiving only the electric light showed that they contained no starch and very little or no chlorophyll.

On February 15th two strong plants of German ivy *(Senecio scandens)*, carnation and begonia, were selected for a similar experiment. One plant of each was covered by day and the other by night. February 28 the electric light ivy appeared as if dying, and March 10 it was apparently dead. By March 3 the electric light carnation was seen to be making an etiolated growth. A month later the new white growth had become four to six inches long. The electric light begonia began to drop its leaves March 5th, and a month later all the leaves had fallen. The contrasts were most striking. The daylight plants were strong and dark colored, while the others were dead or nearly so.

The above experiments show conclusively that within the range of an ordinary forcing-house the naked arc light running continuously through the night is injurious to some plants; and in no case did we find it to be profitable. But the fact that the light hastens maturity or seed-bearing suggests that a modified light may be useful under certain conditions.

### EXPERIMENTS WITH A PROTECTED LIGHT RUNNING ALL NIGHT—(1890).

Early in March, 1890, an ordinary white opal globe was placed upon the lamp, and for five weeks experiments similar to those already described were conducted. The effect of the modified light was much less marked than that of the naked light. Spinage showed the same tendency to run to seed, but to a much less extent, and the plants were not affected by proximity to the lamp. Lettuce, however, was decidedly better in the electric light house.

| | Average weight of entire plant. | | Average weight of top. | |
|---|---|---|---|---|
| VARIETY. | *Light house.* | *Dark house.* | *Light house.* | *Dark house.* |
| Half-long Rose | .41 oz. | .41 oz. | .19 oz. | .16 oz. |
| " " | .26 " | .34 " | .12 " | .14 " |
| Scarlet Globe | .24 " | .26 " | .08 " | .08 " |
| Prussian Turnip | .28 " | .29 " | .11 " | .09 " |
| " " | .27 " | .33 " | .09 " | .08 " |
| Blood-red " | .36 " | .40 " | .14 " | .15 |
| French Breakfast | .25 " | .30 " | .13 " | .11 " |
| Half-long Scarlet | .22 " | .32 " | .08 " | .08 " |
| Average | .29 oz. | .33 oz. | .12 oz. | .11 oz. |

| | Average weight of tubers. | | No. of marketable tubers. | |
|---|---|---|---|---|
| VARIETIES. | *Light house.* | *Dark house.* | *Light house.* | *Dark house.* |
| Half-long Rose | .22 oz. | .25 oz. | 84 pct. | 97 pct. |
| " " | .14 " | .20 " | 76 " | 87 " |
| Scarlet Globe | .16 " | .18 " | 88 " | 95 " |
| Prussian Turnip | .17 " | .20 " | 100 " | 100 " |
| " " | .18 " | .25 " | 90 " | 100 " |
| Blood-red " | .22 " | .25 " | 90 " | 75 |
| French Breakfast | .12 " | .19 " | 100 " | 100 " |
| Half-long Scarlet | .14 " | .24 " | 85 " | 100 " |
| Average | .17 oz. | .22 oz. | 89 p.ct. | 94 p.ct. |

The loss due to the electric light averages from one to five per cent. in the different comparisons, while the loss occasioned by the naked light was from 45 to 65 per cent. It is noticeable, also, that while the tops or leaves were lighter under the naked light, they were heavier under the modified light than those of normal plants; and this is interesting in connection with the fact that the lettuce did better under the modified light than in the dark house. The carrots gave indifferent results. They did not appear to be affected greatly even by the naked light, even when growing directly opposite to it and but three or four feet away. Carrots require

such a long period of growth that the first good picking was not obtained until the end of the experiment in April. The plants, therefore, grew under both the naked and protected lamps. In the following calculation the plot on the upper or east end is omitted because it

FIG. 6. ENDIVE IN SHADOW AND LIGHT.

appeared to have been modified somewhat by the greater heat occasioned by the elbows in the steam pipes at that point:

| SAMPLES (Carrot). | Average weight of entire plants. | Average weight of tops. | Average weight of tubers. | No. of marketable tubers. |
|---|---|---|---|---|
| Light house, center . . . . | .14 oz. | .08 oz. | .06 oz. | 51 per ct. |
| " west end . . | .16 " | .08 " | .08 " | 63 " |
| Dark house . . . . . | .19 " | .11 " | .08 " | 64 " |

We found that the injurious effects of the electric lamp are lessened by the use of a thin globe. The facts indicate that there may be conditions under which the electric light can be made profitable to the gardener.

EXPERIMENTS WITH NAKED LIGHT RUNNING PART OF NIGHT—(1891).

From January 16 to May 1, 1891, the experiment was conducted under new conditions. The light ran but a few hours, and never on moonlight nights.

Of radishes, the foliage was noticeably larger in the electric light house, as it had been under the modified light, but the tubers were practically the same in both houses. American Wonder and Advance peas were in every case larger and more fruitful in the dark house.

The lettuce, however, was greatly benefitted by the electric light. We had found that under the protected light the lettuce had made a better growth than in normal conditions, but now it showed still greater difference. Three weeks after transplanting (February 5), both varieties in the light house were fully 50 per cent. in advance of those in the dark house in size, and the color and other characters of the plants were fully as good. The plants had received at this time 70½ hours of electric light. Just a month later the first heads were sold from the light house, but it was six weeks later when the first heads were sold from the dark house. In other words, the electric light plants were two weeks ahead of the others. This gain had been purchased by 161¾ hours of electric light, worth at current prices of street lighting about $7; this will give an idea as to economic values. The electric light plants were in every way as good in quality as those grown in the dark house; in fact, the two could not be told apart except for their different sizes. Figs. 1 and 2 show representative portions of the crops as they appeared five weeks after being transplanted to permanent quarters. Fig. 1 is a view in the dark house, and Fig. 2 in the light house. The variety in this case is Landreth's Forcing. The electric light plants were upon the benches 44 days before the first heads were sold. During this time there were 20 nights in which the light did not run, and there had been but 84 hours of electric light, worth about $3.50. In order to compute the cost of growing lettuce by the aid of the electric light, it is necessary to know how far the influence of the light will extend. This we do not know; but the lamp exerted this influence throughout a house 20x30, and the results were as well marked in the most remote part as they were near the lamp. If the same results can be obtained by hanging the lamp over the house, intead of inside of it, by that means several houses might be lighted at once.

Several named varieties of tulips gave interesting results. Upon the 13th of February, when these came into full flower, it was found that in every case the colors were deeper and richer in the light house; but the colors lost their intensity after four or five days, and were indistinguishable from those in the dark house. The plants in the light compartment had longer stems and larger leaves than the others; and there was a greater number of floriferous plants in the light. The tulips were grown at a distance of 10 and 12 feet from the lamp.

Verbena flowers near the light were uniformly injured. February 26, all plants within six feet of the light were stunted, the leaves were small and curled, and the flowers were short-lived. Fig. 7, page 671, shows the effect of electric light upon verbenas. The left specimen stood four feet from the lamp, and the right specimen is from the dark house.

A few fuchsias were grown in both houses. Those in the light house were about eight feet from the lamp, and they flowered three days earlier than the others. The colors were not changed. Heliotropes of various named varieties standing nine and ten feet from the lamp did not appear to be affected in any way. Chinese primulas at seven feet from the light were not affected, but those four feet away, especially the lilacs, were changed in color. The lilac was bleached out to pure white wherever the light struck squarely upon the flowers. Petunias were much affected by the light. The plants were much taller and slenderer in the light, even at the farthest corners of the house, and they bloomed earlier and more profusely. Coleus plants within three feet from the lamp were much affected. Reds

became yellow, browns turned to green, greens lost their brightness, and dark purple became glossy black. Whenever shadows of other leaves protected the foliage the color was unchanged, and the precise limits of the shadow, even to the dentations of the overhanging leaves, were visible for days afterwards. Plants five feet away were little affected at this time, and those 12 feet away were unchanged.

In all these experiments with ornamental plants, it was noticeable that the light exercised a very injurious effect within a radius of about six feet. Between six and eight feet the results were indifferent, and beyond that point there was usually a noticeable tendency towards a taller and straighter growth, and it seemed to us that at distances of a dozen feet or more the flowers were more intense in color, particularly when they first opened. There was usually a perceptible gain in earliness in the light house, also.

### EXPERIMENTS ELSEWHERE.

The experiments of C. W. Siemens, in England, and P. P. Dehérain, in France, with our own, appear to be the only definite investigations of the subject upon what may be called a practical or horticultural scale.

At the close of extended experiments, Siemens was very sanguine that the electric light can be profitably employed in horticulture. He had shown that growth can be hastened by the addition of electric light to daylight; that injury does not necessarily follow continuous light throughout the twenty-four hours; that electric light often deepens the green of leaves and the tints of flowers and sometimes intensifies flavors, and that it aids to produce good seeds; and he thought that the addition of the electric light enabled plants to bear a higher temperature in the greenhouses than they otherwise could.

Dehérain's experiments were conducted at Paris, in 1889. His general conclusions of the influence of electric light upon plants are as follows:

1. "The electric light from lamps contains rays harmful to vegetation.

2. "The greater part of the injurious rays are modified by a transparent glass.

3. "The electric light contains enough rays to maintain full-grown plants two and one-half months.

4. "The light is too weak to enable sprouting seeds to prosper or to bring adult plants to maturity."

Finally, observations were made more recently upon the influence of the electric light upon plants in the winter palace at St. Petersburg. It was observed that in a single night ornamental plants turned yellow, and then lost their leaves.

### RECAPITULATION.

It is impossible to draw many definite conclusions from the above researches. Yet there are a few points which are clear. The electric light promotes assimilation; it often hastens growth and maturity; it is capable of producing natural flavors and colors in fruits; it often intensifies colors of flowers and sometimes increases the production of flowers.

The experiments show that periods of darkness are not necessary to the growth and development of plants. There is every reason, therefore, to suppose that the electric light can be profitably used in the growing of plants. It is only necessary to overcome the difficulties the chief of which are the injurious influences upon plants near the light; the too rapid hastening of maturity in some; and, in short, the whole series of practical adjustments of conditions to individual circumstances.

It is a common notion that plants need rest at night; but this is not true, in the sense in which animals need rest. If light is continuous, they simply grow more or less continuously, as conditions require. There is no such thing as a plant becoming worn out or tired out because of the stimulating influence of continuous light.

FIG. 7. INFLUENCE OF ELECTRIC LIGHT UPON VERBENAS.

On the whole, I am inclined towards Siemens's view —that there is a future for electro-horticulture.

L. H. BAILEY.

# NOTES FROM THE EDITOR'S GARDENS

AT LA SALLE-ON-NIAGARA.

SOME OF THE NEWER GLADIOLUSES.—Among many varieties of this popular flower planted last May, were included several of Lemoine's new giant gladioluses, the new hardy Swiss variety Luricensis (the bulbs of the foregoing costing $1.50 apiece), and some of Burbank's strain of seedlings from California. The results of the investment have been quite interesting and marked by some surprises, as well as disappointments.

Of Lemoine's new giants the one named Comte Horace de Choiseul was of enormous dimensions, as the portrait on the next page drawn to natural size shows. This can better be realized by comparing it with the outline in natural size of a common gladiolus as shown on page 675. But while the size of individual blooms is immense, the variety preserves the trait peculiar to many of the Lemoine race, of showing but one or two blooms open on a spike at one time. However much the single flowers may be admired for size or peculiar coloring, therefore, the spike as a whole makes a weak show as compared with the Gandavensis type. But this is not all. The habit of growth of our subject, again like many of the Lemoines, develops rather a weak and crooked stalk, as indicated by the outline engraving of a plant. It required two stakes to fairly support our specimen, with its monstrous flowers. In color this variety, which belongs to the Nanceianus type, is distinct. The ground is a brilliant red tending to salmon, and delicately tinged and spotted with carmine. The lower petals are blotched with a distinct shade of crimson, relieved by white and with a strongly contrasting spot of maroon towards the center, as the engraving shows.

GIANT LEMOINE GLADIOLUS MONSIEUR HARDY. DRAWN LIFE-SIZE ON THE EDITOR'S GROUNDS.

Monsieur Hardy, illustrated on this page, is a large flower of handsome but singular shape, also of the Nanceianus type. Its color is purplish scarlet, slightly flecked with crimson scarlet. The lower petals, towards the flower's center, are sharply sprinkled with crimson maroon spots, on a creamy yellow ground. It is a more vigorous plant and of better habit than the foregoing.

Luricensis made a weakly growth and never bloomed. It may be noted that two races of gladioluses have in late years been originated by M. Victor Lemoine of France, namely, Lemoinei and its forms, and Nanceianus and its forms, to which the first two named above belong. The former of these has been before the public the greater length of time. Its flowers are characterized by spots and marks more intense in color than any known to the older *G. Gandavensis* and *G. Brenchleyensis* types of our gardens. The race owes its origin to hybridizing *G. purpureo-auratus* with some of the Gandavensis type and reciprocally. The newer race, *G. Nanceianus* in its various forms, sprang from hybridizing *G. Saundersii* and *G. Gandavensis*.

The Burbank seedlings were received from Luther Burbank, Sonoma county, California, an enthusiastic grower of this flower. These were remarkable for the large size and brilliant colors of the flowers. The arrangement of the blooms in the spikes was in no case up to a high ideal for regularity, but this defect, if it may be so considered, was largely overbalanced by very great attractiveness in other respects. One beautiful variety, mottled crimson on a pink ground, showed a decided tendency towards doubleness. Of this an engraving life size, is shown on page 676.

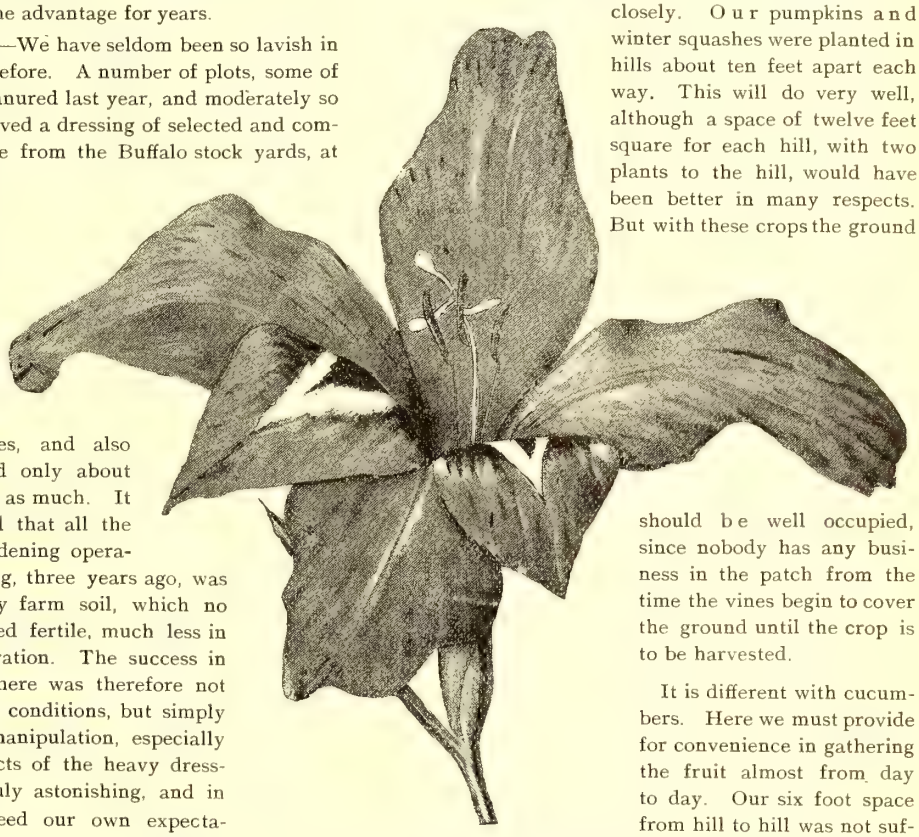
SUGGESTION FOR AUTUMN BEDS.—When September and October arrive, the flower garden is almost devoid of bloom in the hardy section of perennials. There is some exception to this, which leads us to suggest what should prove a very attractive bed of fall flowers for adorning the lawn. Let the bed be circular, and say about eight feet across. The same size in oval or irregular form might be even more satisfactory. Occupy the center with about three plants of the chaste tree (*Vitex Agnus-*

*castus*). This is a charming shrub with chaste and elegant foliage, slightly aromatic, and a profusion of spikes of bright blue flowers. About the central plants arrange an irregular line of Japan anemones, white, rose and crimson, and to the outside of these, some plants of autumn monkshood and *Gaillardia cristata*. The foregoing will give a pretty assortment of flowers for a long time following September 1. All the subjects named have handsome foliage, fitting them to adorn any lawn bed, however conspicuous its place. The plants can be obtained at a moderate cost from any dealer in a fair assortment of hardy perennials. Once planted, such a bed would show to fine advantage for years.

MANURE EFFECTS.—We have seldom been so lavish in the use of manures before. A number of plots, some of them already well manured last year, and moderately so the year before, received a dressing of selected and composted mixed manure from the Buffalo stock yards, at the rate of about three large car-loads per acre, besides light doses of concentrated fertilizers and chemicals. Other portions, especially those planted with coarser vegetables, such as sweet corn, tomatoes, and also strawberries, received only about one-half or one-third as much. It should be understood that all the land used in our gardening operations at the beginning, three years ago, was nothing but ordinary farm soil, which no one would have called fertile, much less in a good state of cultivation. The success in gardening achieved here was therefore not due to favorable soil conditions, but simply and exclusively to manipulation, especially manuring. The effects of the heavy dressings this year are truly astonishing, and in many cases far exceed our own expectations. Seldom have we seen such thrift in onions, cabbages, cauliflowers, and in fact all other vegetables planted there, nor such numbers of cucumbers, melons, squashes and pumpkins. The cucumbers, especially, just lay in heaps. They grew faster than they could be gathered; and all this on the same soil where but a year ago peas, potatoes, and other vegetables refused to bear any kind of a crop, merely on account of the lack of needed plant food in the soil.

During the early part of the season, which was characterized by a seven weeks' drouth, the plants made little headway; but just as soon as the rains came and dissolved the plant foods, thus helping the roots to get hold of them, the growth began at a truly wonderful rate. We had not made provisions for such luxuriance by giving extra space, and thus the vines ran together and over each other in a wild tangled mass, making it difficult for any one to walk through the patch. Still the results, as already stated, were highly pleasing, for the ground underneath this sea of verdure was covered with the desired fruits.

One lesson which this impresses upon our mind is the desirability, for the sake of convenience in management, especially in gathering the crop, of adjusting the space between plants or hills to the fertility of the soil. On excessively rich soil, we must plant especially wide apart. On poor soil we can plant quite closely. Our pumpkins and winter squashes were planted in hills about ten feet apart each way. This will do very well, although a space of twelve feet square for each hill, with two plants to the hill, would have been better in many respects. But with these crops the ground should be well occupied, since nobody has any business in the patch from the time the vines begin to cover the ground until the crop is to be harvested.



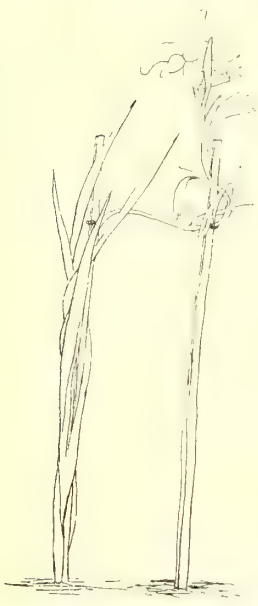
NEW GIANT GLADIOLUS COMTE HORACE DE CHOISEUL. DRAWN LIFE-SIZE ON THE EDITOR'S GROUNDS.

It is different with cucumbers. Here we must provide for convenience in gathering the fruit almost from day to day. Our six foot space from hill to hill was not sufficient for the ordinary varieties. It will do for dwarf growers, like Early Russian; but White Spine, the Long Greens, Paris Pickling, etc., require, on this heavily manured soil, a space of no less than eight feet apart each way for each hill, in order to give the women a chance to gather the crop in a convenient and orderly manner.

The question now is, Does the lavish use of manure in the garden pay? The experience of this season only emphasizes a lesson learned by us long ago, but which is a most important one to all. It is, that "manure makes the crops grow." The question of success in garden operations is almost entirely a question of manure. Without manure, noteworthy results are hardly possible;

with manure, good manure, and plenty of it, you can hardly make a failure even under very ordinary and perhaps inferior management.

We wish to lay particular stress on this. No single item in the business of gardening for the table or for profit is of so great importance as the matter of "plenty of good manure." Everything else is subordinate to it. And for best results it will not do to use merely moderate amounts—we must be lavish, liberal to extravagance—in this matter. Then gardening will pay, not only in money or money's worth, but in pleasure, and increased interest in our work as well.



Showing habit of Comte Horace de Choiseul Gladiolus.

People should not suppose that they cannot have a good garden because there is no rich garden-spot already available. Take any ordinary farm soil, no matter whether it be clay loam, sandy loam or sand, if only well drained, and with the lavish use of good manures you can soon turn it into a beautiful garden-spot. You may not be a skillful gardener; still by this free use of manures, and under the guidance of a little common-sense, you can be a very successful one.

What Manure to Use.—For old gardens, which have been heavily manured for a long series of years, and are filled with manurial remnants, applications of lime, ashes, nitrate of soda, etc., will often answer all purposes for a time. When we have an ordinary piece of farm soil for a foundation, however, and wish to make "the wilderness blossom as the rose," we think the quickest, and only sure way, is by the use of good stable compost in the mentioned lavish style. The desired results cannot well be reached by any other means. It may also be said that we find stable manure the cheapest means to the desired end. Here and in many other places, we can buy plant foods in the shape of barnyard manure much cheaper than in any other form. We must consider, that any good two-horse wagon-load of the material, put on the land, is worth, at rates paid for the average run of concentrated fertilizers, not less than $2. Here we can buy it, either from dairy farms close by, from the livery stables in Niagara Falls, or from the Buffalo stock yards, for a quarter that price and often for less, and can lay it down upon the land at less than $1 a load. We thus have a great advantage over other localities.

At such prices it will be profitable to make free use of it. On the other hand, we also see the good effects of additional application of concentrated fertilizers, and we do not like to do without them altogether. Some of our plats, we think, are now in such shape, that far less liberal applications than have been made this year will give good results for most crops; and even the entire omission of stable manures, for a season, would by no means endanger our success.

The Fruit Trees.—All fruit trees on the grounds without exception, old and young, have made a fine, healthy growth this season. The leaves have all along been in wonderful contrast to the yellow, sickly looking foliage of the two preceding years. This is simply due to changed atmospheric conditions. These did not happen to be favorable to the development of scab and similar fungous diseases, and foliage and fruit had a chance to come to a perfection seldom seen. Our spraying experiments on trees, however, have been made in vain. The favors of the season were better than all spraying mixtures we might have used; the trees not sprayed looked just as healthy and thrifty this fall as those upon which the Bordeaux mixture and the ammoniacal copper carbonate solution was spilled by the gallon.

## FALL BULBS IN THE SOUTH.

BULBS are not so freely used in ornamental gardening in the south as they should be. There are many of the bulbous plants which are too tender for open air culture in the north that will give us a wealth of bloom unknown to those who only cultivate them in pots.

Nearly all the amaryllis tribe are hardy anywhere from central North Carolina southward, and no plants give a greater show of flowers. Our native *Amaryllis atamasco*, or zephyranthes, makes a beautiful border for a bed of the large and high colored sorts. Roman hyacinths, which are unsatisfactory and tender north of Baltimore, do very well here. They begin to bloom in the Raleigh lawns from the 20th to the 25th of December, and continue to throw spikes until March. A bed of these of several colors, with border lines of various colored crocus, makes a pretty show. Of tulips, only the late tall sorts have been satisfactory with us. The Dutch hyacinths of the latest blooming sorts, planted here in a full northern exposure, usually make a fine show in March—and the whole gorgeous tribe of amaryllis, usually represented here by a few varieties, will make our gardens gay in February and March. Tuberoses, commonly left in the ground here all winter, should be lifted and replanted

in spring, for although they usually survive our winters their bloom is uncertain by such treatment, for an unusually cold snap, which may not destroy the bulbs, will frequently destroy the flower germ already formed therein, and great disappointment is experienced by their failure to bloom. The growth of tuberose bulbs for the northern aud foreign market is quite an industry in the southeastern part of North Carolina, and our growers produce very fine stock which never fails to bloom; but our amateurs who carelessly leave them outdoors frequently complain to me of a failure to get them to bloom. They should lift and dry them as the commercial growers do, and keep dry and warm all winter. On the other hand, I frequently see growing in pots here the hardy tuberous-rooted *Begonia Evansiana*, which would be much better off in the open ground. In fact, all the new tuberous begonias will survive our winters in dry soil with a good cover of leaf mould and rough manure over the beds, and give much better results than if lifted.

*Begonia semperflorens*, which is not exactly tuberous but has a fleshy base and root, will survive here in the same manner. All the showy flowering alliums also do well here, and add an attractive variety to cut-flowers. Nothing makes a more showy bed than the various scarlet anemones. They are seldom planted here. One of the most pleasant memories of my boyhood was an old garden in southern Maryland where large masses of these surpassed in brilliant display the beds of early tulips. While early tulips are generally unsatisfactory here, the anemones never would be. By all means start a bed of them, and they will increase in beauty from year to year. *Anemone fulgens* is the variety I refer to. There are many others with large double flowers, at large prices, but the fulgens is cheap and makes a magnificent show.

Calochortus, the mariposa lily of California, in many varieties ought to be largely planted in the south, and yet we seldom see them. They have a great range of color and markings, and only need to be known to become popular.

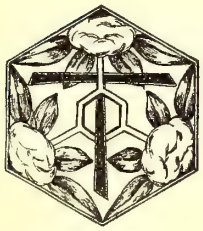
In almost every garden here are old clumps of European iris, which give a wealth of bloom in early spring, but few people in the south have ever seen the gorgeous varieties of *Iris lævigata* from Japan. Try a few of them this fall, and we feel sure you will want more. The florists offer many named varieties, but large clumps of mixed sorts can be had cheap and will give great satisfaction. And then there are the lilies, all of which do so well with us in a proper situation. They need a cool exposure and some shade, a sandy soil, no manure about their roots, but plenty of leaf mould, and should be planted very deep in the ground, six to ten inches. All of them should be planted in the fall except the old white lily, *Lilium candidum*. This variety is dormant only for a while in summer, after blooming, and then makes a rosette of green leaves which remain all winter. When grown in this latitude, this lily should only be transplanted in early July—but as grown at the north the bulbs can be shipped in August or September. If transplanted after the winter leaves are made, no bloom need be expected the following year, though the bulbs may survive such treatment. The florists now have their autumn bulb catalogues out, and a small

OUTLINE OF COMMON GLADIOLUS, NATURAL SIZE.
(See page 672.)

expenditure will secure a wonderful display in our mild climate all through late winter and spring. Therefore we urge all to plant a few bulbs. SOUTHRON.

# GLADIOLUS-RAISING FROM SEED.

A PLEASANT DIVERSION.



THIRTY years ago mother began growing the gladiolus. To the varieties of the earlier period were added about ten years ago, Martha Washington, Shakespeare, Napoleon III., Sultana, Marie Dumortier, La Candeur, Golden Scepter, Galatea, Felicien David, Eugene Scribe, Ceres and Etendard. This makes a grand collection and formed our nucleus for raising many fine sorts from seed. We allowed about two pods on each stalk to ripen seed, saved them carefully, and sowed them in rows in the garden the following spring.

The young plants of the gladiolus look like blades of grass, only there is a slight rib in the center. There is

danger of their being taken for weeds. The first season's growth is only a few inches, with tiny bulblets. The best way is to take them up and dry top and bulb together. When quite dry, put in a paper bag, and store in a place safe from dampness, frost and mice.

In spring following, plant the little bulbs in same manner as you would sow seed. This year they will grow a foot in height, and the bulbs will be about the size of cranberry beans. Winter them over as before.

The third summer they will grow about two feet tall, and a very few will bloom,* but not many; this season they form fair sized bulbs. When dry we remove the tops and pack as large bulbs, each variety put in a paper bag, properly labeled, and place in a chest or box. Care must be taken not to dry the bulbs hard enough to kill them. They are also very easily injured by dampness which causes a dry rot of the crown of the bulb. A few bulbs are easily cared for, but when a peck or more are stored together they seem to gather moisture. We look to them every few weeks to see if they are all right.

The beauty of our seedlings has repaid us many times for the trouble. Most of them prove nice. One of the first was named James Vick, and a grand flower it has proved, of soft scarlet color. The flower is well opened, with thick petals, close upon the stalk (which is medium height); the throat light, with a peculiar cream blotch upon the three lower petals, and a purplish pencil line through each. We have no other flower in our collection with this shaded blotch. It is our best true scarlet gladiolus. Another was a lovely salmon color, with light throat which is finely penciled with violet rose. This is a distinct variety; the leaves are wide but short and very dark green; it has been most satisfactory to us.

Others were decidedly distinct. One of these was a rich shade of cherry rose, throat light, well penciled violet; branching freely. Another was a rich, cream white, with fluted edge; rose markings in from the edge of petals about half an inch; the throat penciled evenly upon the three lower petals in rose crimson. One seedling named Mary A. Colby, is pure white, most delicately marked with rose; throat, lightly marked; one of the thickest petaled waxy flowers we have, and I think the most perfect as a cut-flower in the collection. A variety named Jennie B. Colby is an improvement upon that beauty, Eugene Scribe, which is claiming much, but is true. The flower has large, thick petals; in color, it is white, flamed and striped rose and carmine, and where the petals unite, thickly dotted ruby red, giving it a very mottled look; upper floral leaves pure white; edge full, almost fluted. Many pronounce this the best in our collection; we had never dreamed we could raise such beauties from seed. Among others there was a fine citron yellow, the bud of a peculiar greenish look; a fine pink, blending rose and carmine shades upon a blush ground; it is a beauty, branching freely; has some double blooms; one of soft cream-white, with crimson blotches, penciled violet rose.

A Double Gladiolus from Mr. Burbank, Sonoma Co., California. (See page 672.)

We have many more fine varieties. We have found pleasure in naming all the better ones after the individuals of our family and ancestry, and some after leading horticulturists.

If we can raise from seed as fine varieties as the high priced named collections, why should not others try? From our stock of hundreds of little bulbs, two and three years old, we shall expect some nice flowers next season. We have seedlings of old Gandavensis, of the same color, but brighter and twice as large. A pink striped kind has proved a fine parent plant, and has given us some lovely pink flowers—true watermelon pink. Golden Scepter has added several fine flowers from its seed. Our best flowers came from Shakespeare and Eugene Scribe. Some varieties will not mature seed.

*Merrimack Co., N. H.* SUNNYSIDE FARM.

[*Seedlings, if well cared for, should bloom the third year; many, indeed, should bloom the second. A rich soil, and care that they do not suffer from drought, are the most that is required.—ED.]

# ASPARAGUS FACTS.

ASPARAGUS has been in cultivation for over two thousand years, but its successful and extensive culture does not date back more than one hundred and fifty years. One of the reasons for its importance is that it comes on the market at a time when there is "much meat and little vegetable," and there is nothing that can take its place. The crop is always salable at some figure, and probably the reason why the market has never been glutted, is on account of the time required to get a bed started on a paying basis.

SOIL.—Henderson says a deep and rather sandy loam, or in other words, alluvial soil such as for celery, is best. Vilmorin Andrieux says light, sandy soil. Greiner gives the first choice as sandy loam, and for a second clay loam. A clay soil would not seem advisable, as the soil should act and drain quickly after spring opens; but as an asparagus bed should last from eighteen to twenty-five years, a sandy soil would not be found the perfect one. It must be a soil that will hold its own. A well-drained clay-loam would seem to fill the conditions as well as any. Yet asparagus may be profitably and successfully grown on other classes of soils. In preparations for your bed, if the subsoil is not porous, make it so by subsoiling.

FERTILIZERS.—Asparagus is a coarse and ravenous feeder. From the fact that it is a salt-water plant, salt is by many supposed to be one of the best fertilizers that can be applied. The truth of the matter is that it will stand great quantities without damage, but it is not true that the plant is partial to it. Its greatest value is in killing the weeds on the bed.

A number of growers strongly recommend top dressings of nitrate of soda in the spring. The first one should be applied just as soon as the buds begin to start in the spring. Undoubtedly stable manure should hold the first place as a fertilizer. It may profitably be applied in the fall, thus also serving as a mulch. Mulching is not necessary for protection, but advisable as a means of inducing earlier crops. In the spring the finer parts of the mulch should be worked into the ground. It might be well to loosen the soil a little before applying the mulch in the fall, so as to easily take in what might otherwise be washed away. In cases of special danger of leaching, it would doubtless be better to make this mulch of some cheaper material, and then apply the manure in the spring. In New Jersey it is common to plow a wide furrow in the center between the rows, fill with compost and turn a back furrow.

PLANTS AND PLANTING.—New plants can be obtained by dividing the crown or from the seed, the latter being the most desirable way. Or you can buy your plants, one or two years old, direct from nurserymen. In growing from seed, sow in drills, which are one foot apart and two or three inches deep in the drills Thin the plants to about three inches Give them thorough and careful cultivation for two years. Under very favorable conditions, one-year plants will do for transplanting. Lift the roots carefully, and expose them as little as possible. No plant feels hurt in the root more keenly. If the soil for your permanent plantation is in fairly good condition, do not waste manure by applying it the first year. Wait until the plants can use it.

Be sure to set the plants deep, and give them plenty of space, so as to allow top cultivation and room for the extensive root systems. In the old directions, the distance advised to set the plants was from twelve to eighteen inches; but now, for lasting beds, four to six feet is recommended. Greiner says that with rows six feet apart, the roots will soon interlock. In clay lands six inches, and in sandy land nine inches would be regarded as deep planting. After your ground has been thoroughly prepared, plow a furrow the required depth across your field. Where the plants should come, put one or two shovelfuls of compost. Place the plant in the bottom of the furrow, spreading out the roots, and cover about three inches with earth. Be particular to fill the furrow gradually as the plant becomes established.

PLANTATIONS FROM SEED.—Growing permanent beds without transplanting is finding many advocates at the present time. It is cheaper, and possibly better. Sow about six pounds of seed per acre in three-inch-deep drills, which are three feet apart, the place for the drills having been previously hollowed out somewhat. The plants should stand at least nine inches apart, or even more. Everything depends upon the culture. Asparagus is weaker than the weeds, and it will be easily smothered out.

With good culture a crop may be cut the third year. During the first and second year a crop can be grown between the rows, but they must not be allowed to take the manure from the asparagus. This method is advocated mainly by Henderson. Greiner recommends for amateurs and those that desire extra fine and large stalks, to use instead of soil in filling furrows, light porous compost composed of fresh horse droppings, wood dirt, leaf mould, etc. This covering absorbs heat readily, and also is sufficient protection. He suggests that it might pay for marketing. In this case, it would be much better to pull or break off the stalks than to

try cutting. You could easily push down your finger and break off at the crown.

Gray, in the *Garden Magazine*, vol. IV., page 246, says, Do not cut the stems down in the fall until all the sap has returned to the roots. Others say, Cut as soon as they begin to turn.

GATHERING AND MARKETING.—In the use of the knife, care must be taken that injury is not done to the starting buds, and to use the draw cut as much as possible. Where the ground is loose enough to push the fingers down by the stalk, by all means twist or break the stalks instead of cutting. Cut the stalks when from two to four inches above the ground. Do not try to cut longer than two months, or about the middle of June. If the cutting season is made longer than this, the next year's crop is injured, as the plant has not had sufficient time to recuperate and lay up stores for the next year's crop. Sort out the uniform lengths, and make up in circular bunches that weigh from one to two pounds. Place the tops even, and then even the bottoms by cutting. Bunching machines are in the market, or you can easily construct one. Rubber bands are often used instead of raffia for tying the bunches. Stalks can be kept for several days by placing in a cool room and immersing the butts in an inch or so of water. For shipping short distances you can use trays, but for longer distances you must use boxes that are a little deeper than the length of bunches. Be sure to pack them in firmly and fill in about the tops wtth some soft padding to prevent injury to the asparagus if boxes should be turned upside down.

VARIETIES.—The chief colossal varieties are Conover's, Barr's Mammoth, Moore's Hybrid and Argenteuil. Palmetto is a southern variety for which much is claimed. New sorts are frequently announced, which as a rule are somewhat superior strains of the varieties named. It is indeed doubtful whether they are not all one and the same thing developed and improved by selection.

ENEMIES.—The Asparagus beetle has been troublesome about Long Island and some other locations. The color is a combination of yellow, red, light blue and glossy black; virtually it is a yellowish beetle with black stripes. When it is fully grown it is about one-half inch long. The egg is laid along the sides of the young stalks. When the insect is disturbed, he ejects a drop of black liquid. Mr. E. S. Carman discovered the most effective remedy of rubbing off the eggs by passing the hand lightly up the stalks. Do this early and the insect is effectually checked.

F. E. RUPERT.

# PECANS IN THE NORTH.

THAT there are valuable varieties of this nut in the north we can testify from observation and experience. Those from Texas and Louisiana have been tried here and found tender; but we have them here of a large size and of excellent quality. Trees grown to an enormous size, near 100 feet high, and over two feet in diameter, are common on our Missouri bottoms; and a grove of fifty trees, which the pioneer had sense enough to let stand, is a very profitable piece of land.

I know of one such about six miles from here, from which the owner realized more money one year than from the rest of his farm. I paid him eight dollars for part of the yield of one tree that season. The trees are scattered over several acres, and he farms the land nearly the same as that which is clear—raises wheat and corn. To go through this pecan orchard and examine the difference in the nuts was quite a treat and curiosity. There are not any two exactly alike; some long and thin, pointed at both ends, others short and nearly round. The surface of some is rough, while others are quite smooth. The same difference is found in their flavor, and the amount of meat and quality of what is in the shell. Some shells are pretty hard, with thick lining partitions, while others are so thin that they can be crushed with the hand. Those large ones that I bought were packed in sand in a box with holes in the bottom for drainage, let stand on the ground out doors all winter, and in the spring, just as they began to sprout, were planted out in a row three inches apart, covered one inch deep.

I don't believe three per cent. failed. They were in good soil and made tops of from six inches to one foot. But when I got to digging them, something was learned. Many of them had roots twenty inches long, and to get them out entire was no small job. The idea that nut trees are very difficult to transplant is erroneous; the only trouble is, persons don't do it right. I raised of that lot alluded to about 1,000, all of which were sent out all over the Union. In all my observations I have never found one on upland. River and creek bottoms are their home. An impression generally prevails that this class of nuts must be planted before they get dry, or of any age; but this is wrong, so far as the history is concerned, for a few years ago I planted some paper-shell hickory nuts that had lain in a drawer for three years. They were planted in the fall and every one grew. But they grew very slowly in the first two years, and it is not likely that I will ever see them bear nuts. There are thousands of acres in the south, the land of which is not used for farming, that would become very valuable in course of time if planted with the best pecans, or planted with

any good growing ones, and when ten years old, grafted with the best varieties. W. R. Stuart, of Ocean Springs, Mississippi, sent me the finest yet received. On my grounds here are growing grafts of Nussbaumer's hybrid pecan, grafted on common hickory, several feet above ground. They have not yet borne fruit, but may soon. While difficult to grow when grafted on trees of some size (and it must be crown grafting), they take readily when set on young trees a few inches under ground. Several of these hybrids or crosses, whichever they may be called, have been sent to me; and I find that several of them are larger than any pecan I ever had seen. S. MILLER.

*Montgomery Co., Mo.*

## WITH THE SMALL FRUITS.

OWING TO the dry weather, my crop of strawberries was only moderate. The Gandy again has pleased me better than any other variety on my grounds; it is very late. The berry is large, smooth, and of more than average quality.

Among raspberries, Souhegan and Marlboro come earliest, and about together. Both begin to ripen fully a week before the season for the Gandy strawberry has closed. This year, both the Souhegan and Marlboro had their season remarkably prolonged. We gathered fine berries from the Marlboros almost as long as from the Cuthberts. This last is our best berry in quality and productiveness. The Gregg and Cuthbert for late, with Souhegan and Marlboro for early, cover the whole raspberry field, unless for special occasions one desires on his table a royal beauty, in which case he needs the Golden Queen, which fruited with us this year for the first time, and greatly pleased us

The Marlboro and Gregg seem to be deficient in vitality, and a good many of the bushes have died from no apparent cause. Other varieties growing beside them have been unaffected. Our raspberries have been planted in rows four feet apart; experience would place the minimum distance at six feet.

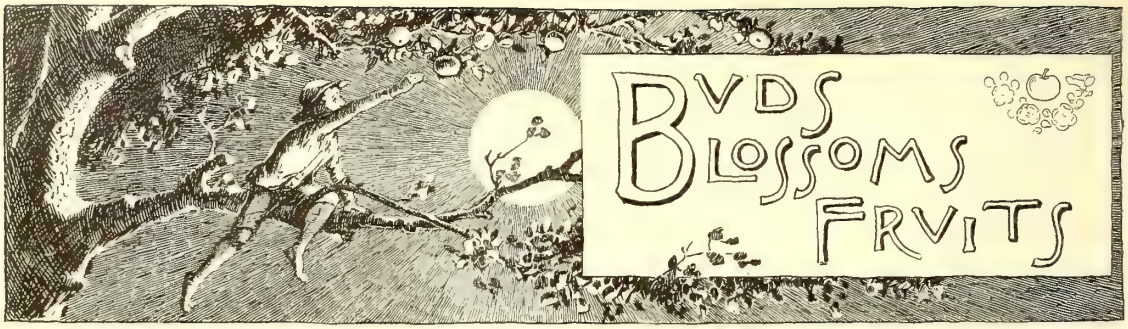
The Fay currant far surpassed all other varieties on our grounds. The bushes were so heavily laden that they lay prostrate on the ground. The bunches were very large, the fruit of excellent quality. The Cherry variety was much smaller in the berry, than Fay. The White Grape we found again a beautiful fruit and fine for the table, it being the sweetest of currants. Our future plantings will be of Fay, White Grape, and Victoria for late. We have been little troubled with the currant worm this season, the bushes keeping in foliage well without the use of insecticides.

The Houghton and Downing gooseberries bore magnificent crops. If our plants are true to name (which we begin to doubt), the Houghtons were the better. The Smith fell behind either. Industry is free from mildew, but bore little fruit; Crown Bob seems deficient in vitality. The Mountain, Late Green and Golden Cluster were all free from mildew.

We had Early Harvest blackberries ripe June 28. This berry is a beauty. The vines seem vigorous and fairly prolific. Early King follows in ten days, but has not commended itself to us. Erie is fine, but not prolific with us. Wachusett, Wilson Jr., Kittatinny and Lucretia have so far done no good for us. We have fruited Lucretia three seasons, and it only cumbers the ground. Time has shown that we have two very distinct blackberries, both bought for Snyder. One, a strong upright grower (while the other is inclined to a trailing habit), we consider our best blackberry.

Of the juneberry Success we have two distinct varieties. That is, both were bought for Success. Both fruited sparingly. No plant on our grounds made a more vigorous growth than a Japanese wineberry. The fruit was worthless, the plant itself of little value for ornamental purposes. We have not noticed that anyone has called attention to resemblances between this plant and our American thimbleberry. To our minds, the thimbleberry is the much more valuable for ornamental purposes. We have been trying to grow huckleberries. The plants were received in a dry time, after having been on the road over four weeks, and yet they live, even if they do not grow much. We have not mulched them, and the soil in which they are planted is probably not very favorable.

*Union Co., Penna.* GEO. G. GROFF.




*NOTICE.—As a special inducement to lead our readers to contribute short notes on cultural methods and devices, and to send in sketches and photographs of choice plants, fruits, flowers, vegetables, garden scenes, implements, etc., the publishers hereby make the following offer for a limited time: For any good article that occupies a half-column or so of space, or for any sketch or photograph from which an acceptable picture can be made for these columns, a year's subscription to this journal will be given. The articles will not for a moment be judged from the standard of fine writing or composition, but by the practical and useful ideas or suggestions in them. But besides this premium, the gain accruing mutually between readers by the telling of experience should be sufficient inducement to contribute such notes. We shall look for a hearty response to this offer from our readers.*

## I. LITTLE TWIGS.

CACTUSES need so little care.

A DRY PLACE for the winter onions.

DAMP DESTROYS more celery than frost.

SASH-BARS of aluminium are anticipated.

THE SHIRLEY POPPIES have pleased us much.

FREQUENT RE-POTTING may be actually harmful.

PREPARE YOUR ballot on name at once. See page 682.

NO DOUBT every tree stands firmest on its own roots.

COMMON GLADIOLUS BULBS are not far from being hardy

MEANINGLESS curves or "wriggles" in a walk are absurd.

SOME PERSONS express surprise that the Japan quince fruits. Why should they?

CRANBERRY GATHERERS at Cape Cod receive ten cents for a measure of six quarts.

EVEN BULBS, ravenous feeders as they are, must not have rank manure in too close contact.

HAVE YOU A CELLAR? Do you keep a horse? Then why not make a trial in mushroom growing?

CALIFORNIA GREEN FRUIT, shipped east over the Southern Pacific up to September 8, amounted to about 2,000 car loads.

A PERENNIAL TRUTH.—"I only need visit the graveyard of a community to know the character of the people."—*Benjamin Franklin.*

IF WINDOW GARDENERS only would learn that market plant growers avoid over-potting as they do frost, less complaints of bad luck would be heard.

OLD ENGLISH GARDENERS used to boast of the crop of peas sown in open ground in November, in England. That practice is now largely abandoned.

IT IS NOT a graft but a union from the root up, and therefore solid and reliable—we mean the combination of THE AMERICAN GARDEN and POPULAR GARDENING.

ACORN COFFEE, though quite popular in some districts of Germany, is not at all pleasing to our taste. Yet it is considered strengthening for consumptives and delicate children.

THE PERFUMERY used in England every year would make a respectable miniature lake holding about two million gallons, and every gallon of it worth not less than five dollars.

"HE THAT QUESTIONETH much shall learn much," saith the philosopher. If you do not find the exact information you need in your work you are referred to the Question department.

LET BUT enthusiasts, though strangers, start off talking about their flowers, lawns, fruits and vegetables and they get acquainted in no time. That's the spirit to have prevail in this great family.

WE LIKE to turn everything to good account, even frost. On beds and fields newly spaded or plowed and left rough, frost acts as a thorough pulverizer, and in a measure as a fertilizer also.

THE THREE TALLEST TREES in the world are said to be a sequoia, near Stockton, California, 325 feet high, and two eucalyptuses in Victoria, Australia, estimated to be 435 and 450 feet high respectively.

TWO NEW PANSIES, one snow white, having instead of the usual yellow eye, two smaller petals of pure white, and a good red to be called cardinal, are announced as novelties for next season.

YOUR GOOSEBERRY BUSHES will bear all the better next season for timely severe pruning. By removing branches where too thick, especially of old wood, and heading straggling branches back, you will not go far astray.

ALL MATTER and samples for the editorial staff should be addressed to Elias A. Long, La Salle-on-Niagara, N. Y. All subscriptions and other business matters to The Rural Publishing Co., Times Building, New York.

THE LARGEST MUSHROOM on record, probably, is the one picked up by a workman in Londesborough park, England. It was 42 inches in circumference, stem six inches in circumference, and weighed over two pounds.

ALLOW US to introduce to you a great family of gardeners—THIRTEEN in one: THE AMERICAN GARDEN and POPULAR GARDENING head the list, and the lesser lights combine in one great horticultural ray that shall enlighten the gardens of America.

THERE IS ALWAYS room at the top—for big apples and strawberries, says the *California Fruit Grower*. The admission from such a source is a surprise. We had been given to understand that California fruit was big, if somewhat flat, all the way through the package!

DID APPLE POMACE DO IT?—Mr. Moulton, one of my neighbors, has an apple orchard now bearing four or five barrels of extra smooth, perfect fruit. He says the only dressing used for the trees was apple pomace from his steam cider mill.—W. C. JENNISON, *Natick, Mass.*

KINDNESS MAY KILL.—Avoid covering half-hardy plants too early. As a rule, December covering of these is better than covering earlier. When you do cover, remember that a big slab of sod cut about an inch and a half thick is one of the best of coats for many things.

THOSE WHO have not tried *Zinnia Haageana, fl. pl.*, are advised to make a note of it for next season's planting. It is an easily grown annual, with any number of pretty double flowers that in color remind you of African marigolds. We expect to illustrate it sometime soon.

WE ALWAYS COLLECT dry leaves in autumn. It helps to clear up the premises. Even if not worth much for manure, they come handy as absorbents in stable and poultry houses, and for the hens to scratch in during winter. The little labor pays well, especially as labor at this time is cheap.

THOSE WHO, in adorning their lawns with hardy shrubs, overlook the berry-bearing plants, such as barberry, snowberry, waxberry, strawberry tree, privets, bush cranberry, make a great mistake. They excel in beauty just now. All of our leading nurserymen can supply these, and the price is low.

MUST THE POLE LIMAS GO? They seem to have lost that relish for us which they possessed before the time of Henderson's Bush Lima. Is this due to the superiority of the latter in flavor, or to the peculiarities of the past season as affecting the former only? What have our readers to say on this point?

A SOIL-HANDLING TOOL.—Having considerable earth to grade recently, I made a tool from a defective six-tine manure fork, as shown by drawing, that for effectiveness really surprised me. The tool entered either sod or ordinary hard soil more readily than would a spade, while it is lighter than that tool.—CAYUGA MARKETMAN.

OUR NURSERYMEN should make more of the variegated-leaved corchorus as a fine hardy shrub, in their catalogues. It stands the winters unprotected as far north as Niagara Falls. It is one of the most shapely, graceful and vigorous dwarf shrubs on our grounds. We have noted its good qualities in this latitude for fully twenty years, and are surprised that it is not more grown.

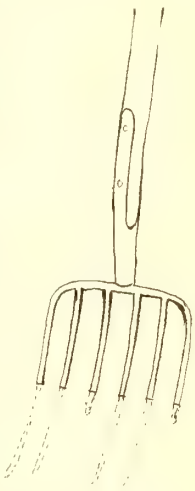
WITH THE chrysanthemum's recent increase in merit and popularity, it now crowds the rose rather hard for position as queen of flowers. Still how can it ever wholly displace that fragrant, time-honored favorite? A compromise to the effect that two queens be recognized, the June and the Autumn queen of flowers, is now quite in order.

TO SHOW to what extent the chrysanthemum has taken possession of all hearts, it is only necessary to notice the spirit of the New York Florists' Club. At their coming chrysanthemum show, November 2-8, they offer the large sum of $6,500 in premiums. Madison Square Garden on those dates will be worth a journey across a continent to see.

FRUIT OR VEGETABLE?—Should the tomato and melon be classed among fruits or vegetables? It seems simple. See how the groceryman places them—always among the vegetables. See where you find them on the exhibition table—always among the vegetables; and if you want to find where they grow, you go into the vegetable garden. Enough said; a bean is just as much a "fruit."

WITH THE RECENT improvement in chrysanthemums, their culture has become most fascinating. When, therefore, you attend the shows, make a note of the better varieties, with a view to adding them to your stock another season. This journal will help you all in its power, but when it comes to suggesting colors and forms, each person's taste should be the criterion for that person.

THEY FAIL.—I have obtained flower-seeds from the best houses in the country. Treat them as best I can, many will fail. The seedsmen say it is the grower's fault. Maybe; but I have tried all treatments, and yet meet with many disappointments. My fear is that too many of our seedsmen do not renew their stocks of seeds sufficiently often, especially outside the more staple sorts.—MAY GAINES, *Oneida Co., N. Y.*



SOIL-HANDLING TOOL.

IS DONE LIFTING BOUVARDIAS.—I don't plant them out for lifting in the fall any more. I keep them in pots through the summer, plunging these with the rim a little deeper than the beds. To prevent worms entering, I place a smaller pot directly under the other in plunging. Lifted and potted plants never give such satisfaction through winter as do those receiving the other style of treatment.—C. C. MAGEE, *Worcester Co., Mass.*

AS OTHERS SEE IT.—Thousands of city children now every year are given a fair glimpse of the country, thanks to fresh-air missions. "Wat de country is like is dis;" said a small, red-haired Irish waif after his return from

a two weeks trip in the country. "Dere's de whole worl', an it's green, an dey ain't no houses, an you kin hear a mile w'en you holler, 'cause it's so still. An all de streets is dirt an soft, an de birds sings, and dere's cherries on de trees."

## II. THRIFTY SAPLINGS.

**Idaho pear** specimens have been received from H. S. Anderson of this state, and the Idaho Pear Company of Idaho. They only strengthen the impression resulting from examination of specimens in former years. The fruit is characterized by large size, somewhat awkward shape, clear yellow color, its peculiar pleasant aroma, smooth uniform texture of flesh, almost entire absence of core, and fine quality. The variety is certainly valuable for all sections where the tree will grow.

**Wanted! A Name.**—Exactly what this consolidated journal shall be called has not yet been decided. This is a family matter, in which the reader has an interest. We want your help in deciding. To tens of thousands the name THE AMERICAN GARDEN is endeared; to quite as many others, perhaps, POPULAR GARDENING would be the first choice. A compromise on "GARDENING" is being considered; What say you, reader? Your postal card ballot would assist in deciding; indeed, as the politicians say, *your* vote may settle the matter. Send it quick!

HELENIUM AUTUMNALE. (See page 683.)

**Wandering Jew.**—Are plant growers above giving this old window plant a place, seeing it is so rarely met? I esteem plants, old or new, according to their merits. If there is another family that will develop more beauty for equal trouble than will the subject of this, I want to meet it. I grow three varieties—the common, the zebra-leaved, and a species with small leaves called vittata. I plant them in hanging pots in the most ordinary soil, and with a little attention to pinching the ends of shoots, obtain the handsomest mass of foliage imaginable.—MAY GAINES, *Oneida Co., N. Y.*

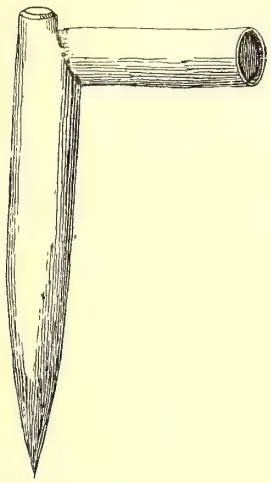
**A Fine Bouquet Flower.**—One of the wild flowers that has given especial satisfaction in my flower garden this year is the Virginia water-leaf (*Hydrophyllum Virginicum*). The whole plant is very pretty; it grows about ten inches high. The handsome pinnate leaves have leaflets with large spots in the center. The flowers are very numerous, in dense one-sided racemes ranging from white to sky-blue, and of good size for bouquet making, for which they are especially adapted, the color being particularly attractive in bouquets. It is a fine plant for parks and other large grounds, and for the flower garden.—WILFRED A. BROTHERTON, *Oakland Co., Mich.*

**Window Garden Fruit.**—To gather a little bouquet for a friend or some invalid is one of the greatest comforts of the window garden, and we can well afford to be generous, for the plants will do all the better for a little thinning and a timely removal of the flowers. Often we see a fine plant put forth a few choice blossoms, which the owner would not cut for love or money. So they are allowed to bloom, fade, dry up and go to seed. Afterwards the owner wonders why, with all the watching and fussing and tender care, the plant does not grow more rapidly and does not give more bloom. Picking off the flowers would have brought more in the train of the pruning.

**An Improved Dibber.**—Long continued work with the home-made dibber, or in fact any other ordinary dibber, wears greatly on hands not perfectly hardened and calloused by the steady use of hard handled tools. We who work in the garden for pleasure or profit, are not expected to have the "horny hands" of the man who earns his living merely by handling shovel and spade. We like to use a dibber such as illustrated on page 683. It is cut from a branched stick, the branch coming out at nearly a right angle. It is neatly shaved down to the proper size and shape, and the handle part fitted to receive a piece of rubber hose, which should be lightly drawn over it. This gives a firm, and yet easy and convenient hold. We like this dibber better than any other we ever used.—W. W., *Des Moines Co., Iowa.*

**Philadelphia's Sunken Garden.**—The sunken garden at Horticultural Hall, Fairmount Park, Philadelphia, is a product of the Centennial Exhibition, and has been the admiration of thousands of people every summer since then. The fine effects here produced in carpet bedding and its marked success make it no longer an experiment, but a leading horticultural feature of

the park. It is about a quarter of a mile long, forty feet wide, and five feet deep, and is divided transversely in the center by steps and a walk, on one side of which is a tank containing a *Victoria regia;* on the other side one containing water hyacinths and lilies. On the slopes are continuous festoon beds, in which plants of subdued colors are used, the lower level beds containing the most brilliant.—W. C. BUTLER, *Philadelphia.*



DIBBER WITH PADDED HANDLE.
(See page 682.)

**Two Handsome Vernonias.**—(1.) *V. Noveboracensis:* A very handsome native perennial, growing to the height of four to eight feet, bearing at top a large corymb (over one foot in diameter) of rather large purple heads. This is a wild flower of especial merit, greatly improving under cultivation, as the writer can testify, he having an especially fine plant, which has borne its handsome purple heads in great profusion, and sends up from five to ten stalks from each root. Fine for the park, the flower garden, the lawn or the bouquet; everywhere attractive. (2.) Clustered vernonia (*V. fastigiata*): Two to four feet high, having smaller corymbs of smaller but much darker purple heads. Color much richer, but as the heads, as well as the entire plant, are much smaller than in the first named species, it is a less showy plant. Still, it is worthy of culture.—WILFRED A. BROTHERTON, *Oakland Co., Mich.*

**The Kodiak Flower.**—It is not named after the popular photographic box, but from Kodiak Island, in the extreme north Pacific near Alaska. Miss Mary Ransom, according to E. E. Smith before the California Floral Society, brought the first plant to California. But for the statement to the effect that the seed is "about the size of tobacco seed" one might, from the description, infer that it is the beautiful double bindweed or calystegia (also called rose-vine) illustrated in the April POPULAR GARDENING. "The flowers are borne in profusion from May to September; very double, about 1½ inches in diameter, and shaded from the most delicate satiny pink to bright rose," says Mr. Smith. Dr. Behr of California considers it allied to *Clarkia rhomboidea*, of his state. Altogether, we would like to know more of the kodiak flower; if our California friends will send us a few seeds for trial, "we'll do the rest."

**Reproductive Powers of Vegetation.**—The reproductive powers of vegetables and the lower order of animals are immense. One single plant of elecampane frequently produces in one season 3,000 seeds; the poppy 3,300; the sunflower 4,000. The tobacco plant has been known to bring to maturity fully 40,340 seeds. This astonishing power to multiply is more especially manifested in the elm. It is said that one tree will produce the enormous sum of 1,500,000 of seeds, and each of these seeds has the power of producing the same number if given a chance. The production from one single seed in the fourth generation would be sufficient to plant the whole solar system to elms. All this lavishness in seed production is merely a wise precaution against the extinction of the kind by unfavorable conditions or attacks of enemies. It is for no other purpose than that although thousands of seeds must perish, one may live and produce its kind.—WILLIAM STREET, *Montgomery Co., Pa.*

**A hearty invitation** is extended to every friend of this journal to visit the editor's experiment garden, at La Salle-on-Niagara. These grounds, known as "Woodbanks," are but five miles up river from the matchless Niagara cataract. A score of trains daily connect the two places. An area of 13 acres has here been planted with one of the largest collections of hardy trees, vines, shrubs and plants, both useful and ornamental, in America. As a simple illustration, the vineyard comprises more than one hundred varieties, bearing their first crop the present year, while the two acres of lawn show nineteen distinct kinds or mixtures of lawn grass. The kinds and varieties of lawn trees and plants nearly exhaust the catalogues. In the midst of such a garden the editorial staff, including our artist, perform their work on this journal. Visitors are welcome to come and study the place to their heart's content, so long as they will forego personal attention from the editors, who are very busy men.

**Helenium Autumnale.**—This showy plant is attracting considerable attention now-a-days. It grows in clumps, several stems arising from the same root, three to five feet high, bearing at their summits large, loose corymbs of blooms. The flowers are two inches and under in diameter, and very showy; both the ray and disk parts being a brilliant yellow. The rays, which become drooping, end in three blunt teeth. The stem is decurrent (winged); that is, leaf-like wings (ridges) pass down it from the leaves, giving it a peculiar appearance. It is one of the most showy of our native autumnal flowers. It grows usually along lakes or rivers and smaller streams close to the water's edge, or if far from it, where the ground is moist. Have found it growing in mucky, sandy and red clay soils, generally flourishing best where there was a good deal of gravel, lime or clay in the soil. This will give satisfaction wherever a hardy perennial with very showy yellow flowers is wanted, whether in the park or flower garden. It is really an autumn glory, blooming from August to October.—W. A. B., *Mich.*

**The Fuchsia in Winter and Spring.**—The fuchsia is not generally a winter-bloomer. Some varieties give a few flowers in winter, but we should look to other plants for winter blooming. Such as have bloomed

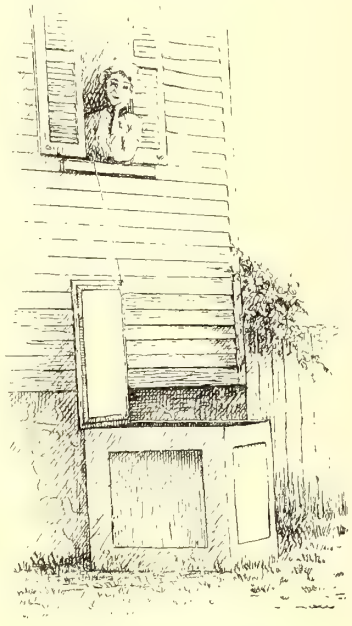
all summer should have a rest. You can keep them in the cellar, watering two or three times in winter. About April, bring them to the light, and if the pots are filled with roots, shift into larger pots. Handle carefully, and do not break the ball of earth that contains the roots. Set in a box or pot, and fill the vacant space with rich soil. Press the soil firmly, and wet well. Be sure the soil is free from angle worms, as their presence is death to the fuchsia. All the old leaves and dead wood should be removed, and the plant trimmed in good shape. Keep them from strong sunlight, and give plenty of water at the roots. Spray the leaves twice a week, and you will be astonished at the rapidity of their growth. To those who wish to be busy over their plants this one offers a fine chance, as they revel in repottings, shower baths and attention generally. I know of no other plant that will thrive when it is "fussed with" so well as the fuchsia.—MAY FROST.

**On Arranging Grounds.**—The article entitled "Taste and Tact in Arranging Home and Other Grounds" is the thirteenth installment of what, without doubt, is the most successful serial relating to practical horticulture that has yet appeared in the American press. The design of the series is to impart, in a plain style, practical ideas on tastefully arranging grounds of every kind, basing the instructions on actual examples submitted by our readers. To this end sketches of home plats, rural cemeteries, town squares, village improvement work, etc., have been invited from our readers, with a view to our submitting suggestions for improving the same, in future articles. To date, scores of plats for improvement have accordingly reached us. Of these more than a dozen have been carefully treated in POPULAR GARDENING; to the great satisfaction, as we are assured, of multitudes of readers. While it has been the case that more diagrams have been received than could yet be published, this has been a decided advantage to readers in enabling us to choose the best subjects for conveying information to the largest number of interested persons. On similar conditions other plans are cordially invited from our greatly extended list of readers.

**Flowers at the World's Fair.**—Half a million pansies, one hundred thousand roses, and millions of other flowers, including every known variety and species, will be seen at the Exposition. The horticultural exhibit will be on a scale never before attempted in the history of the world. Mr. Thorpe estimates that the equipment of the horticultural building, including the purchase price of plants, will be $350,000, and the total expense of the display $750,000. The floriculturists of the country will donate a large share of the plants. Ten of the sixteen acres of ground on the wooded island will be planted in flowers. The shores of the island will be left wild for scenic effect, and the waters around the margin of the island will be bright with water lilies and other aquatic vegetation, while its interior will be tastefully planted with roses, rhododendrons and lilies, besides a vast variety of wild flowers, which are at present preserved in a nursery on the island.

H. J. Laing, a London florist, called on Chief Thorpe and arranged to make a grand display of tuberous begonias. Mr. Laing promised to send two men from England to grow and care for the flowers, and have a vast field of the blossoms ready for the fair.

**A Refrigerator Hot-bed.**—"A hot-bed!" was the great cry in early spring, and as a first-class one couldn't be thought of, we hauled out of the cellar a large old ice-box, placed it under a chamber window, fastening a strong string to the lid, and the other end to the blind. A bushel of fresh manure was placed in the box, with soft meadow soil on top. The seeds were planted and seemed to like their quarters as much as if they were in a real hot-bed made by a carpenter. In three or four days most of them were up, and fit to transplant before the garden was ready. The lid could be raised or lowered from the window above. One night it came on to pour; I was awakened by the thunder, and feared my poor seedlings would be drowned. But it was only the work of a moment to dash to the window, lower the lid, and make all snug and safe. After the seedlings had been transferred to the beds, the box proved convenient for things for the window-garden. On some accounts it was better than a real hot-bed, for there was no tiresome stooping. I've learned that if one wants a tool or some convenience for the garden, and the money is not handy, by looking around one may find right under her nose something that will serve the purpose very well.—SISTER GRACIOUS.



REFRIGERATOR HOT-BED.

**Flowers in the Buffalo Parks.**—Superintendent McMillan, of these parks, is one of the ablest landscape gardeners in America—a man who strives for the highest ideals in park embellishment. As a consequence, he is opposed to many things in the line of floral embellishment in public grounds which generally pass for being very handsome. So far as the park system under his charge is concerned (and it is one of the grandest specimens of landscape gardening in the world), it has never been marred by any ridiculous exhibits of so-called "artistic" bedding, such as prevail in many parks.

But recently the Buffalo Board of Park Commissioners voted an appropriation for securing and running a range of greenhouses for growing tender bedding plants for the parks. We venture to prophesy that the superintendent will grow a large stock of bedding plants, and give the public some excellent illustrations of how effectually to use this class of flowers in lawn embellishing. Now if the Buffalo park board will make an appropriation for stocking up their parks with a fine collection of hardy perennial flowering plants, we shall see such an exhibition of sensible flower gardening as is all too rare in this country. This intelligent park superintendent is capable of great things in such directions

**A Blue Chrysanthemum.**—It will be remembered that such a one of bright hue was exhibited in Philadelphia a year ago, but it was made of paper. John Thorpe, our leading chrysanthemum authority, believes that a genuine blue chrysanthemum is among the near possibilities. While the old botanists averred that we could not have blue, yellow and red in the same species, the case of the hyacinths sets that theory at naught, and gives Mr. Thorpe reasonable grounds for expecting the addition of a good blue to the many gorgeous colors now found in the autumn queen. Commenting on the original colors of the chrysanthemum, he says these were very limited. There were a pale yellow, a white, and a very weak lilac shade, and from these have been raised all the colors and shades now seen in this flower. This has been accomplished by very slow and persistent selection and cross-fertilization, and from sports. It is worthy of notice how intensified the yellows have become, and how many shades of this color there now are. The lilac has become pink, of pure shading; then, as to red, Cullingfordii often presents us with nearly a pure tone of red. The most pronounced purple we have to-day is from the lightly-tipped, incurved Princess of Wales, being a sport named Violet Tomlin. It is really purple. Now we cannot get purple without blue, and to those who are at work in this field of development, a blue chrysanthemum would not be such a great surprise.

**My Cellar Work-table.**—Happy is the lover of plants who has a good cellar! New uses for it will be found every year. I have driven nails into the rafters, and hung upon them baskets containing dahlia tubers, oxalis bulbs, etc. They are out of the way, free from frosts, and always come out in the spring in good condition. Ferns will make excellent growth in the cellar, particularly when you take your fern-case apart, as is necessary once a year. I have my table in the cellar, and often pot my plants there, and work over the plants that will be moved into the north bay window and covered with glass in October. I never saw an amateur but had great trouble with *Begonia rex*. They are lovely at first, and it is a constant temptation to you to buy one, but in a few weeks the leaves droop, and perhaps an ugly snail will riddle them with holes, and you give up in despair. But try the cellar. I have a glass globe on my cellar table, into which, when the gold-fish died, I put earth mixed with sand, and cutting a gash or two in the leaf, laid it flat on the top of the earth. Had you watched it with me patiently, you would have seen the roots form, and learned how to raise a *Begonia rex* yourself. Another plant that grows beautifully in the cellar is the maranta. Its leaves are beautiful, and its flower delicate. I shall keep my fern-case darlings in

CELLAR WORK-TABLE.

the cellar until they are well established and can be removed to their true home, the dining room, where they will delight our eyes all through the winter.—SISTER GRACIOUS.

**Express Companies and Fruit Growers.**—Much complaint is heard again about the unsatisfactory service and the high rates charged by the express companies and other carriers. We believe these complaints are not without foundation. The mass of fruits produced this season gives to the transportation companies a vast amount of business and a large income. The carriers ought to be thankful for this, and try to coöperate with the growers to their mutual advantage. Instead of doing this, they take every possible temporary advantage that the situation and the great demand for shipping facilities afford them, and exact the old rates, based upon fairly high fruit prices, and upon the well-known principle of "what the traffic will bear" for service that is characterized by hurried and rough handling, and lack of all reasonable care and decency. The prices obtained for the fruit grower's products this season do not give him much comfort. The margin between actual expenses and selling price goes almost entirely into the pockets of the carriers and adds to their wealth and influence. The fruit grower's labor receives little reward. In many instances even now it is a serious question with the latter whether he should let his products go to waste or ship them to market merely for the benefit of others. We believe the transportation companies are making a great mistake in not showing more willingness to divide the profits of the large fruit crop with those who produced

it. In their greed for immediate gain, they are ruining some of their best customers, and jeopardizing their own chances. The fruit growers will not stand the high prices for poor service forever.

**Flowers for the Winter Window Garden.** — No need of doing without flowers in winter, no matter how cold or dreary. It is only necessary to select among those perpetual bloomers that are the foundation of any good collection, the plants which thrive under the peculiar conditions of soil and temperature that you can offer them, afterwards giving minute attention to proper potting, fertilizing, drainage and cleanliness. Mrs. Lora S. LaMance gives the following list of steady winter bloomers: Abutilons in variety, *Achania malvaviscus*, ageratums in variety, *Anthemis coronaria fl. pl.*, *Agathæa cœlestis* (blue daisy), balsams, cuphea (cigar-plant); *Begonia rubra*, *B. Sandersonii*, and *B. semperflorens*; *Clerodendron Balfouri*; geraniums, winter-blooming sorts; heliotropes, daisies, *Jasminum grandiflorum*, *Impatiens Sultani*, *Euphorbia splendens*, *Lopezia rosea*, oxalis (winter sorts), *Nicotiana affinis*, *Rivina humilis*, petunias, single and double, *Primula Sinensis* and *P. obconica*; marigold, double; roses, winter-blooming teas; sweet alyssum, ten-weeks-stocks, vinca. Some of these, as the clerodendron and petunia, will bloom only in warm rooms; stocks, primulas, and daisies in rooms moderately cool. Again, geraniums and roses must have full sun to bloom, while primulas and oxalis need slight shade. Abutilon, achania, begonia and nicotiana bloom equally well in sun and shade, but require size to give profusion in blooms, and the first two sorts need a preliminary course of "pinching back" at least six months to promote a bushy, dwarf growth, as "leggy" plants give few blooms. On the other hand young plants of alyssum, marigold, daisies, balsams and primulas give the best satisfaction, but they should invariably be stocky plants, or they will not bloom the winter through. Comparatively few roses or geraniums bloom well in winter. Among these are: Jas. Vick, Master Christine, Mad. Thibaut and Bishop Simpson geraniums, and Niphetos, Perle des Jardins, Safrano and Bon Silene roses. Roses are difficult for a beginner to manage, and are so liable to be infested with aphis or plant-lice, that many amateurs will not admit them into their collection, as when once introduced the pests spread rapidly from one plant to another. It will thus be seen that there is room for wide choice between the various ever-bloomers. If restricted to a half dozen sorts, choose a *Begonia rubra*, a good geranium, an abutilon, an achania and a single and a double primula. If the room is to be kept very warm, omit the primulas and substitute a heliotrope and single petunia.

**Personal between Editor and Readers.**—This department of the consolidated journal is to be made up from the departments formerly known as "Buds" in POPULAR GARDENING and "First Fruits" and "Windfalls" in THE AMERICAN GARDEN. It is designed, as in the past, to be a common meeting-ground of readers and editors, to familiarly talk over all sorts of matters helpful to increase the interest in horticulture. The motto applying to the department, as it often has been quoted in a Buffalo journal, is this: "Everybody knows more than anybody." Perhaps we ought to ask our artists to work this into the new head that is to be engraved for this department in the full-fledged journal. We'll see! That excellent motto means simply that the wisest horticultural writer, or the most skillful experimenter, though he have acres upon acres devoted to tests in popular gardening, or these jointly or a score of them together, know but precious little of gardening as compared with the sum of practical knowledge possessed by a family of a hundred thousand gardeners, amateur and professional, whose "experiment" plots are scattered in town and county throughout this land. But the difference in knowledge is just here: In one case it may represent the greatest possible acquirement of single individuals, and ready to flow from their pens at will. In the other, it is scattered information, of but little use beyond its possessors except as it shall be revealed through a suitable medium. This magazine, through its special departments and this general department, aspires to be just that collecting and distributing medium for the general good.

While its managers will by no means overlook the value of all expert information, and now desire even more of it than ever, yet increased effort will also be made to enlist the great mass of amateurs and other gardeners as contributors to these columns. What is desired is, that every reader contribute some information bearing upon his experience in useful or ornamental horticulture. You certainly have reached some results, made some discoveries, however simple, that will be useful to others. Here is the place where they may be made of the greatest possible value. You may possess some implement or device, or some fine plant, tree or other garden object that would, if illustrated, be of interest to others. These columns and our artists are at your service, for the good of the cause. You have a suggestion to make or some new idea to add to what some one else has said in the paper. The "Comments by Readers" section of this department is open.

Thousands have questions to ask; other thousands can answer questions that have been asked; a suitable department is at the command of both.

In short, this journal, as the exponent of popular American horticulture, asks all who are interested in the fascinating art to assist in working out by its means the greatest possible good for the greatest number.

Gardening is a popular art; the price of the magazine will be popular (one dollar a year), its matter shall be popular at the same time that it is practical and suited to various tastes; and altogether, with the support and assistance which we are determined it shall deserve, it now is and shall continue to be not merely the greatest journal of its kind in America, but easily the leader of all other horticultural journals in the world. May we have the earnest support of all friends of horticulture?

## III. COMMENTS BY READERS.

[*One idea often suggests another. Here is a page in which all readers are invited to express themselves regarding any matter that has recently appeared in these columns. If you think you know better regarding some point than the writer of some recent article, or if you think you can forcibly confirm or add to some present or late statement in these columns, the Editor would be glad to hear from you. Many such contributions would be welcome each month.*]

**Various Floral Matters.**—I smiled in sympathy when I read in the September POPULAR GARDENING a complaint about the ways of some plant dealers, for I swallowed the bait and was caught on that very hook; and in consequence I have a manettia vine, a *Solanum grandiflorum* and a sweet nightingale or ghost plant—one name will do as well as the other, for there is not a ghost of a blossom to tell whether it is sweet or not! My manettia vine has done fairly well, planted out on south side of the house in rich soil, but has never had such abundance or size of blossoms as the catalogue represented. *Solanum grandiflorum* is very enterprising as a vine, and has made wonderful growth but of its blooming qualities I have a poor opinion, and the few blossoms it has are about as fine as a potato blossom. However, one likes to experiment with new plants, and while I heartily agree with M. S. in condemning the practice of exaggerating the good qualities of novelties, so called, perhaps the experience, if passed along to our floral friends, will be beneficial all around. I still stand by old *Cobœa scandens*, thunbergias of the different colors, lophospermum, etc., for vines for my conservatory in winter, and these with climbing nasturtiums, morning glories, sweet peas, abobra, madeira, and some others for out of doors in summer. I have experimented with the different sorts of ipomea, moonflower, etc., but do not find them desirable for this climate. It is to be regretted that so few persons mention their state in writing of their success or failure with different plants, as climate makes all the difference in the world. Constance Elliott is a much-lauded passion vine, and in a climate of perpetual warmth may bloom as profusely as some of the catalogues represent, but in this climate it will not, though the vine will cover a porch, roof and all, and the foliage is very pretty; so I keep it in a tub and take it to the cellar in the fall, cutting it back well, bringing it out again in the spring.—MIRIAM PARKER, *Minn.*

**Early Tomatoes.**—It is the opinion of some growers that the tomato requires a certain age to mature its fruit, and that no manner or degree of forcing can induce the plant to ripen much inside of four months and a half. I believe it depends on soil, weather and culture, and that it is possible to raise plants so as to get ripe fruit in less than three months. One season I sowed tomato seed, of the Trophy variety, the 11th of March, in a hot-bed. I use no sash, but cover only with boards. April 7 the plants were taken from the seed-bed and planted in another hot-bed, five inches apart. On May 2 I set them in the open ground. The land was well broken and worked mellow, and marked off in rows, four feet apart. I put two shovelfuls of well rotted manure every three feet in the rows, mixing the manure well with the soil. The plants here set were cultivated every three days, if the weather would admit. When ten or twelve inches high, stakes were set at each hill, and the plants kept nicely tied to them. Suckers were taken off. On the 13th of May they were in bloom. All imperfect fruit was taken off. On the 3d of July I sold the first ripe fruit, making one hundred and fourteen days from seed until ripe fruit. In another year since I sowed on the 9th of April the Acme variety, in a hot-bed without sash, just covered with boards. On the 2d of May I took the plants from seed-bed and planted them in the open ground. The land was treated the same as in the first case, except that when they were worked the third time, a liberal top dressing of hen manure was given. Good cultivation was given, and the plants kept to stakes, and all imperfect fruit kept off as before. They were in bloom the 1st day of June, and July 11 I sold the first ripe tomato, making ripe fruit in 93 days from seed. To cultivate the tomato in a way to throw as much of the force and vigor of the plant into the fruit will cause the plant to produce ripe fruit much earlier. —T. D. B., *Ky.*

**Wild Oat Grass in Michigan.**—The wild oat grass (*Danthonia spicata*), noticed by F. H. Horsford of Massachusetts, in THE AMERICAN GARDEN, August, is a very common Michigan grass, growing on dry sterile soils. In such places it sometimes holds exclusive possession of the ground. It is common along roadsides, and in open woods where the ground is dry and sterile, especially upon the high hills of Oakland county, Mich. Never saw it on cultivated land in Michigan, or on any but poor soil. Still it is evidently spreading, growing as a rule where nothing else would grow. The present writer has considered it a fair pioneer plant to add humus to sterile soils, ultimately fitting it to grow better things. As it is worthless for other purposes, and seems to be rapidly spreading, Mr. Horsford's remarks are timely and deserve careful consideration by farmers. Would like to know in what states this grass grows.—WILFRED A. BROTHERTON, *Mich.*

**Where the Eucalyptus Grows Out-Doors.**—The "tenderfoot," on his first visit to southern California, finds many trees that are new to him. Foremost among these is the tall eucalyptus, which was briefly mentioned in May POPULAR GARDENING. It is a native of Australia, valued highly for its rapid growth. Many persons residing near San Diego have small groves of eucalyptuses, from which they obtain a large part of their firewood, cutting off the entire top of the tree every few years. The tree seems to be in no way injured by this excessive pruning, but immediately sends out new shoots to furnish another supply of fuel. By steeping the leaves an excellent remedy for coughs is procured, one that is not in the least disagreeable to the patient. Tainted meat wrapped in the leaves a few hours is said to become fresh again. The bark of

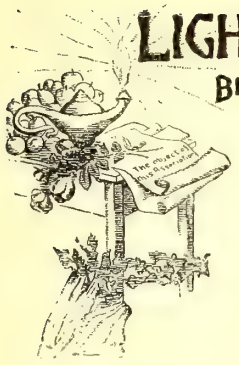
the eucalyptus is also said to be a good substitute for tannin. The eucalyptus requires very little care, if planted where it has a sufficiency of water. If cultivated in swampy, malarious districts, it would contribute in no small degree to making such localities healthful.—A. C. SULLIVAN, *Cal.*

**Reliable Reports.**—What can be more interesting or useful than notes from real experiment grounds where it is known that the experimenter has no commercial interest to influence his conclusions? It is better even, in some respects, than experimenting on a salary, as at the government stations. Love of the work is a great stimulant to the experimenter.

**Heuchera.**—Having found specimens of one of our native alum-roots, last season, the writer looks with eagerness for the report of the new Mexican species, at the La Salle grounds.

**First and Best Peas.**—Reliable notes on the many so-called improvements in these are much needed. One hates to be always decrying the new, for in many directions the advance has been wonderful; but the grain of salt needs to be thrown in often. For years in succession we grew an old variety, Carter's First Crop, for a first early for market gardening purposes; this was between 1880 and 1890. By delivering directly to customers, and taking extra care to have stock always freshly picked, so good a popular reputation was made for this old sort (not known to customers by name) that they could not be induced to buy of others. The pods were almost invariably well-filled, and the crop was assuredly profitable whenever we were in the market early. This was on what we have been in the habit of calling "ordinary" soil,—though it was a clay loam—and with no great advance over ordinary treatment. Peas were sown in thick rows, and manured, though not heavily, with barnyard manure. Our experience tallies exactly with that of the Editor at La Salle, as to the difficulty of distinguishing one "first early" from another, by reason of any decided advance in any one of the three great market qualities: earliness, heavy cropping, or fullness of pods. Not a year passed that other varieties were not tested on equal terms with the Carter's, yet we never reached the point where we dared give it up in favor of any other, no matter how highly lauded. One year we grew a long row each, of four high class "firsts," in rich garden soil, with equal chances, hoping to establish a claim for Cleveland's Rural New-Yorker above the others; but a stranger could not have told that they were not all of the same variety; the only advance our sharpened discernment could make out, in spite of the leaning toward the Cleveland, was that its pods were a trifle broader and better filled than those of the others. Yorkshire Hero, and the mammoth podded Stratagem and Telephone have been given a black mark because of insufficient productiveness, although they are all good otherwise. Nothing yet suits us as well as Laxton's Alpha and the old Champion of England for delicious sweetness and productiveness combined. Both have a faulty vine in that they are too tall, and this is our chief reason for trying so faithfully to find something better to replace them. Alpha is often a slender grower, with pods not always well filled. The present year it outdid itself, and the difference was surely due to the field; for the first month after sowing was so very dry that we feared the crop would be a failure. The ground was a heavy clay loam, devoted to peas both in 1889 and 1890, when it had received good dressings of commercial potato manure only. This year a dressing of hen manure was applied, perhaps three weeks after sowing, and a second when they were in bud The vines were so rank and vigorous that we hardly recognized the variety, and the pods were filled almost to bursting. The cut of Heroine is very taking, and it has been placed on our list for next year.

**Kerosene Emulsions.**—Much experience in a small way with both formulas leads the writer to express the belief that those who desire to mix small quantities of the emulsion, and have not a force pump, will find the emulsion as made with milk easier to secure and safer to use than is the case where soap is used. The oil mixes quite readily with milk, and—possibly because of this—a strong dilution, which would prove fatal to foliage with the soap emulsion, does no harm to anything but insects if the milk formula is used. Red spider has, with us, been kept at bay by the perhaps cowardly—at least discreet—method of growing only those plants that it does not especially favor. Carnations have been the noticeable exception, but only twice has the enemy appeared, and then on plants brought from the commercial growers' houses. Last winter the plants were neglected in favor of things more important, and December found the carnations alive with the dreaded pests. "Is sulpho-tobacco soap effective?" we asked a prominent floral writer. He replied that its odor, at least, would be effective in driving us out of the house, and advised water, which had already been tried without the least apparent effect. He thought the kerosene emulsion of no value, but its use was the desperate, almost hopeless last resort before destroying the infested plants. Two thorough applications, at intervals of perhaps ten days, freed the plants. Since this treatment of them, not a red spider has been seen on the plants, and this remedy is thus proved successful. —C. S. VALENTINE.



# LIGHT FROM THE SOCIETIES

## BEING MATTER THAT DESERVES TO BE WIDELY KNOWN

**American Carnation Growers.**—We learn that quite a large number of carnation growers have expressed themselves in favor of forming a national carnation society. There is room for such a society. Let the good work go on!

**The Western New York Horticultural Society** has secured the premiums offered by the State Agricultural Society, namely, $200 for largest display of fruits for market purposes, and $100 for best display of fruits for domestic use.

**New York Chrysanthemum Show.**—The premiums offered by the management of the show to be held at Madison Square Garden, New York, in November, amount in the aggregate to the modest sum of $6,500. A statement in THE AMERICAN GARDEN, September issue, conveyed a wrong impression. It may be mentioned in this connection that a preliminary chrysanthemum show is being held at the United States nurseries, Short Hills, October 26 to 31, which is in itself quite extensive, Messrs. Pitcher & Manda having a magnificent display.

**Pennsylvania Horticultural Society.**—The annual spring exhibitions of flowering bulbs, orchids, roses, carnations, palms and other decorative and flowering plants, cut flowers, table decorations, seasonable fruits and vegetables, will be held in Horticultural Hall, Broad street, Philadelphia, March 29 to April 1, 1892. Very liberal premiums are announced.

**The California Florists.**—At the semi-annual meeting of the Florists' Club of California, in September, the following officers were elected for the ensuing year: President, Emory E. Smith; vice-president, F. Shiveley; recording secretary, M. H. Wilkens; financial secretary, C. W. Shaw; treasurer, Joseph Carbone; directors, G. E. Robinson, H. B. McGowen, S. H. Selling and E. J. Poyal.

**Indiana Horticultural Society.**—The annual report for the year 1890, just received, makes a handsome volume of 200 pages, superior in both text and general make-up, edited by W. H. Ragan, secretary. A new and highly interesting feature is the Appendix C, Catalogue of the Birds of Indiana, by Amos W. Buller, containing 142 pages and a large number of life-like illustrations. Altogether, this report is a highly commendable work.

**Royal Horticultural Society, England.**—Among interesting plants recently shown before this society was an *Aristolochia grandiflora* from the Royal Gardens at Kew. The flat portion of the perianth measured sixteen by twenty inches, with a pendulous filament three feet long. It is reticulated, white and rich brown, the center with velvety purple, interior of tube lined with reflex hairs. The odor is very powerful. Leaves six to eight inches long, ovate cordate.

**Cactus-Growing.**—Cactuses should have a sandy soil, say one-third sand, and will endure the hottest sun. Some kinds are best when grafted on some other variety. The enemies of the cactus are the red spider and the mealy-bug. Should the mealy-bugs become too numerous they will kill the plants. The best remedy is hand-picking. The ravages of the red spider are greatest in a hot and dry room. Frequent spraying with water is a good remedy.—MRS. FLORENCE E. MOORE, *before the Miami Horticultural Society.*

**Cranberry Crop Short.**—According to reports received from all the cranberry growing regions of the country by the American Cranberry Growers' Association the crop will be 20 per cent. smaller than that of last year. This is attributed to the heavy frosts, both east and west, last May. The New Jersey crop will show an increase of 6,078 bushels, or 6.8 per cent. In New England there will be a decrease of 16,596 bushels or 15.4 per cent. The eight reports received from the west show a decrease of 8 per cent.

**A New Industry for Women.**—An association of women is about to start in business to undertake by contract the care of London conservatories, window-boxes, balconies and small gardens by the year, season, or month. The members of the association will themselves attend to all orders, employing men for the digging and rough work only. Plants will be received and tended by the association during the absence of the owner from town. The title of this new business is the Women's London Gardening Association.

**Massachusetts Horticultural Society.**—The following special prizes are to be awarded at the annual chrysanthemum exhibition, November 3 to 6: Offered by the Boston Gardeners and Florists' Club, for the best ten vases of chrysanthemums, of ten named varieties, ten long-stemmed blooms of one variety in each vase, $75; second prize, $50; offered by Peter Henderson & Co., New York, for the best six cut blooms of chrysanthemum Louise Boehmer, a piece of plate valued at $25. Also, at the spring exhibition, 1892, offered by the firm of R. & J. Farquhar & Co., Boston, for the best two pots of *Lilium Harrisii*, a piece of plate valued at $15. These prizes will make competition interesting.

**Protecting Trees from Rabbits and Mice.**—A device exhibited before the Indiana Horticultural Society by Mr. Fess consisted of lath, and wire about the size of bail-wire used in water pails, but more flexible. Three laths were sawed in two in the middle, thus making six slats. In fastening them together they are laid down on a table, each lath about an inch from the next, and all parallel. A piece of wire, long enough to go across all the slats and extend an inch or so beyond on each side, is laid across them about six inches from the end of the slats, and a staple is driven over the wire and into each slat. Then one of the surplus ends of the wire is bent into the form of a hook and the other into the form of a loop. Another wire is placed in the

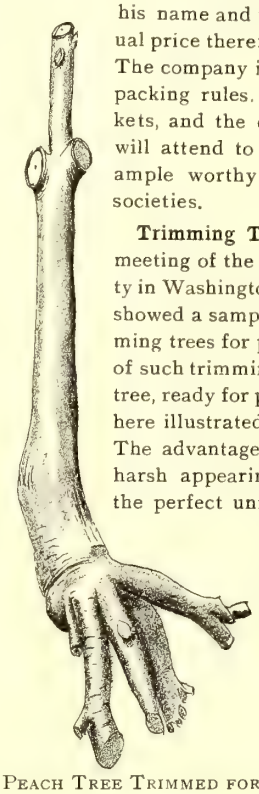
same way near the other ends of the slats. The whole can then be placed around a tree, the wires hooked, and thus a complete cage is made to protect the tree. Of course, the slats can be placed closer together if necessary. The whole arrangement costs only one or one and a half cents per tree. Another member said he used wire screening, and it cost him only nine-tenths of a cent for each tree. He would cut out a piece of wire cloth that would a little more than go round the tree, and bend it round a broom handle. It was then put round the tree without any fastenings and would hold its place.

**The Compost Heap.**—Select a place handy to get at, put down first a bed one foot deep of old sods or muck, and on this pile all the refuse material as it collects in various places ; it may consist of old straw, leaves, an occasional load of heating manure, rotten vegetables, etc. This should be turned over occasionally, by hand if necessary, but the best way is to have the compost in the hog yard, and haul to it manure as it collects near the stables. If manure is piled upon a good bed of rotten sod, it will not lose much by leaching, nor will it lose by heating if hogs have the run of the yard it is in, as they will "root" it up well.—Prof. S. B. Green, *before the Minnesota State Horticultural Society.*

**California Legislates Against Insects.**—A law passed in the last session of the California Legislature makes it the duty of the County Board of Horticultural Commissioners to inspect orchards, nurseries, or other places in their jurisdiction, and to notify the owners if they find such places infested with the scale insect, the codlin moth, or other pests injurious to plants or trees, and to request them to eradicate or destroy the pests. Such orchards or nurseries are adjudged to be public nuisances, and when their owners shall refuse to abate the same within a specified time, it shall be the duty of the County Board to destroy said insects, and the expense thereof shall be a county charge, to be recovered by an action against the property.

**Cemetery Planting.**—A cemetery lot with mounds of graves not higher than three inches above grade, of plain sod, well clipped and trimmed, and cut by a lawn-mower, gives the appearance of neatness, simplicity, quiet and beauty, that every burial lot ought to have. Should ornamental relief be insisted on, there are numerous and various plants and shrubs that may be used, such as the American ivy, English ivy, myrtle, laurel, box and holly, plain or variegated. These give a natural appearance, and harmonize with a well-kept lawn, and with the foliage of forest and other trees. The growth of wild flowers should be encouraged, which, together with a good collection of hardy herbaceous perennials, will insure an abundance of flowers from earliest spring until the severe frosts of autumn. This class of plants is inexpensive, will live through winter, flourish without care, become larger in size, and increase in beauty every year, and should be dispersed over the ground so as to give them a natural appearance.—Geo. H. Scott, *before the Association of American Cemetery Superintendents.*

**Co-operative Marketing.**—The Reno county, Kansas, fruit growers have recently formed an association for the purpose of securing better shipping facilities and market prices. The stock is divided into 1,000 shares of $5 each, on which an assessment of 20 per cent. is required to be paid at once. This gives to every member the right to ship in the car of the association to its agent at the pro rata carload rate for carriage and sale. Each shipper will mark his own fruit with his name and will receive in return the actual price therefor, less the expense as above. The company is now maturing shipping and packing rules. An agent will secure markets, and the committee on transportation will attend to shipments. This is an example worthy of imitation by other local societies.



Peach Tree Trimmed for Planting.

**Trimming Trees to Plant.**—At the recent meeting of the American Pomological Society in Washington, Prof. Brunk of Maryland showed a sample of his new method of trimming trees for planting, and also the results of such trimming in root growth. The peach tree, ready for planting, as shown by him and here illustrated, was only 15 inches in length The advantages claimed for this somewhat harsh appearing mode of cutting back are the perfect uniform distribution and ramification of the roots all through the soil in every direction, while trees with roots left wholly or nearly intact make root growth only along the lines and in the direction of the root ends left. The tops have to be trimmed in proportion to the roots, to preserve the proper balance between root and top. The specimens of pear and peach trees grown from these "mere sticks," and exhibited before the society, were fine and well developed, and superior to specimens grown from trees as ordinarily trimmed. Prof. Brunk says that in the tree as cut back by him he has the best part of the whole in a small space. Nurserymen might do this trimming and then be able to pack 6,000 trees in the same space now required for 1,000.

**Good Rules for Beginners in Fruit Growing.**—Do not undertake too much at first. Where experienced persons agree as to one method and disagree as to another, follow the method on which they agree. Spring planting is conceded to be good by all authorities. Fall planting may be practiced with such varieties as grow

from cuttings. Stand by the older varieties and do not venture much on untested kinds. Do not take the advice of interested persons unless you know them. Do not expect to accomplish without experience the same results as are accomplished by experienced persons. If you can succeed as well as they, you are either a great genius in this direction or this is a world of chance. Different advice is given by persons of experience. This comes from different conditions. Study your conditions. Do not change your business. Be patient.—M. A. THAYER, *before a recent Wisconsin Meeting.*

**The Possibilities of Economic Botany.**—The methods of improving plants are already known so well that if all our present cereals were swept out of existence, our experiment stations could probably replace them by other grasses within half a century. New vegetables may be reasonably expected from Japan, which has already sent us many choice plants in all departments, and it is likely that some of our present vegetables, which are now much neglected, will come into greater favor and be improved. The fruits of the future will tend more and more toward becoming seedless, just as pineapples, bananas and some oranges are now. There is no good reason why we should not have seedless raspberries, strawberries and blackberries, and also raise, by cuttings, plums, cherries and peaches, free from stones.—PROF. GOODALE, *before the American Association for the Advancement of Science.*

**Ohio Horticultural Society.**—The Ohio State Fair at Columbus always attracts many fruit growers, either as exhibitors of fruit or admirers of the fruit displayed. This year the fruit exhibit was the best made of late. There were three thousand plates on the table, apples taking the lead. These were excellent for fairness, fine color, and large size. The display of pears and peaches showed that their culture in Ohio was fairly successful. There was a good display of plums, although it was past the best season for most varieties. Grapes made a fair showing, but were not up to the standard of last year, probably because of frosts. Twelve counties competed, with one hundred plates each, of all varieties of fruit. Lucas county led, with Lawrence, Ottawa and Lake following in order named. Thursday evening about fifty horticulturists assembled in Representatives' Hall, President Campbell presiding. Ravenna, Portage county, was chosen for the annual meeting in December. The question of the society's exhibit at the Columbian Exposition was referred to the executive committee. They will report at the December meeting.—E. H. C.

**Co-operation in Marketing Fruits.**—E. J. Howland, in introducing the subject, said: Commission men at present are a necessity. If we would make an organization and say we want some reform of abuses we might accomplish something. In the first place the commission men take a good percentage. I am not prepared to say that it is too much. Then the risk is entirely on our side. The commission man takes no risk.

I don't see how we could organize a State Union, but where in a neighborhood 200 or 300 acres of fruit could be secured, much might be done.

The following points, if answered in the affirmative would make coöperation a success. These are:

1. Will coöperation correct the abuses practiced by commission men?
2. Can we buy our supplies more advantageously?
3. Can we secure lower rates from railroads?
4. Can we secure better prices for our produce?

I might add a fifth: Will horticulturists organize harmoniously and work together?

As to the first point, I will give one instance: I once sent in some twenty-four half-cases of red raspberries. When the returns came in there were three naughts, and I did not even get the cases back. I thought at least I should have got something on the cases.

As to the second point, we could buy in car-load lots, and so could buy to better advantage.

In regard to securing lower rates from the railroads: Southern Illinois growers have secured a reduction from thirty cents to fourteen cents. What others have done we may do.

And as to the fourth point, I think we could get prices sufficiently better to cover cost. My plan is this: As soon as persons subscribe sufficient acreage to warrant the outlay, let an organization be made. Let an agent be appointed to receive all shipments, and send all to him. Let him choose his commission men, and receive one-half per cent., or so, pay. I am satisfied that we are liable to overstock one commission man. If we had a man at the market, he could see where to put the stock. We could afford to pay a good man five or ten dollars per day to do this, rather than to have a poor one do it for nothing. If a man was there all the time, he could see who could use the stock.

Another way would be for five or six men to establish a commission house of their own. I think 400 acres of fruit would justify keeping a commission house the whole year, and pay interest and rent. Ten per cent. is a good deal. I would like to hear now from some men who have had practical experience in this direction.

Prof. Lazenby states that six Tompkins county (New York) fruit and vegetable growers formed a coöperative society for the sale of their products in Ithaca, the county seat, and for a number of years have very successfully maintained the same. Each of these men had from twenty to forty acres in cultivation. They had labored under the same difficulties you are experiencing, and determined to throw off the yoke. They planned and planted together, each one growing the special class of fruits and vegetables his ground was best adapted to. In this way they were enabled to supply the best of articles of their own growing. They canvassed the city and made their contracts with consumers, giving the best of assurance that their articles should be fresh and in good order. They secured the services of a competent, reliable man to attend to the deliveries, and each morning they met at headquarters

with their products. After taking an account of what each man put in, the products were delivered by their man. If any remained over, it was sent to other cities for sale. They soon found it to their advantage to establish drying houses, canneries and cold storage, and in various ways accomplished far more than individuals can do.—*Extract from the Discussions of Indiana Horticulturists.*

**Aquatics and Their Culture.**—Fifty years ago the cultivation of nymphæas and other aquatic plants was confined to some of the finest places of that time; notably the grounds of the Duke of Devonshire, where originated that superb variety, Devoniana The distribution of thousands of plants annually is a feature of our own day, and one which, from present indications, is certain to become much more important in the near future.

A few years ago many persons supposed the flowers were artificially colored. Now the blooms are generally admired, and are sold from the leading flower stores as cut-flowers, and are also used by thousands in designs and bunches on various occasions.

The Nymphæa.—*Nymphæa lotus* and *N. cærulea* were both figured on Egyptian monuments, also *Nelumbium speciosum*, representations of which are found on the ruins of the ancient temples. From this evidence we learn that the Egyptians were doubtless acquainted with it, although the plant no longer abounds in an uncultivated state in Egypt. It is supposed to have been originally introduced from Asia, where it is still found plentifully in many parts.

Some confusion exists in regard to the name lotus. *Nymphæa lotus* is probably the true Egyptian lotus, or lotus of the Nile of the ancients, and was held sacred to the God Isis, and was engraven on some of their very ancient coins. The lotus of the lotus-eaters was a tree (*Zizyphus lotus*) found growing in northern Africa and bearing a sweet fruit. *Nelumbium speciosum* is the sacred lotus, or water bean, of India. *Nymphæa cærulea* is called the blue lotus of the Nile, but is also found at the Cape of Good Hope.

The introduction by several of our large cities of water plants into their public parks has done much to educate the public taste for aquatics.

*Arranging Water Gardens.*—The introduction of water affords one of the most effective features in landscape gardening, and when judiciously planted becomes doubly pleasing. Many estates contain low, out-lying pieces of ground, half neglected, which, by the introduction of water gardening, might be made the most attractive of spots. If no natural body of water exists, a cemented basin of any shape or extent might be made at a comparatively slight expense and planted with aquatics; the background and margins with cannas, cyperus, caladiums, *Arundo Donax*, callas, irises, and other moisture-loving plants, making a most pleasing and attractive garden.

Any low piece of meadow with a clayey sub-soil, and which could be inundated, if broken up and well enriched might be planted with hardy lilies, with *Villarsia nymphæoides*, aponogetons and other small-growing aquatics for the shallow parts, and would make a most satisfactory lily garden. The nymphæas best suited for this purpose would be: odorata and varieties, yellow and pink; alba candidissima; chromatella, fine yellow; and for a blue, *N. scutifolia* would probably prove hardy, except for very far north. The nelumbiums also should be given a chance; for, while the tubers will not bear freezing, yet if planted so that the runners could bury below frost line, they will generally winter over. The calla of the greenhouse will also winter out if planted deep enough, and would be very effective with its fine blooms. Sagittarias, nuphars, orontiums, *Pontederia cordata*, *Sabbatia chloroides*, and a host of native aquatic and bog plants could be added from time to time, which would make such a garden of much interest to botanists as well as mere lovers of the beautiful.

To all who hesitate about beginning the cultivation of wate plants under the impression that the possession of natural ponds or the large outlay of money in preparation was necessary, I would say that a few tubs set in a sunny sheltered spot, with other plants set about them, and planted with nelumbiums and tender nymphæas, would give an opportunity for their succeseful cultivation. The tropical kinds flower more freely than the hardy ones, as a rule, and, being in tubs, might be removed to a warm cellar to winter.

The compost best suited for growing them in tubs or pots is good strong loam and well-rotted stable manure—about equal parts. With the proper conditions at first supplied, their after requirements are few, and these readily suggest themselves.—*Abstract of paper by Benj. Grey, read before the Toronto Convention of the Society of American Florists.*

**The Hybridization of Plants.**—In the lowest forms of vegetable life the process of reproduction is exceedingly simple—that is, one plant divides itself into two; each new plant divides again, and so on indefinitely. Under less favorable conditions reproduction takes place in a general way as follows: Two of these plants come together and merge their substance into one another—that is, fertilization consists simply of two entire plants, or parts of plants, which fuse into one, and lose their previous identity. This means the simple union of two individuals for the sake of strength and production. The united plant is able to live and resist adverse influences which otherwise would have destroyed the single plants.

The two plants after union become one round body, and this covers itself with a protecting shell; and since the larger the mass is, the smaller, proportionally, is the exposed surface, the united plant needs less covering than the two did before the union, thereby saving both material and force. Thus the union of the two into one mass has saved the life of the individual and has perpetuated the species. This is essentially what takes place in every plant where there is anything like

fertilization. The law is, that fertilization is the union of two masses of living matter ; and it should be remembered that in the fertilization of flowering plants we have the same union of individual masses, and that as a consequence of the union of the male and female cells, there begins a growth in the young seed which results in the formation of the embryo found in every seed. This fertilization—that is, the joining of the substance of the pollen-cell with that of the seed-cell—does not differ in any essential respect from that taking place in the simplest plant.

**New and Promising Small Fruits.**—To a true lover of fruits the mere description of many novelties is the most interesting *fiction* of the day. He soon learns that new and promising small fruits may in some respects be compared to human beings. There are men who make promises freely but rarely do anything else. We have them among the small fruits. Then there are ladies known as fickle. For a season they will smile upon you beautifully, causing you to be unspeakably happy, when of a sudden they change and leave you to the cold mercies of the world. These we have among the small fruits also. On the other hand there are the solid men of the day. They make no special fuss about it, but when you come to make a report of their acts you will find them performing their part well, each and every time. In the pursuit of this interesting study, the following characteristics of fruits have come under the essayist's personal observation :

Raspberries.—Among the blackcaps worthy of note may be mentioned the *Kansas* and *Lovett*. The former is a blackcap after the style of the Gregg—fully equaling it in size, and ripening a week earlier. It is also far more prolific with me, has less bloom upon the fruit, and is a freer and stronger grower. It is thus far hardy with me ; but the Gregg is usually hardy, also, the first year of fruiting.

*Palmer* is a variety of the Doolittle type resembling closely the Souhegan or Tyler, ripening with it. I have failed to note any property possessed by it wherein it is superior to that very valuable sort. These remarks apply to the Cromwell and Carman with equal force.

*Progress* or *Pioneer* is an improvement upon Souhegan in some respects, but it is not so early by three or four days. The fruit is identical in size, appearance and quality, but the canes are of much stronger growth and yield nearly double the quantity of fruit upon a given space of land. It also possesses the very desirable property of adhering firmly to the peduncle when fully ripe.

*Older* is a variety worthy of more than passing notice, being one of the very few entirely distinct blackcaps that have appeared in a long time. In fruit, cane and foliage it is so unlike any other variety as to be noticeable at a glance. In size it is large to very large, rivaling though not equaling the Gregg ; is almost destitute of bloom upon the fruit, hence very black, and although firm, is of superior, rich and high quality. In growth of cane and productiveness it may be compared to the Souhegan. Season, second early, ripening with the Ohio.

*Thompson's Early Prolific* is an early red variety that has proved superior, all things considered, to any I have grown. Were the berries larger and canes of stronger growth it would approach closely the ideal raspberry for market growing. It is among the earliest to ripen and is prolific. In size it compares favorably with the Hansell and Brandywine, and in firmness and brilliant color it nearly or quite equals these two varieties. Its quality is fair to good.

*Japanese Wineberry* is perhaps worthy of mention. The cane is of very strong growth and ornamental enough to be worthy a place upon the lawn. The berries, which ripen at the close of the raspberry season, are rather below the average size of red raspberries. They are deep amber in color, turning to the color of sherry, are translucent and sparkle in the sunlight and hence are very attractive. They are too soft for transportation, and although rich are too acid to be enjoyed by any except those who are fond of acid fruit. Properly cooked I have found it exceedingly palatable, and from it pretty and superior jelly can be readily made. The large calyxes or burrs which enclose each berry until fully ripe impart to the hand a viscous substance upon the slightest touch, that is decidedly unpleasant.

Blackberries.—It is to be greatly lamented, yet must, I fear, be recognized as a fact, that the trend of this most important member of the small fruit family is retrograde.

*Early King* seems to possess much merit as an early sort, especially for the home garden. In size it is about medium, larger than Snyder, Taylor's Prolific, etc., but smaller than the Wilson. It lacks firmness for long shipment, but is of superior quality and is very hardy. The cane is of moderate growth and fairly prolific, giving us our first blackberries.

*Thompson's Early Mammoth* is evidently a seedling of Wilson's Early and very much like it in many ways.

*Minnewaski* has proved with me the best substitute for the Kittatinny, since we can no longer successfully fruit that old favorite. The canes are of good growth, fairly prolific, healthy and hardy ; berries of good to large size, firm, attractive and excellent. It has not proved especially early, ripening with Snyder and Kittatinny, or ten days after the Wilson.

*Lovett's Best*, taking all things into consideration, is the most promising of the new varieties.

*Childs' Everbearing Tree Blackberry* or *Topsy* I think is a hybrid of *Rubus cuneifolius* by *Rubus villosus*, retaining the stout upright cane and villainous spines of the former and the large fruit of the latter. On ordinary fertile soil the canes attain a height of three to four feet, are erect, very strong and rigid. It branches freely and is densely covered with rather small foliage of a thick, leathery texture. I have never known it to be attacked by orange rust or any other diseases. It is exceedingly

prolific, beginning to ripen late or the first of August with me, and remaining in fruit from four to six weeks. The berries are of the largest size, rather soft, and of good though not high quality. It is not very hardy, its position being between Wilson and Lawton in this regard. I do not think it would prove profitable to the market grower anywhere, owing especially to its lateness in ripening.

CURRANTS.—*North Star* gives promise of being a valuable variety, especially for the market grower.

*Black Champion* is an improvement upon the old Black Naples. Berries are larger and produced in greater abundance.

The *Crandall* has, I am pleased to state, some merit for culinary purposes. It is of strong growth, exempt from the attacks of insects and disease and very prolific; but the fruit is too harsh and austere to be acceptable as a dessert fruit. The berries are exceedingly large, almost equaling in size the Delaware grape, and are decidedly attractive. A good jelly can be made from it.

A NEW FRUIT.—*Elæagnus longipes* is interesting. Did it ripen in late autumn instead of July its value would be greatly enhanced. The bush is of low spreading habit, densely clothed with pretty foliage, and comes into bearing as quickly as a red currant. Its yield is simply wonderful, the berries being literally crowded upon the under side of the branches. The fruit is borne upon slender stems about an inch and a half long, is of cinnabar color with numerous small light gray dots, and about three-quarters of an inch long by a half inch in diameter. It is tender and juicy, with one large, long, sharply pointed seed in each berry, but so acid as to render it utterly unfit for use as a dessert fruit, but useful for tarts—in fact, for all the purposes for which the cranberry is used.—*Abstract of paper by J. T. Lovett, read before the American Pomological Society.*

**American Pomological Society.**—The attractions which Washington, D. C., with its fine parks, public grounds, choice specimens of trees and plants from all quarters of the globe, and its many other things worth seeing, offers to the visitor in general, and the horticulturist at this time of the year in particular, did not prevent a fairly full attendance during all the sessions of the society in the lecture hall of the National Museum, held September 22 to 25. On the whole, the meeting, so far as the number of the members present, the interest manifested in the discussions, and the quality of the papers read, are concerned, was a decidedly successful one.

THE FRUIT EXHIBIT.—This was decidedly creditable. We have not seen a better one in recent years. A lot of seedling quinces exhibited by Luther Burbank, of California, were real beauties. Ellwanger & Barry had on exhibition a collection of 112 varieties of pears, among them Bartlett's of higher color than we ever had seen before. A number of varieties of Japanese persimmons and oriental pears were shown by President Berckmans. The exhibit of Henry L. Lyman, as representative of the Virginia State Board of Agriculture, consisted of 335 plates of apples, 27 of pears, 78 of grapes and 5 of plums. It received the Wilder silver medal. The Wisconsin Horticultural Society, the Jewell Nursery Co., P. S. Dinsmore of California, J. W. Porter and J. L. Babcock of Virginia, also exhibited many plates of fine apples. Special mention is due to the Albright peach, exhibited by H. M. Engle of Pennsylvania, who also had fine specimens of Paragon chestnuts; the Excelsior peach, exhibited by J. H. Hale, of Connecticut; the Brilliant grape, exhibited by E. Williams. The Albright peach is of mammoth size, white with red cheek. Excelsior, or Hale's Hardy, is only of medium size, but high color, the tree said to be quite hardy in buds. The Brilliant grape is one of T. V. Munson's seedlings, very handsome, somewhat like Brighton, and of superior quality.

SMALL FRUIT TALK.—One of the most interesting things brought out at this meeting was an informal address on the subject "How to Make Small Fruit Culture Pay," by J. H. Hale, who claims to have made some marked successes, and more marked failures, and thinks he sees now how the failures could have been prevented. Thorough preparation of the soil and liberal manuring are named as the necessary foundation of success. Three-fourths of the soil is not well enough prepared for profit. We can not dispense with deep plowing and thorough pulverization of the surface afterwards. Manure should be used freely on all soils not naturally rich enough. The fertilizers should be rich in phosphoric acid and potash. Much nitrogen in the manure applied in fall stimulates the growth of foliage in spring, and blight may follow. The best source of potash, according to Mr. Hale, is cotton-seed-hull ashes, next wood ashes. Phosphoric acid can be applied in fine ground bone most economically. Wood ashes can be applied at the rate of 200 bushels per acre. In the selection of manures, however, discrimination and good judgment must be used. Sometimes a little nitrogen will be beneficial. The Marlboro raspberry, for instance, is a slow grower, and nitrogen will help it to make stronger growth. The Cuthbert does not need such help.

The question of variety is purely a local one. The best advice is that which you get from your neighbor, and at your nearest market. What will succeed in one place, may be an absolute failure in another, and perhaps not a great distance from where that variety prospered. Growers usually allow too many plants on their fields, sometimes two or three times as many as are good for best results. Mr. Hale is an advocate of hill culture, and of giving each plant plenty of space. His raspberries are six feet apart each way. Thus he finds it easier to take care of the plantation, and gets larger and better berries than when plants are crowded, and as many quarts per acre. Altogether, there is too much grass and too many weeds grown in our berry patches. The point where many growers fail is at the market end. Some growers produce good fruit, and then lose all profits by not studying the best methods of marketing. The fruit-grower often works too hard and thinks too little. As a rule the man who packs best and studies the marketing

methods, is the one who makes the most money. A certain grower in Massachusetts packs his fruit in baskets of the finest and whitest basswood, puts in good fruit only, and always asks five cents per quart above market rates —and he gets it, too. Several other instances of the same kind are mentioned. Once Mr. Hale saw a man buy a lot of strawberries at 15 cents a quart, when apparently the same grade of fruit in another crate could be bought at 12½ cents. Asked the reason for his selection, the buyer replied, that the name of the grower on the outside of crate assures him that the berries are as good clear through the package as they are on top. He was in too great a hurry to examine a new lot from an unknown grower. This is a reputation well worth having. Mr. Hale also says the average home is not one-quarter supplied with the fruit it ought to have. It is all nonsense for rural people to claim that they can buy berries cheaper than they can raise them. Rural people never buy all they want. They may get a few quarts to last over Sunday, but they never bring in a half bushel at a time that the members of the family may eat all they want. A large family can almost consume a half bushel of fresh fruit a day the year around. No better and more profitable market can be found for a lot of fruit than the family. It certainly is profitable, even in cash. Plenty of fruit saves pies and cakes that make work for the women, and dyspepsia for the children.

Small Fruit Discussions.—J. T. Lovett followed with a paper on "New and Promising Small Fruits," the substance of which is given elsewhere. In the discussions of the various papers on small fruit growing Benjamin G. Smith, of Massachusetts, told of his success with the English gooseberries. They can be grown as well as the American sorts. Mulching is not necessary, but plenty of manure is. He thinks cow manure is best. He succeeds quite well with the blueberry. Once he found a fine bush near Cambridge. He gathered the fruit, planted the seed, and grew plenty of fine plants, which soon yielded an abundance of fruit. Prof. E. S. Goff, speaking of the importance of considering the market end, told of a banker in his place who introduced the business system of the bank into small fruit growing, and especially marketing, and who sold $8,000 worth of products from a few acres of land.

The New Officers.—The election of officers did not result in a change of the old staff so far as the following are concerned: President, P. J. Berckmans, Augusta, Georgia; treasurer, B. G. Smith, Cambridge, Mass.; secretary, G. C. Brackett, Denmark, Iowa. C. L. Watrous, Des Moines, Iowa, is first vice-president.

Fungous Diseases of Pomaceous Fruits.—Professor B. F. Galloway's paper on the "Recent Progress in the Treatment of Diseases of Pomaceous Fruits," gave a review of the results of experiments carried on by the section of vegetable pathology during the past year. The losses due to apple scab in 1890 are estimated to exceed $16,000,000, and the damage to pears, plums, etc., by the different diseases, at not less than $50,000,000 annually. The way to fight these diseases is by protecting the young and unfolding leaves against the germination of the disease spores. The points to be discovered, were (1), what kind of application is effective without injuring the foliage? (2), how often should the applications be made? (3), in what way can they be made most economically? The Bordeaux mixture has been found most effective. On a small scale the knapsack pump is all right; but for large scab operations it is not effective enough. The department, so Professor Galloway informs us, is now at work trying to construct an automatic machine, holding about fifty gallons, that will spray four rows at a time, and can be made at a cost not exceeding $25. The ammoniacal solution of carbonate of copper has been found best for mildew on apples, and for many other diseases. Three or four early sprayings seemed to give as good results as seven or eight at intervals all during the season. The cause of peach yellows is yet a mystery. The disease is transmissible. It can not be cured. It can only be eradicated by means of the axe and fire.

Pear Blight.—Prof. B. T. Galloway, in reply to a question about the nature of pear blight, says that it is caused by the work of a micro-organism which enters the tree through a growing tip, or through a flower. These microbes are easily obtained and can be bred like insects or plants. What to do for their destruction is another thing. We do not yet know much about it. The leaf blight can be prevented by spraying with copper mixtures, but this does not affect fire blight.

The peach yellows riddle remains unsolved. Dr. Erwin F. Smith is certain that the "starvation" theory, defended by Profs. Goessman, Penhallow and Maynard, is wrong, and the question stands as before. H. M. Engle, of Pennsylvania, suggests the use of plum stocks for the peach, in order to fortify it against infection. His own experiments seem to indicate that the peach, when budded in the branches of such plum stocks as the Blackman, are very little susceptible to the disease. Dr. Smith replies that he is trying peaches on plum stocks, but can not yet base conclusions upon the results thus far obtained. He also states that he has been on the station grounds at Amherst, Mass., and found fifty cases of genuine yellows among 300 trees. It is also shown that fertilizer applications bring out a thriftier growth even in diseased trees, and Mr. Chas. A. Garfield states that this effect often makes people think that they are curing the yellows, though the disease is progressing fast, and the trees soon die suddenly. Prof. Bailey had made three trips through Delaware, New Jersey and Maryland, and also saw Dr. Smith's test lots. The yellows there did not follow the lines of application. We must give up the idea that the chemical nature of the soil influences the yellows. As one of the first indications of the disease attack, Dr. Smith names the premature development of fruit buds.

The Peach Rosette.—Dr. Smith said that twigs affected by peach rosette cannot bear fruit. The disease is as dangerous as the yellows, much more contagious, and always fatal. The diseased spurs appear as if affected by green fly or like insects.


☞ *It is the privilege of subscribers to ask any questions about gardening in any department. All will be answered by specialists.*

☞ *Correspondents are urged to anticipate the season. To ask on April 15 or 20 what peas had best be sown, could bring no answer before June, when the answer would be unseasonable. Questions received before the 5th of any month will probably be answered in next issue. Please do not expect answers by mail except to very important questions. Inquiries appearing without name belong to the name next following.*

☞ *Replies to inquiries are requested from our readers. In answering give the number of question and your address, not for publication, unless desired. Write only on one side of the paper.*

## QUERIES.

(*The succession in numbering follows the October* POPULAR GARDENING.)

2613. **Apricots in Michigan.** Can any of them be grown here with any hope of success? What varieties are best to plant? If budded upon wild plum, how long before they would come into bearing?

2614. **Pears for Profit.** In setting 100 trees, would you plant mostly Bartlett or Anjou?—C. H. F., *Rives Junction, Mich.*

2615. **Violet Growing.** Have just put up three new violet houses. Please give me the essential requirements of the crop?—J. E., *Nyack, N. Y.*

2616. **Heating Small Hot-house with Hot Water.** How are the pipes arranged, and circulation kept up?—J. C. A., *Washington, Ind.*

2617. **Home Nursery.** How can I grow cherry, apple, peach, and pear trees for my home supply?

2618. **Pear Sprouts as Stocks.** Are the shoots that spring up around pear trees good for stocks?

2619. **Cherries Sprouting.** Why do our old red cherries sprout so from the roots? What kinds do not?—SUBSCRIBER, *Dexter, Mich.*

2620. **Raising Lily Bulbs.** How can I increase them, especially Easter Lily and *Lilium auratum?*

2621. **Pruning Currant Bushes.** How should this be done?—R. A. C., *Orchard Park, N. Y.*

2622. **Winter Treatment of Oleanders.** Should they be kept in the dark during winter, and is it best to cut them back after flowering in the spring?—MRS. G. S., *Montreal, Canada.*

2623. **Managing Apples.** Do you know of any treatise giving culture, packing and shipment? If not, please give some pointers about packing for domestic and foreign shipment.—Y. M. C. A., *Richmond, Va.*

2624. **Grape Mildew.** What is cause and remedy for it?

2625. **Black Rot of Grape.** What is the cause of the dead spots in enclosed grape leaves?—WM. A. S., *Philadelphia, Pa.*

2626. **Excelsior Peach.** Is this new variety worthy of general planting, both for market and home use?—R. M. W., *Columbus, O.*

2627. **Prickly Comfrey for Forage.** Is it of value? Is it difficult to eradicate?

2628. **Japanese Wineberry.** Is this of any particular value, except as a curiosity?—D. M. D., *Carpenteria, Cal.*

2629. **Chopped Apples.** Can you give me the address of parties buying chopped apples at prices named in Durand's paper? Also address of firm selling slicer?—N. L. G., *Nottingham, N. J.*

2630. **Stone's Hardy Blackberry.** Is this a good one for Indiana?—G. S., *Indianapolis.*

2631. **Cheap Fruit Evaporator.** Can you recommend one?—A. E., *Salem, Utah.*

2632. **Winter Protection of Roses.** How should we treat the out-door varieties?—M. W. Y., *Lancaster, Pa.*

2633. **Bordeaux Mixture on Grapes.** Will the scare recently caused by action of the Board of Health in New York city have a lasting injurious effect on the grape market?—GRAPE GROWER, *Canandaigua, N. Y.*

2634. **Affected Chestnut Trees.** A great many of our chestnuts here were this summer attacked by what appeared to be a blight; the leaves over the entire tree wilt, then turn yellow and fall off. On examination of the body, I find something like tracks of some minute grub or worm between the inner bark and the wood? Who can give light on the subject? C. R., *Laurel, Md.*

2635. **Promoting Fruitfulness of Growing Fruit Trees.** My orchard trees are remarkably thrifty, but very tardy in fruiting. Have remained almost barren. What can be done? ANXIETY, *Batavia, N. Y.*

2636. **Hardy Apples.** All our apple trees have been winter killed, but we have none of the newer introductions. Will some one at the cold north tell what varieties endure their winters?—MRS. H. A. D., *Constantia, O.*

2637. **Moyer Grape.** Is it hardy, and if so, does it equal Delaware in size, quality and productiveness?—H. P., *Ann Arbor, Mich.*

2638. **Night Temperature for Conservatory.** Residence heated by hot water; conservatory 7x15, heated in same manner, well protected to the north. What night temperature should be arranged for a general assortment of plants?—A. C. T., *Huntington, W. Va.*

2639. **Chinese Lilies in Clear Glass Bowls.** Will they grow and flower well?

2640. **Violet Disease.** Leaves marked with disease spots. Would it do to use the plants for forcing?—H. A. M., *Port Jarvis, N. Y.*

2641. **Prizetaker Onion Sown in Fall.** Can this variety be kept over winter for spring setting, if sown out-doors this fall?—F. D. B., *Galena, O.*

2642. **Gregg Raspberry Sets.** I grubbed out a patch. Plants sprung up thickly from the roots. Can they be used for sets?—C. A. S., *Whitehall, Wis.*

2643. **Cabbage Leaf Blight.** Is there such a disease? If so, what is the cause and remedy?—SUBSCRIBER, *Mercer, Pa.*

2644. **Oats in Currants.** Would it be a good plan to sow oats in the currant patch to serve as mulch for winter?—A. A. J. P., Jr., *Providence, R. I.*

2645. **Growing Potted Strawberry Plants for Market.** Land new, now in cabbages. Fertilized broadcast with compost of eight barrels fish scrap, 20 one-horse loads muck, 30 of sea-weed, and 300 pounds phosphate. How should I set and treat plants, and what other fertilizer should I use?—E. W. W., *Hancock Point, Md.*

2646. **Planting Dwarf Pears.** Should the trees be set deep enough so roots will be formed from the graft?—W. N. F., *Grimsby, Can.*

2647. **Niagara Plum.** Is it a desirable market variety, and as productive as Lombard?

2648. **Grape and Currant Cuttings.** When should they be prepared and how treated for cutting?—A. A. H., *Bellows Falls, Vt.*

2649. **Japan Plum and Variegated Cornelian Cherry for Virginia.** Will they endure our hot dry summer?—MRS. H. M. T., *Richmond, Va.*

2650. **Construction and Cost of Small Conservatory.** Intend to put up one on south side of house. Can any one give me an idea about construction and cost? How heated most cheaply? Furnace too far away.—MRS. E. A. H., *Burton, O.*

2651. **Strawberries in Louisiana.** In what manner can we best keep them during hot dry summer?

2652. **Manetti Rose Stock.** What is it, and where can I get some?—M. C., *Lousiana.*

2653. **Sulphate of Ammonia.** Would you recommend this in solution as a stimulant for greenhouse plants?—W. Y. F., *Concord, N. H.*

2654. **Large Potato Yields.** How can I grow 150 pounds from one pound of seed, as some growers claim they can do?—C. M., *Cape of Good Hope, South Africa.*

2655. **Stock of Plums on Clay Soil.** Is peach or plum preferable?—W. M. G., *Portland, Oregon.*

2656. **Hot-bed Making.** Please give directions.—G. T. C., *Orleans, Mass.*

2657. **Pansies Dying.** My plants came up well from seed. Bed kept well protected; but majority of plants died within a week. What can be the cause?—W. A. B., *Parkersburg, W. Va.*

2658. **Fruit Jellies for Market.** Can you tell us the process of the commercial manufacturer of fruit jellies? Would it not be more profitable to use our surplus fruits in this way than to dry them?—J. L. B., *Norfolk, Va.*

## REPLIES.

2613. **Apricots in Michigan.** We would not plant many apricot trees of any kind, either in Michigan or any other northern state, unless after we had made sure, by previous experimental planting, that we had found one of the few spots where the apricot succeeds. The chances are entirely against the supposition of success in hit-or-miss planting. Apricot culture in our latitude is only in an experimental stage. It is true there are a few locations from which good crops are reported, especially the Seneca lake region in this state. The apricot there grown to almost the exclusion of any other is the Harris, a newer introduction. If the inquirer has a well protected location, near a large body of water, and yet on a western or northwestern slope rather than southern exposure, he might try a few of the Harris variety and a few of our old standards; but it would be foolhardy to run much risk by wholesale planting.

2614. **Pears for Profit.** Undoubtedly the inquirer will find Bartlett pear trees growing somewhere in his own vicinity. Ask the owners whether these trees give satisfaction or not under good culture. The Bartlett can be grown quite successfully and profitably over a wide range of country, always provided that it is well treated. In the Niagara district there is no pear better suited for general planting, and in average years our growers make more money from it than from any other fruit they grow or possibly could grow. The Anjou is also a good market pear, but here it is a shy bearer; in some other sections it gives larger crops of beautiful pears. Ellwanger & Barry, Rochester, N. Y., who know just how to treat it and market it, have unbounded success both in producing the fruit and in converting it into money. They are as enthusiastic over the Anjou as we are over the Bartlett. But all this does not solve the problem for you, which of the two to plant more largely. Neither do we see any way to solve the problem for you. Study your own local conditions, and the successes or failures of your nearest neighbors with the varieties named.

2617. **Home Nursery.** The matter of starting a little home nursery, it seems, is simple enough. Prepare a long and narrow piece of good loam, free from stones and rubbish, in same way as you would for planting carrots or any ordinary garden crop, although it is not necessary to make it so rich. Mark out furrows four feet apart, and sow seed of the fruits trees desired—apple, pear, plum, peaches, etc.—preferably in fall, and just as soon as the seed is gathered. Plant and cover in same way as you would garden seeds of same size, respectively, and when the trees begin to grow, in season following, cultivate and keep clean from weeds; also thin where necessary. A little home nursery of this kind, even if consisting of only a few hundred trees, will be a most useful thing on any place, large or small. It will give the boys a chance to learn and practice budding and grafting, and to become interested in horticultural pursuits. It will stimulate tree planting and result in a better home supply of good fruits, not to speak of the chance of "turning an honest penny" by the sale of some of your surplus to neighbors.—G. R.

2618. **Pear Sprouts as Stocks.** We believe they can be used in an emergency. Seedlings, especially of wild or inferior varieties, however, are much better for stocks, and there is no need of using sprouts when seedlings can be raised easily and cheaply.

2621. **Pruning Currants.** Thin out branches where too crowded, preferably removing the older wood, and giving the new growth a chance. This is about all the pruning required.

2562. **Bulbous Plants in House.** The kinds in your list that to our knowledge are suitable for house culture are the following: Cyclamen, chionodoxa, crocuses, freesias, hyacinths, *Milla biflora*, narcissus, scillas, tulips. It takes a long time for *Lilium Harrisii* and *L. candidum* to bloom in the house, and success may be hindered by a number of difficulties. The most suitable bulbs, plants and shrubs for forcing are such as flower very early in the season outside.

2570. **Heating Small Conservatory.** Usually the preference is to have all pipes level with and above the heater. Still we see no reason why a good circulation could not be had if the pipe at some point was lower than the boiler.

2574. **Anemone Japonica.** The bug mentioned is a stranger to anemones on our grounds. If they are not too numerous, hand-picking by means of tweezers shaped like an elongated letter U might answer. On general principles Paris green may be applied to destroy any leaf-eating insects. Mix one-quarter ounce of the poison in four gallons of water, adding a little lime also, and apply the water with syringe.

2592. **Rose Trailing to Bloom.** The Jacqueminot is a free bloomer under ordinarily fair treatment. Did

you prune it back closely at planting time or in the spring? The bloom comes on the new growth. We have seen cases of pruning being neglected, in which the plant seemed to stand still, when if it had been well cut back new shoots and bloom would have appeared.

2797. **Cedar Hedge Planting.** Spring is preferable for planting all conifers in this climate. The red cedar (*Juniperus Virginiana*) does not adapt itself as well to the purposes of a hedge as do the arbor-vitæs, hemlock, Japan quince, honey locust, etc., a reason being that the individual trees vary considerably in character of growth. Still we have seen a handsome ornamental hedge of this plant, the individuals standing thirty inches apart.

2598. **Starting Hawthorn Seed.** This seed does not usually start until the second season after ripening. A good course of treatment is to mix the seed with an equal quantity of sand at the time of gathering, and leave in this shape in the open air until the autumn following, when it may be sown in nursery rows.

2616. **Heating Small Hot-house.** The simplest way imaginable of heating a small hot-house by means of hot-water pipes, is to buy one of the base-burning water-heaters now made for this purpose and offered at a reasonable price by manufacturers in various cities of the United States. You find their addresses in our advertising columns. The instructions for setting them up and arranging the pipes are furnished with these heaters and furnaces. For large houses use a larger furnace. The manufacturers' catalogues tell the exact capacity of each furnace, and give all other information on the subject that you may need. This method of heating may be more expensive so far as construction and first outlay is concerned, when compared with the old flue, but it makes up for this many times over in saving of fuel, in ease and convenience of management, safety, and general satisfaction. The use of the base-burning water-heater in a small house reduces the required attention to a minimum, and secures a more uniform temperature with more congenial atmospheric conditions inside the house, than can be had in a flue-heated house. —G. R.

2623. **Managing Apples.** We are not acquainted with any special treatise on culture, packing and shipment of the apple. General information on these subjects is given in our standard works on fruit culture, notably, Downing's "Fruit and Fruit Trees of America," and J. J. Thomas' "American Fruit Culturist." For foreign shipment, apples are packed in same manner as for our own markets, with this difference, perhaps, that there should be even more pains taken in assorting and packing. None but the very best sound fruit should go to foreign countries. The close ordinary barrel is better for this purpose than is the ventilated barrel now much used, here and in Canada, for summer and early autumn fruits as also for vegetables, all of which are liable to ripen up too fast in a close package at this season, or become heated and injured. Be sure to face the apples nicely, shake the barrel while filling, heap it up well, and press down with considerable force, so that each apple will be sure to remain in its place during the voyage and until opened by the consumer. If the apples have a chance to shake about in the package before they reach the market, they will be worthless. Do not be afraid of hurting the fruit by tight squeezing.

2628. **Japan Wineberry.** We have a specimen on our grounds, but it seems to lack thrift. Its proper place is on the lawn, not in the fruit garden. Certainly there is no likelihood of its ever being grown as a market fruit in its present state, nor to any extent as a fruit for the home grower. The plant is interesting, and worth growing as a curiosity. Practical value it has next to none. See also J. T. Lovett's description of the fruit in his paper read before the American Pomological Society. —G. R.

2629. **Chopped Apples.** These are a merchantable commodity like all other evaporated or fresh fruits, and subject to wide fluctuations in price. Last winter and spring, during the times of scarcity of all evaporated fruit products, the price of chopped apples reached four cents a pound. It is not likely that such a price will be obtained again for the article for some time to come, unless we are going to have more failures of the apple crop. Slicers are kept on sale by all dealers in evaporatory and evaporating outfits. We can only refer you to our advertising columns for the addresses of dealers. We cannot give J. B. Durand's address.—G. R.

2630. **Stone's Hardy Blackberry.** Like all other fruits, this does well for one, and is a disappointment for another. Indiana growers speak in favorable terms of it, and it is worth a trial in exposed situations.—G. R.

2631. **A Cheap Fruit Evaporator.** We suppose you want a cheap dryer for small scale operations. In that line we know of nothing superior to the U. S. Cook Stove Dryer offered in the way of premium and otherwise by The Rural Publishing Company (see premium offer in the October numbers). It is cheap and does good work.

2637. **Moyer Grape.** This is one of the earliest on our grounds, and of honeyed sweetness almost as soon as it first shows color. But the vine is not a thrifty grower, and the bunches are very small. In these respects it is in notable contrast with the Delaware, which here proves quite a good grower, and prolific of fine looking bunches nearly twice the size of the Moyer. Its earliness and good quality, however, are valuable features.—G. R.

2632. **Winter Protection of Roses.** All varieties of roses will be greatly benefited by being protected, however lightly, during our northern winters. There are various methods used in giving protection to plants, some of which require quite an amount of unnecessary labor and care. Tying up with straw or matting often proves injurious to the plants, as the covering is frequently left on too late in the spring, until the growth has become too far advanced. Banking a large number of roses with earth requires entirely too much labor. During the past few winters I have been practicing the laying down system, which, I am sure, is at once the most simple and the best for roses. Late in the fall, just before freezing up, I bend the rose bushes down level on the ground; they are kept down firmly by a simple frame made by driving a stake on each side of the bended plant half way to the top, and nailing a lath one foot in length upon the tops of these stakes. The stakes are driven down so as to keep the bush as

close to the ground as possible. It is best to bend the plants towards the east, or from the prevailing storms. Should the roots be exposed after being bent, a shovelful of earth should be thrown on them. We have kept roses in this manner from being in the least injured by freezing. Very large bushes can be bent down and fastened upon the ground as described. In extremely cold situations, the whole plant should be covered with earth after being fastened down. When the weather has become pretty well settled in spring, the plants should be loosed, severely pruned and tied to stakes; they will then bloom profusely and be a source of much pleasure. All roses should be cut with quite long stems before they begin to wilt or fall apart. A new growth is thus encouraged which will bloom in a very short time.—JOHN F. RUPP, *Cumberland county, Pa.*

2633. **Bordeaux Mixture on Grapes.** It can not be denied that the "poisoned grape scare" in New York city at the end of September weakened the market for a time, and has done some injury to the industry as well as to the individual growers more directly concerned in the occurrence. Still we do not think that the injury is more than a temporary one. It is now generally acknowledged that the action of the New York Board of Health was hasty, ill-advised, and unwarranted. On the other hand it will serve to make the growers more cautious in the use of spraying mixtures, and for this reason it may prove to be a blessing in disguise. Personally we lean to the use of the ammoniated carbonate of copper solution, because it is cheaper, more easily prepared, and allows a greater dilution of the drug than does the Bordeaux mixture. This latter is only useful in the very earliest applications, especially in a rainy season, as it adheres pretty firmly while the other is easily washed off. Late applications are usually of little account, but if made at all, should be made of the copper carbonate solution, and never of the Bordeaux mixture. The following extracts are from a circular sent out by George T. Powell, director of the New York Farmers' Institute: "I have personally inspected a large number of vineyards during the past season in this state, and have found that where the spraying had not been done, the entire crop of grapes has been ruined by rot, the vineyard abandoned, and weeds grown up as high as the trellises; while in the same locality those properly treated were carrying a full crop of fine fruit.

"In the Bordeaux mixture lime is used, which causes the material to adhere like cement to the wood and stems, long after its effect has passed off. The Bordeaux mixture can be dispensed with, for the lime is troublesome, causing the nozzles to clog and work imperfectly, and the material to color the fruit and stems when dry weather follows the application. Spraying should be done as a preventive, not as a cure, and hence should be done early in the season most vigorously, even before the buds open; then late spraying, near the time of ripening and shipping the fruit, will be unnecessary. For insects, one pound of pure Paris green dissolved in 225 gallons of water will be ample; for grape-rot, three ounces of carbonate of copper and one pound of carbonate of ammonia, dissolved in two quarts of hot water, then diluted with 50 gallons of water, has proved as effective as the Bordeaux mixture, is more easily applied, and washes off readily with a light rain. The choice is to eat sprayed fruit, or to dispense with it largely as food, which the people will not do, for it is no longer a luxury but a necessity; and if the instructions given by the Department of Agriculture, by the farmers' institutes, and our experiment stations, are carried out, the consumers of fruit and boards of health will have no cause for alarm."

2626. **Excelsior Peach.** It is not safe to plant any new thing on more than a trial scale. The Excelsior (or Hale's Hardy) peach has not yet been so generally planted that its reputation is established on a firm basis. On the other hand it comes highly recommended by good authority. It was well spoken of at the recent meeting of the Pomological Society, and specimens there exhibited were remarkable for high color and beautiful appearance, although but of medium size and fair quality. Mr. Hale, who knows what he is talking about when speaking of peaches, says the tree makes a low spreading head and will bear a good crop when the buds on all other sorts are killed. One of our readers, W. D. Hinds, of Massachusetts, some time in September forwarded for our inspection a basket of this fruit, which showed the general characteristics of the specimens on exhibition in Washington, and impressed us quite favorably. He gives the following account: "The Excelsior peach originated near Lowell, Mass., several years ago. It is very hardy and prolific, having borne full crops annually for five years in Massachusetts, and in Greenville and Goftstown, N. H. It has stood 12° below zero and borne immense crops while the buds of all older varieties were killed in the same locations. The tree is dwarfish in growth, almost drooping, and we can pick all the fruit on seven-year-old trees while standing on the ground. When this variety becomes known to the fruit growers in New England, it must revolutionize peach culture here." All this is very good as far as it goes. It will tempt us and many others to plant a few trees for testing; and the commercial growers, relying on the judgment of such a good authority as Mr. Hale, may find it advisable to risk a larger number of trees. On the other hand, we should bear in mind that many other varieties of fruits have been lauded just as highly when first introduced, and yet have been found wanting, or at least, failed to become popular. The Globe, the Wonderful, etc., were introduced with just as much praise and promise as the Excelsior; yet they have not been able to establish for themselves a reputation as sorts for general planting. These considerations should admonish us not to plant largely of anything we have not before tried in our own place or that has not been tried in our immediate vicinity.—G. R.

2653. **Sulphate of Ammonia for Greenhouse Plants.** In sulphate of ammonia, nitrate of soda and nitrate of potash (saltpeter) we have nitrogenous substances most admirably adapted for application to greenhouse and other plants in watery solution; but, unfortunately, very few systematic experiments have been made with them. All three are valuable for the nitrogen which they furnish to plants in a handy and available form. The experiments thus far made with them seem to show that sulphate of ammonia is the best

of the three, and certainly the most lasting in its effects. It often increases the number of blossoms, and heightens their color, at the same time improving the firmness of the petals and the thrift and color of the foliage. On the whole, the substances mentioned are like sharp tools. In the hands of a skillful workman they can be made to do good service; but in the hands of a child they may do a great deal of harm. The applications must be fitted to the conditions of the plant. A dormant plant, or one with little root, is more liable to be injured than to be benefited by the free application of liquid fertilizers of this kind; while a growing plant, with root system fully developed, will make good use of quite strong doses. Always observe the condition of the plant and its roots before such applications are made, and regulate quantity and strength accordingly. Clear water is good enough for plants with few roots. We should take no risks, and avoid being too lavish either in quantity or strength. A small teaspoonful of sulphate of ammonia to the gallon of water, or very weak liquid manure (say of tea color) will usually be all that is required for good results.—G. R.

2646. **Planting Dwarf Pears.** It is a rule of pretty general application that every tree does best on its own roots. This consideration has led to the advice to plant dwarf pear trees deep enough so that the pear scion will strike roots, and in time transform the dwarf into a longer-lived standard. Thus the quince root brings the tree into bearing at an early age, and then, having fulfilled this mission, dies and gives way to genuine pear roots. This same method is now also practiced and recommended by our very best authorities in regard to apple root grafts. The latter are set deep, thus inducing the graft to throw out roots on its own account, and make itself independent of the root stock upon which it was grafted. While we are followers of this practice and doctrine, it must be said that some good horticulturists differ with us on this question, and believe that it is best rather to let dwarfs remain dwarfs, and to plant standards where standards are the ultimate aim.—G. R.

2657. **Pansies Dying.** The trouble with pansies dying in seed pans was probably that they were kept too densely shaded. Plants grown in the absence of the needed light are always weak and subject to injury from exposure, or from fungus attacks. In cool or dark weather little or no shading is needed.

2641. **Prizetaker Onion Sown in Fall.** We doubt very much whether this variety is hardy enough to winter out-doors at the north. At least it would not be safe to run the risk. We are trying this on a small scale this year. Much, of course, depends on season and location. We have had Danvers Yellow or Yellow Dutch, grown from seed sown in August, winter in good condition where planted, and make good bunching onions in early spring. In a mild climate, and with slight protection by leaves or litter, we believe almost all onion varieties could be sown in fall, and wintered in good condition. The Extra Early Pearl (Johnson & Stokes) has been used in this way even in northern Ohio with perfect success. In growing Prizetakers, we would prefer to sow in hot-bed in February, and transplant to open ground in April, in accordance with the system termed "The new onion culture."—G. R.

2644. **Oats in Currants.** Sowing oats is often recommended as a means of providing a cheap mulch for strawberry beds, etc. We have never fallen in love with the practice. A light mulch of marsh hay is good enough for our purpose. So far as mulching currants is concerned, we do not see what good results could be accomplished by it. Currants are perfectly hardy in root and bud and need no winter protection. On the other hand they will respond gratefully to liberal treatment in the way of fertilizers, and in place of the oat mulch which adds nothing to the soil, we would much prefer to give a good coat of stable manure or other manurial substances in its place.—G. R.

2651. **Strawberries in Louisiana.** The only means which we could suggest of protecting strawberry plants from injury by the hot sun and dry weather of the inquirer's state, is by planting in a half shady situation, or by shading with screens or similar devices. It seems that there could be no great difficulty in the way of growing strawberries, no matter how warm the climate or how dry the season, if proper use is made of natural or artificial shading, especially in conjunction with irrigation. Strawberry beds, in warm latitudes, may be made at the north side of buildings, in vineyards, young orchards, or between rows of any tall growth, even if nothing but corn or cane. Certainly there ought to be some way of summering strawberry plants in safety.

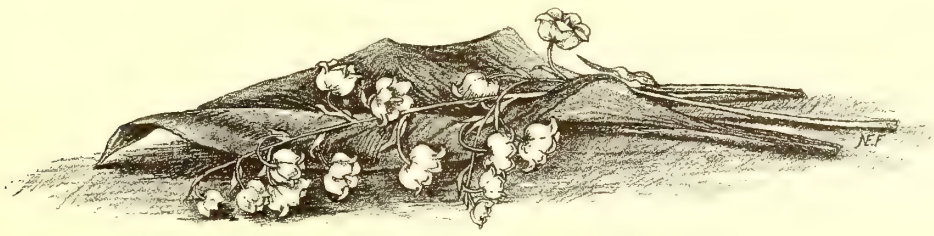
2645. **Growing Potted Strawberry Plants for Market.** New land fertilized with a compost of 8 barrels of fish scraps, 20 one-horse loads of muck, 30 of sea weed and 300 pounds of phosphate will probably be in first-rate condition for growing strawberry plants. Where plant growth is desired rather than the production of fruit, nitrogen should be the chief element in the fertilizing materials used. The sea-weed, with its perhaps two per cent. of potash, and the phosphate and fish scrap, supply the mineral plant foods in great abundance; while nitrogen is provided in the muck, fish scrap, and still more in the decaying sod and green manure plowed under, not to speak of the probably rich stores of all plant foods already in the soil. If anything more were needed to stimulate thrifty growth of plants, we advise a light top dressing of well-composted hen manure. Have the plants in rows not less than four feet apart, and not less than two feet apart in the rows. For convenience in cultivation they might even be set in check rows, four feet apart each way. Remove every fruit stalk as soon as it can be seen. Keep the ground well stirred up about the plants. Remove the first few runners on each plant; then prepare thumb pots by filling them with a mixture of clay loam and well rotted compost. As fast as a young plant gets ready to throw out roots, set a thumb pot into the soil under it, and keep the plant firmly in place upon the pot by means of a little stone, a stick or a handful of soil upon the runner stem next to it. Remove after the plant has filled the pot with roots.—G. R.

2648. **Grape and Currant Cuttings.** The proper time for making cuttings is in autumn, just as soon as the leaves have dropped. The currant cuttings should be six or eight inches long. You can tie them in bundles and bury them in sand or sawdust in the cellar, or pack them in slightly damp moss. A still better way is to plant them immediately. Select a well-drained spot of rich mellow loam, and set the cuttings deep enough so

that top bud will be even with surface of the ground. They may be placed in a slanting position, which is usually more convenient for the operator, especially if the cuttings are rather long. Be sure and pack the soil very firmly about the cuttings, as this is in fact the most essential part of the work. It insures success while neglect in this respect means certain failure. A light covering of coarse litter or evergreen boughs will also be serviceable, if not an absolute necessity. Grape cuttings of the long-jointed varieties should be cut to two eyes, leaving an inch or two of wood above the upper and below the lower one. Cuttings of close-jointed sorts may need three eyes. Tie the cuttings in bundles of twenty-five or fifty, and bury in sand or sawdust in the cellar, or in a well drained spot out-doors; sandy loam preferred. In spring they should be well calloused over, and ready for emitting roots as soon as planted out. Sometimes special treatment is given them for facilitating the callousing, such as putting in hot-bed, or in cold frame with butt ends up, and covered with a layer of dry leaves. The general directions about planting given in regard to currant cuttings, apply also to grape cuttings, except that the latter should be planted in spring rather than fall.—G. R.

2635. **Promoting Fruitfulness of Young Fruit Trees.** Excessive growth of wood is always antagonistic to fruit production. We have seen apple orchards of fine, thrifty trees that produced almost no fruit for the first twenty years. After that the ground was kept in grass, and the trees bore heavily, at least in alternate years. If we have patience enough, the excessive wood growth will cease, and fruit production begin. Of course, we do not always wish to wait for this natural turn of affairs. Root pruning in such case is the most natural method of hurrying up the fruiting. It checks growth very effectively, and throws the energies of the trees into fruit production. A striking instance of the effectiveness of root pruning came under our observation some years ago. Two thrifty Talman Sweet trees, about fifteen years old, were standing about thirty feet apart. Neither of them had ever borne more than a few specimens of fruit. One summer a gale partly tore up one tree, leaving it in a slanting position with most of the roots on the side towards the wind badly torn and mutilated. The next two years this tree bore an immense crop of apples, while the other tree had but a few. This method of root pruning is just as violent and unnatural as the artificial one which calls for the services of spade and axe. Tearing up some of the upper roots by deep plowing sometimes answers first rate. A more methodical way is by digging a trench on one or two sides of the tree, or perhaps in a circle around it, at a distance of from three to six feet from the stem, according to the size of the tree, and cutting the roots that are encountered. If some good manure, bones or similar fertilizing material is thrown into this ditch before filling it up again, all the better. This work should be done in summer or early fall, and will then result in a check to the wood growth, in the formation of fruit buds, and consequently in a full crop the year following. We should not expect to see immediate effects upon fruit production from root pruning in the spring, no matter how early it is done. Another and really a more natural method of inducing fruitfulness is by bending or twisting the branches. This puts a check on the rapid movement of the sap to the top, and results in the formation of fruit spurs and fruit buds. This method has been developed into quite an art in gardens near Paris, France. Training branches of dwarf trees in spiral form is a favorite way of making them bear fruit, and producing large specimens for show purposes. One of the simplest of all methods is weighting the ends of limbs by suspended stones, bricks and similar heavy articles. Ringing of the branches is also practiced in some cases for the purpose of bringing tardy fruit trees into bearing, and still more generally with a view of hastening the ripening process of fruit. Among grape growers it is not an uncommon practice. The opinions about its utility, however, are greatly at variance. Some good horticulturists are strongly in favor of it even in commercial fruit growing; others are as strongly opposed to it as an unnatural proceeding; some say it hastens maturity; others claim it retards it. While it is pretty certain that in the case of grapes ringing can have no permanent injurious effects, that it increases the fruit in size and perhaps makes it earlier without being detrimental to its quality, we would not advocate the ringing method for fruit trees. Seeding the ground to grass, bending the branches, and root pruning are so effective methods of bringing tardy trees into fruiting, that we see no reason for resorting to harsher means.—G. R.

2654. **Stocks for Plums on Clay Soil.** We would in all circumstances prefer plum to peach stocks as a foundation for plums and apricots, especially since the Marianna plum, one of the best of stocks for the purpose, can be had easily from cuttings.—G. R.



# CURRENT GARDEN LORE

## GATHERED WORLD-WIDE.

**Barberries for Dinner-table Decorations!**—This brilliant innovation graced the outing dinner of a Boston club, last evening. Scrolls and bunches and sprays of the brilliant berries make a pretty variation from the monotony of smilax or the asparagus fern, and connecting a central piece with the rest of the table in a most effective manner; a Puritan staid New England product thus becoming the conveyor of hearty good cheer, color and brightness.—*Boston Transcript.*

**The Catawba Grape.**—After several dangerous frosts, the Catawbas seem, as yet, unharmed, and may come through all right, as they improve rapidly with every favorable day; but we notice that on the shores of Keuka, especially back some distance from the lake, the foliage is considerably affected with what appears to be powdery mildew, and looks as if it had been blanched by a hard freeze. This is not a good sign; still, at this stage of the season, it may not materially injure the fruit; but the crop is more backward than was indicated by its condition at the first of August, and the one thing of all others to be feared is an early and heavy October frost. If warm weather prevails till nearly the middle of October the Catawbas will give a splendid yield, and of good quality.—*The Vineyardist.*

**A Grape-Pruning Experiment.**—In pruning grapevines it is quite a point to avoid too much bleeding. In pruning, last November, I left along the north line fence a Niagara and a Duchess. This Niagara, although planted several years, had not borne much, and the Duchess also had been a shy bearer. Last spring, after the new growth had pushed out over an inch, I cut back all the last year's growth to two or three buds, leaving as the leading bud, where practicable, one that had made the strongest start. I perceived that the vines bled very little, much less than when pruned in March, but they made as rank a growth of wood as usual, and are now heavily laden with large, compact bunches of fruit. Now I am not going to jump to the conclusion that the best time to prune grapes is after growth has started in spring; I merely note that pruning at the time I did does not appear to have injured the vines.—*P. C. Reynolds in New York Tribune.*

**Lilium Auratum.**—A remarkable specimen is flowering now in the garden of Mr. Cole, Upper Clapton, the plant having no less than twelve stems, carrying in all one hundred and twenty-two flowers, which represent a fine variety. There were originally sixteen stems, carrying one hundred and thirty blooms. The bulb was planted five years ago in the turf near the shrubbery, and each season has given a revelation of splendid flowers, bold, showy, and not suffering individually from their rich profusion. It is curious to note that on the other side of the bed a bulb of the same vigor was planted, but has failed to give the same splendid results.—*Journal of Horticulture, London.*

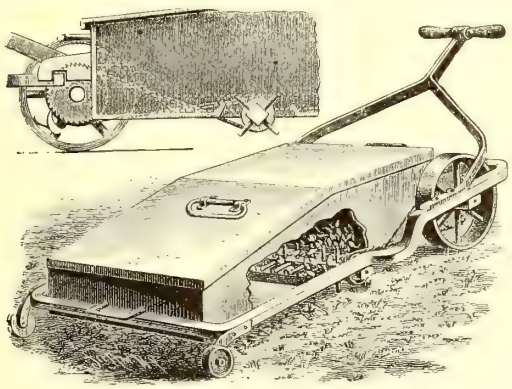
**A New Blackberry Species.**—In the Old World the blackberry varies so much that on every excursion the collecting botanist may have reason to believe he has a new species. In America the native blackberries vary so little that a botanist rarely attempts to describe a new one. One worthy this distinction has at length been found in Virginia. The new blackberry is called *Rubus Millspaughii.*—*Independant.*

**Early Cosmos and Chrysanthemums.**—Cosmos requires large pots, rich compost, sunny exposure, and plenty of water; being naturally brittle, carefully tie and stake the lower branches. In open fields we plant cosmos five by six feet, ours at this time being six feet high and covering the ground. This wonderful growth enables us to cut stems any length; large bunches with foliage and buds are of great beauty. Cosmos now ranks next to the chrysanthemum. During the season we ship daily as far as Minnesota. The lasting qualities of this flower make it a great favorite, and it has come to stay. Cuttings of early chrysanthemums from the sand bed are planted in open field early in April. If the season is dry, watering and mulching are necessary, as we must have well grown wood before August; at that time the buds appear. Careful disbudding is next in order. If black fleas and bad weather do not interfere, we will have creditable flowers of the Chinese varieties October 1.—*J. L. Loose, Va., in American Florist.*

**Pasteurized Cider.**—By M. Pasteur's improved method, cider is rendered so pure and free from active germs of fermentation that it can be kept for years in a perfect state, even with a very low per cent. of alcohol. The cider is taken fresh from the press or after fermentation in tanks, as may be desired. The scum is removed as long as it continues to rise to the surface, or until fermentation has proceeded sufficiently far. It is then run through paper filters and is conducted to a

coil of block tin, which is surrounded by hot water or steam, kept at a temperature of between 140 to 160 degrees F. From here the cider flows through the remaining portion of the coil, which is surrounded by cold water and is so arranged that all the heat is taken from the cider before it is conducted into the barrels in which it is to be stored. After a barrel has been filled, it is necessary to exercise the greatest caution in excluding the air. The bung is driven tight and a coat of thick varnish is applied to the entire barrel. The cider will then by slow fermentation gather flavor and carbolic acid gas and will soon be ripe enough for use. Cider made in this way is simply the plain juice of the apple without the introduction of drugs, animal gelatines, or albuminous compounds of any kind, and it has all of the brilliancy, bouquet and flavor which are so much desired.—*California Fruit Grower.*

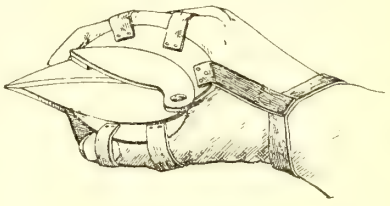
**Improved Lawn Cleaner.**—The illustration represents a machine designed to effectually clear grass, leaves, etc., from lawns and similar places, and which will take up the grass cut by a lawn-mower, leaving the lawn perfectly clear. It has been lately patented by Charles Bailey, Winnepeg, Canada. The frame of the machine is preferably made of bar iron, and in its side bars, near the rear, is journaled a shaft on which the drive wheels are keyed. On this shaft, near one of the wheels, is loosely mounted a groove pulley, having a toothed periphery contiguous to the drive-wheel. This toothed periphery is engaged by pawls pivoted upon the drive-wheel when the machine is moved forward, thus revolving the pulley, but when the machine is drawn backward the pawls slip over the teeth. Near the center of the frame is journaled a rake-head, with teeth projecting at right angles from its sides, as shown in the small view, one end of the rake-head having rigidly attached thereto a small pulley connected by a belt with the pulley on the drive-wheel shaft. As the refuse is thrown upward by the rake when the machine advances, it is received in a box-like receptacle provided



GRASS-GATHERING DEVICE.

with a detachable cover, this receptacle neatly fitting within the frame of the machine, and having a transverse bottom opening, within which the rake revolves. When the box has been filled with grass, leaves, etc., it may be lifted from the frame, the cover removed, its contents emptied, and the receptacle again replaced without trouble.—*Scientific American.*

**Fruit Nippers.**—The fingers and thumbs are often wounded in picking blackberries and raspberries, preventing rapid work. It is often unhandy, too, to pull off pears or apples without bruising the fruit or pulling too much of the stems. Most of the work of "nipping" off fruit is done with the thumb nail pressed against the forefinger. Many florists and small-fruit men permit the thumb nail to grow very long for this purpose. The latest device for providing a stout and sharp substitute for the thumb nail here illustrated is only a short, thick pair of shears made to fit between the thumb and forefinger. This effort to save the thumb is a commendable one. The thumb is of more importance than any finger.—*Rural New-Yorker.*



FRUIT NIPPER.

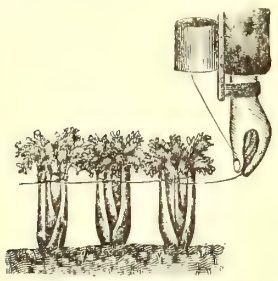
**Vinegar Making.**—One of the best ways of working up apples that cannot be marketed to good advantage, is by making into cider vinegar. Use sound apples, and have the fruit, the machinery and the vessels clean. Rotten apples will not make cider vinegar, and should not be used. Wash the mill and the barrels out clean before commencing the work. When the apples are ground up, some water may be poured over the pomace before pressing out; then press as thoroughly as possible. Do not fill the barrel more than three-quarters full at first. This will save work. Tack a piece of fine netting over the bung-hole after laying the barrel down on its side, putting old rails or sticks underneath as a support to keep the barrels off the ground. It will commence working in a very short time. Let stand in the sun until this quits, and then draw off carefully into other barrels, filling full, and let stand until cool weather. But do not allow it to remain out too late, for it should not be allowed to freeze. By carefully following these directions, good cider vinegar can be made at a small cost per gallon, and much fruit that would either be fed the stock or allowed to go to waste, be converted into a marketable product.—*Western Stockman.*

**Amateur Gardening.**—This can be made a nuisance and an injury to the working gardener when it is brought into direct competition with him. It is so when the rich man pays a rate of wages or establishes a system of hours of labor that cannot be copied by those who cultivate the soil for profit rather than pleasure, or when he disposes of his superfluous products in the market at less than the ruling price, thus forcing prices down below the cost of production under careful

management. It is usually the manufacturer who does this, yet he would be very ready to resent it if his rival in business were to begin to cut prices in such a way as to deprive him of his legitimate profits. He should have some regard for the profits of the hard-working farmer or market gardener.—*American Cultivator.*

**Managing Quince Trees.**—Quince trees eight years old and as many feet high fail to bear for a correspondent. They blossom only to blast. This is possibly owing to imperfectly fertilized ovaries. Spraying will not remedy it. If growing very thriftily they will not fruit so soon as when forming only a moderate growth. They will set fruit in good time. Do not forget to find the borers in the trunk, at the surface of the soil. Here is where many quince growers fail.—*Josiah Hoopes, in New York Tribune.*

**Banking up Celery.**—In handling we tried string, by winding once around each plant and then going on to the next, keeping the string taut enough to hold the stalks in place. This was a decided improvement over the way of holding the stalks in place by earth until the rest of the soil was put in, but when it came to taking the string off the soil would be tramped around the plants and the leaves and upper part of the stalks would be torn off. Someone thought that paper string might do, and it would rot off and not hurt the plant. We had to hunt all over the city of Columbus and finally found what we wanted. We put it on several thousand plants and found that very little injury was done, and this happened by the careless putting on of the string. The plants were held in position by the string until a rain came and settled the dirt around the plant and wet the string enough so it would give way to the growing plant. Some of the plants we gave a second banking before the string gave way and let the plant spread. We invented a little device for putting the string on. I took a tomato can and punched a hole through the bottom of it, nailed it to a stick, and then with a piece of pantaloons' suspender, with the buckles, fastened it to the right arm above the elbow, and at the wrist, letting the string run out at the bottom of the can and between the thumb and front finger. With this one can wind celery all day, if his back does not get to aching too badly. This is all the drawback I have found to it yet.—E. C. Green, *Ohio Experiment Station, in Ohio Farmer.*



Hilling Celery.

**Iris Fimbriata.**—This little iris has a graceful habit, and is so floriferous that it can be employed with good effect in several ways. Like numerous other members of the family, its flowers are, however, somewhat fugacious and are not adapted for cutting. The plant is compact in habit and is consequently well suited for culture in pots, and being somewhat tender it is safer in a greenhouse than outside; in fact, comparatively few

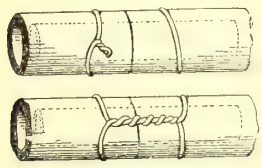
Iris Fimbriata.

positions suit it, except in the warm southern and western counties, where I have occasionally seen it tried, but not with very encouraging results. For some years I have grown it entirely for greenhouse decoration, and as I have a good stock, by forwarding some and retarding others I manage to keep up a fairly long succession of flowers. These are of such a soft pale bluish mauve relieved by orange markings that they appear very distinct arranged with other plants having more brightly colored flowers. A moderate light loam, ample root space, and plentiful supplies of water during the growth and flowering, are the principal points in its culture and need special attention.—*Journal of Horticulture.*

**How to Get Rich Land.**—The dark, rich soil of swamps or meadows should be drained. After it has been relieved of surplus water, such soil proves very productive for all kinds of crops, and will bear cropping for many years, requiring very little in the way of fertilizers. Many men who have sold farms in New England and gone to the West to secure rich land, might have secured land almost as rich at home by draining their swamps and meadows. The expense and loss incurred by selling out and removing west, if they had been expended on the home farm, would have put it into so productive a condition that there would have been

no need of emigrating. The cost of underdraining by tile drains is considerable, but much less than formerly, for tiles are much cheaper now. Many fields thus drained, however, will yield enough more abundantly to repay the cost of the enterprise in two or three years, and will continue to improve in production for several years longer, and will be a permanent improvement, enduring a lifetime.—*Mass. Ploughman.*

**Simple Hose Mender.**—The accompanying engraving gives views of opposite sides of a section of hose sent us by John McGowan, Orange, N. J., to illustrate a simple method of mending hose practiced by him for years. After trimming evenly the ragged edges of the break in the hose, a short section of half-inch iron pipe is inserted as shown by dotted lines in the cut. Then a piece of galvanized iron wire is wrapped around the hose as shown at the right in the upper figure, and twisted tightly so as to sink into the rubber. The wire is then twisted for a few inches as shown in the lower figure, again wrapped around the hose and fastened as shown at the left of the upper figure. This mender is not patented, and the materials for making it are inexpensive and easily obtainable.—*American Florist.*



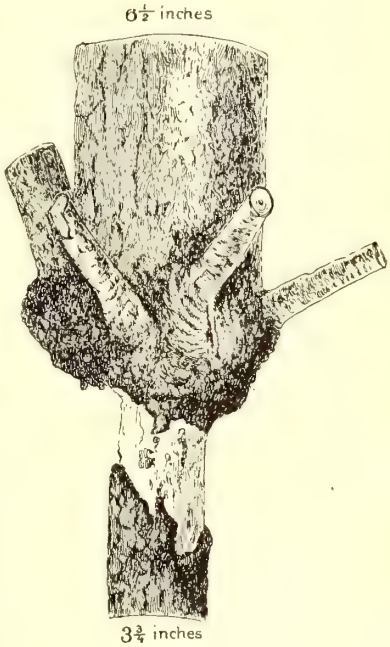
MENDING RUBBER HOSE.

**Making and Planting Grape Cuttings.**—Cut the grape vines in the fall as soon as the frost has caused them to drop their leaves. Make the cutting six or eight inches long; if short jointed there may be three or four eyes to a cutting; if long jointed there will sometimes be but two eyes. Cut close below the lower eye and slanting at right angles with the bud, one-half inch above the upper bud, in like manner slanting, so that the upper point is on the same side of the bud. Tie in bunches from twenty-five to one hundred as the case may require, label them and bury them in the ground so that the upper end of the bundle is three inches underground. In the spring when the ground is fit to work in, plant them at an angle of 45 degrees with the top bud just even with the surface of the ground, press the ground firmly on the lower part of the cutting. If preferable, the cuttings may be planted at once where they are to grow, but in that case they must have a covering so as to keep the frost from piercing them. I prefer planting them in the fall. If a large number are to be set, put the rows four feet apart and the cuttings two or three inches apart in the rows.—*S. Miller, in Colman's Rural World.*

**Rake Cultivation for Deep Loose Soil.**—A neighbor's garden has never for years been cultivated with any thing but a fine toothed rake. After every rain the crust is broken, and being pulverized thoroughly in the preparation, the ground needs no deeper stirring. The beds look almost as smooth as if sand-papered, and the vegetables grow with remarkable thrift. This supplies a practical proof of the excellence of rake cultivation for deep, loose soil.—*Florida Farmer and Fruit Grower.*

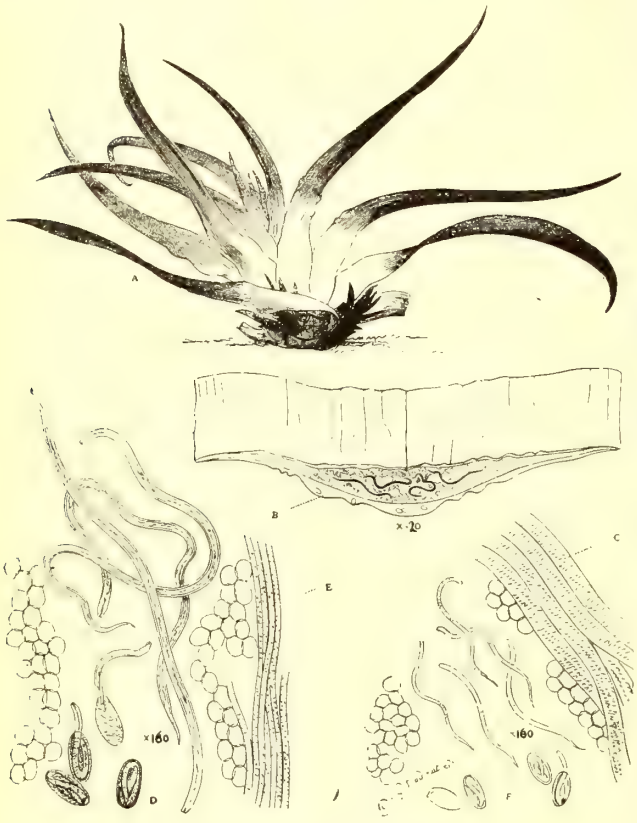
**Rooting Cuttings.**—When cuttings are being rooted by amateurs in small tin or earthen vessels placed in sunny winnows, the process can be forwarded by painting the receptacle black, the color absorbing the heat and imparting it to the sand or earth, thus facilitating the starting of roots and forwarding the plant's development.—*California Fruit Grower.*

**Girdled Trees.**—The life of a tree is in the young wood immediately underlying the bark. It seems incredible that a tree can possibly live when the bark and underlying wood are separated. Some years ago we had on our ground an Austrian pine which had been completely girdled in this manner, and yet it continued to live as if nothing was the matter. The late Professor George Thurber could scarcely credit his eyes, so strange did it seem when it was pointed out to him, yet it lived a number of years before it finally died. We have now before us another illustration sent to us by Mrs. Ross Lewers, of Franktown, Nevada. She says it was a young tree, and about four feet up the trunk it is four inches in diameter. The lower part has four circles of wood and the upper part eight, showing that it lived four years after the girdling occurred, and made annual circles of wood in that time. It appears to have been girdled by porcupines. It belongs to the *Pinus ponderosa*, which is called yellow pine in that part of the country. The fact seems to show that the two species of pine mentioned have the power to draw moisture, and possibly some other material, through the old wood—a power which other trees do not possess—but that being deprived by reason of the girdled portion, the lower part of the trunk fails to get the benefit of the leaf action, and no wood can be formed below the girdled part.—*Meehan's Monthly.*




GROWTH OF PINE TREE AFTER BEING GIRDLED.

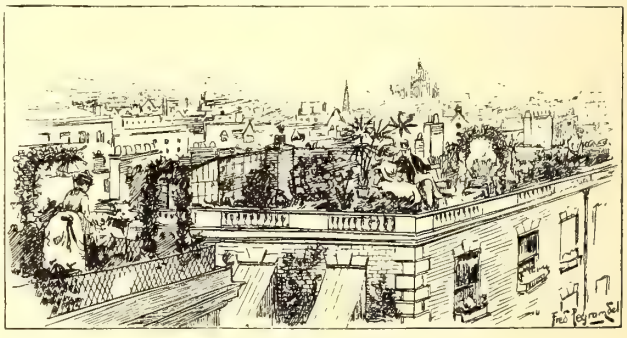
**Carnation Disease.**—We have received several specimens this week of carnations completely dying off from below upwards. On examination, we found the stems and leaves swarming with eel-worms. As these




Illustrating Carnation Disease.

creatures find entrance by the soil, we can only counsel burning the plants and turning out the mould. There is no application that we know of that will cure the disease or kill the animals without also killing the plant. High manuring might enable the plants to withstand the attacks better, but of this we are very doubtful. The illustration shows one of the affected plants; also, greatly magnified, the appearance of the worms and their propagation on parts of the plant.—*Gardeners' Chronicle.*

**Gardens on House Tops.**—At present the use of the roof is very restricted; in a few places, they have been utilized as playing grounds, and in others it is not unusual to see them turned into drying grounds. Houses of the future, if this system is to come into vogue, must have a neat spiral iron staircase ascending from the highest landing, and conducting us through a turret on to a plateau where garden seats are placed as fixtures. At first sight our proposition may to some appear impracticable, but upon second thoughts the idea will be admitted to be not so far fetched after all. One point at the start cannot be denied, and it is this, that for years past there has been a marked and growing desire to enliven the bleak and smoke-begrimed surroundings of our cities. The house tops of London and our suburbs should rejoice and blossom as the rose. Suppose that we have a house top flat and protected with a simple parapet, and at once it will be seen to be the easiest matter in the world to lay it out something like as follows: At the back, partly or right across, one could erect a simple and cheap little glass-house, or it could stand exactly in the center, especially if the roof was roomy or square. Around all the sides of the parapet and the glass-house one, two, or even three rows of pots of various sizes could be placed, in some of which the seeds of plants or flowers could be sown, and the glass-house could be utilized for the production of such seeds and bulbs as required or are improved upon by being raised under cover or in heat. This could be used, strictly speaking, as a cool house, or, with the aid of a simple heating apparatus or lamp, tropical or sub-tropical plants could be raised in profusion, from which a good and constant supply all the year round might be obtained for indoor decoration. From boxes against the parapet climbing and running plants might be grown, which could be trained gracefully to hang over and present a bewitching picture to passers-by in the streets below, whilst in these pots, or formed upon the concrete in shallow beds, hardy and half-hardy annuals could be raised in profusion. What a picture could be made by the utilization of the nasturtium, candytuft, tropæolums, sweet peas, *Bartonia aurea*, *Lupinus nanus*, Virginia stock, eschscholtzias, poppies and clarkias. Besides which, in pots, the aster, balsam, lobelia, cyclamen, marigold, mignonette, geranium, begonia. Then, again, what shall be said of the dahlia, the gladiolus, the iris, the anemone, the sweet william, and wallflower, and even beyond these the names of others are legion. Our idea is a practical



Gardening on House Tops.

proposition, and one which, in a few cases at present, is actually being carried out with entire success.—*Horticultural Times, London.*

# DICTIONARY OF SEASONABLE GARDEN WORK.

## I. PLEASURE GARDENING.

*Abutilons.*—Pinch the leading shoots back from time to time to secure bushy specimens.

*Achillea.*—E. S. Miller's way of getting a stock of these plants is to store the old ones in a shed until January, then plant them in a bench, and take cuttings from the young wood from that time on until May.

*Acacias* to be watered freely, occasionally using liquid manure.

*Achyranthes* under glass to be given a warm situation, proper attention as to watering, and protection against red spider. Pinch back leading shoots if a nice bushy form is desired.

*Azaleas* for late blooming to be kept in a cool part of the house. Plants at rest to be kept moderately moist. The place for young and early blooming plants is in the warmer part of the house.

*Begonias* should now be allowed to rest. Give the Rex sorts less moisture, and keep the pots with the tuberous-rooted varieties in a dry situation, with an average temperature of 50 degrees.

*Bulbs for out-doors* may still be planted, and up to the time the ground freezes solid. The earlier they are planted, however, the better.

*Bulbs for winter flowering* to be brought into heat five or six weeks before the time the flowers are wanted.

*Cactuses* for the house to be kept at rest up to February or March. Any shelf or table in the house is good enough for them. Keep them quite dry. If possible, put a glass case over the more delicate ones, to keep them bright and fine.

*Callas* now approaching bloom should be given plenty of space, light and water. If the soil is not very rich already, apply manure water occasionally.

*Carnations* want moist but not wet soil, and a cool and airy place. They do very well for the window if kept near the glass. Stake and tie as required. Syringe occasionally on sunny mornings.

*Camellias.*—Retard flowering as much as possible by keeping plants cool and syringing occasionally.

*Cestrums.*—Trim into shape, and place in a cool, light cellar, keeping dry at the root.

*Cinerarias* and *Calceolarias* for early blooming to be shifted into large pots, and kept in a cool, light, airy situation.

*Chinese Primroses.*—Water carefully at the root, keeping foliage dry.

*Chrysanthemums.*—Don't use any more stakes than necessary. Don't tie with string as thick as a lead pencil. Don't leave the ends of the strings two or three inches long. Don't forget to wash the pots before taking plants to exhibition.

*Cyperus alternifolia* to be liberally supplied with water, changing occasionally to liquid manure.

*Cyclamens* to be kept close to the glass and in a low temperature. Blooming plants will do all the better for occasional doses of liquid manure.

*Deutzia gracilis* for early blooming to be started into growth by gentle heat.

*Epiphyllum truncatum* to be started into bloom by giving it a sunny situation and increasing heat and moisture.

*Ferns* to be supplied freely with water. Re-pot when necessary. Do not crowd plants in ferneries. A little sunshine on the case at times will do no harm. Occasionally tilt up the glass on one side to admit air. Bulbs flower well in such cases.

*Freesia refracta* for early bloom to be started now, and at intervals for succession, gradually increasing the water supply at the roots.

*Fuchsias.* — The winter bloomers should have occasional doses of manure water.

*General Greenhouse Matters.*—Fumigate weekly with tobacco stems, or keep some moistened tobacco stems strewn about the floor. Hand-pick mealy-bugs and destroy scale by soap wash. Syringe frequently for red spider. All plants under glass to be freely cleansed of dust and impurities. Before bringing into winter quarters, every plant should have a thorough inspection to see that it is entirely free from aphis, scale, or other insects. If at any time a plant is found infected, it should be at once removed from the stand, until once more free from them. Insects rarely attack a clean plant, and with a little care they can be kept out entirely.

*Geraniums.*—Thrifty growing zonales in bloom like occasional applications of manure water. Cuttings when rooted to be potted at once, and placed in a light situation.

*Gloxinias* now at rest to be placed in a dry, cool situation.

*Habrothamnus.*—One of the best flowering plants for house culture, requires a rich soil and plenty of water. In the spring cut it back, and re-pot; give it a place next the glass. It blooms early and remains in bloom all winter.

*Heliotrope* needs a rich soil and the same treatment as the fuchsia. It is of a sensitive nature, and if given too much water or an overdose of stimulants it will droop its leaves. The dwarf varieties are best adapted for house culture.

*Hydrangeas* to be trimmed into shape and stored in a cool, light cellar. Keep quite dry at the root.

*Jerusalem Cherries.*—Freely watering and occasional doses of liquid manure will help to keep the berries on. Plants at rest to be kept in a cool, light cellar, and rather dry at the roots.

*Lawn Directions.*—Correct irregularities and uneven places in the surface of the lawn. Now while labor is cheap, make all needed improvements, such as making walks, draining, trenching, etc. Rake dry leaves in heaps, and remove to the stables for bedding, or utilize as mulch in protecting tender and half-hardy growths. The flower beds and borders may be given a good dressing of well-rotted compost, to be dug in deeply. Plant bulbs if neglected thus far. Box-edging can now be taken up, divided and replanted. While the weather remains open, trees and shrubs may still be taken up and re-set, or planted out as desired. Stakes and garden requisites should be gathered and stored away to be on hand and in good condition for next season's use. Take care of the lawn-mower and other tools. Clean and oil the steel parts and gearing. Tools of this kind are costly roosting-places for fowls. Hardy herbaceous plants should be marked with a labeled stake, to insure their safety against destruction next spring when the beds are dug over. To mulch them slightly or cover with evergreen boughs is always a good precaution.

*Lantana* is one of the best window plants for the amateurs. It is a great bloomer and of easy cultivation.

*Lily of the Valley* for early bloom may be started for forcing at the latter part of the month.

*Manure water* may be applied to most of the flowering plants in full growth once in ten days, or even oftener. A good way to make it is by filling a leaky bucket with old manure, then place in a larger, water-tight one, so that when water is poured over the manure it will drain into the large vessel below. This manure water must be diluted until it is the color of weak tea. Do not let it touch the leaves of variegated-leaved plants. In place of the manure, a teaspoonful of prepared fertilizer, "flower food" and the like, may be used to the pint of water.

*Myrtus communis* to be given a light, sunny situation without too much water.

*Orange Trees, Lemons, etc.*—Sponge off the leaves occasionally.

*Mignonette* for forcing to be kept as near the glass as possible.

*Oxalis* to be given a sunny place for bloom, and gradually increased water supply.

*Pansies* for forcing to be kept as near the glass as possible. Air freely, and keep the ground among them well stirred.

*Pelargoniums.*—Shift plants as needed. Re-pot the old plants cut down some time sgo, using smallest sized pots suitable.

*Pomegranates* to be properly trimmed, and stored in a cool, light cellar, keeping dry at the roots.

*Poinsettias.*—Place close to the glass in warm, moist atmosphere. Give frequent doses of manure water.

*Roses.*—Protect the half-hardy out-door roses by laying down the canes and covering with sods, etc. Roses trained to the rafters in greenhouse should be tied up as fast as they grow.

*Sowing Seeds of Hardy Perennials.*—There is probably no better time than November for this. Seeds of the pæony, hellebore, clematis, actæa, adonis, thermopsis, some pentstemons, lilaceous plants generally, gentians, and others, may be sown as soon as ripe; but alyssum, saxatile, aubretia, campanula, cheiranthus, delphinium, papaver, silene, and many others had better not be sown until freezing weather. Fill square shallow pans with ordinary loam, free from coarse matter. The finest seeds should not be covered, the larger ones should be but slightly covered. Press all down slightly with a brick. Plunge in sand. There will be no necessity to open, except for inspection, before the middle of February.

*Vases and hanging baskets* used out-doors to be emptied, cleaned, replanted, and taken under cover.

*Winter Protection.*—Cover the tender shrubs on the lawn with barrels stuffed with leaves. For tall shrubs use two barrels one over another. Drive stout stakes about them. Mahonias, rhododendrons and yuccas should be protected with leaves, held in place by evergreen boughs or fine brush. Hollyhocks should be covered with sod, set root-like on each side; or with a forkful of coarse manure. Beware of smothering and rotting them. All lilies are benefited by a heavy coat of leaves held in place with brush. Violets and pansies need a light covering of leaves, evergreen boughs or litter. Tie the limbs of half-hardy shrubs together with coarse soft twine; then bind on straw, hay or stalks.

*Shrub Propagation.*—The following strike root from cuttings easily: *Retinospora plumosa, R. plumosa aurea, R. obtusa, Thuja Lobbi, Thuja Wareana, Cupressus Lawsoniana, C. L. erecta viridis* (Golden Yew), *Cryptomeria elegans, Wellingtonia gigantea, Thuja occidentalis;* also the following wall shrubs: *Escallonia macrantha, Garrya elliptica, Jasminum nudiflorum, Lonicera aureo-reticulata, Kerria Japonica, Euonymus Japonicus variegatus, E. Japonicus aureo-variegatus, Ceanothus divaricatus, C. azureus, Choisya ternata, Cotoneaster Simonsii, C. microphylla, Crætagus Pyracantha,* and *Veronica Andersonii.*

## II. GARDENING FOR TABLE AND MARKET.

*Asparagus.*—Clear the beds of old stalks at once, if not yet done, remove and burn the collected rubbish. Whatever manurial substances are found available for the purpose, such as compost, ashes, concentrated fertilizers—nitrate of soda excepted—may be applied now with advantage. For forcing, take up good strong roots at once and store in cold frame to be ready for use when wanted.

*Apples.*—Finish picking the winter crop. As we may expect at least fair prices, both for good green fruit and for the evaporated article, we should not let any go to waste. Good cider-vinegar is not and will not be in large supply, and it will pay to use culls, etc. for cider and vinegar making.

*Blackberries and Raspberries.*—The tender sorts should always receive some winter protection by bending the canes down carefully, and covering with leaves or litter. Trim out the old wood. A little manure or bone dust

# MISCELLANEOUS

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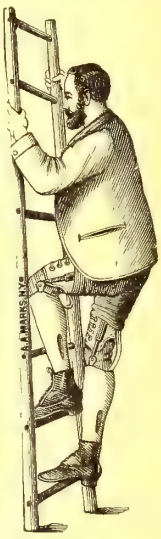


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and ashes, applied now, will help blackberries, and a little more will pay on raspberries.

*Cabbage* to be pulled and stored for winter. A good place for them in early winter is a barn floor or loft, or the corner of some available out-building, to be protected during severe weather by a straw or hay covering. Cabbages buried in pits or trenches should not be covered too deep before cold weather.

*Carrots* to be gathered, topped and stored same as potatoes.

*Celery.*—Use the bleached article freely. Home-growers often allow a large part of their crop to spoil. Take up all plants before severe freezing. Store in celery houses, or on the cellar floor. The secret of keeping it after this time is in keeping the tops dry and the roots moist, and frost out. Small quantities may be trimmed and packed in boxes in moist moss.

*Currants and Gooseberries* to be pruned by thinning the branches, and heading in the straggling ones. Apply good manure freely.

*Cuttings.*—Those of currants may be planted at once, leaving only the top bud exposed above ground, and mulched with coarse litter. Grape and gooseberry cuttings we would prefer to treat as advised for scions, and plant in spring.

*Figs* in tubs or boxes to be stored in a dry, cool cellar before freezing weather sets in. Trees to be forced under glass must now be brought in.

*Frames* in use during winter will now need glass covering. Get the sashes in readiness by mending and painting.

*Grapes.*—All tender varieties should be loosened from the trellises and laid down upon the ground. This will indeed be profitable for all sorts, and while so doing they should also receive their regular pruning. Our best authorities prefer fall to spring for pruning grapes. The tenderest sorts, such as Duchess, Iona, Goethe, etc., had better be pegged down and covered with earth, loose manure, or leaves. In cold climates this treatment will be advisable for almost all varieties. In managing this crop under glass, keep the late houses cool and dry, and air freely. The vines in intermediate houses should be pruned and laid down as soon as the leaves fall. Start the vines in very early houses into gradual growth at once. The borders should have a mulch of coarse manure before cold weather sets in.

*Lettuce.*—The crop in cold frames need plenty of airing, and also sufficient protection from frost by means of mats and shutters. In forcing pits the plants need an average temperature of 55 degrees, and free airing whenever the weather is suitable. The error most frequently made is in keeping the plants too warm. Tobacco stems scattered freely on the soil around the plants will be sure to keep the green fly in check. Avoid excesses in watering and change of temperature. Plants in cold frames to be wintered over need very little extra protection. They are to be kept in a dormant, not in a growing condition.

*Mushrooms.*—If you have a cellar or suitable shed, it will be a good thing to make a trial in growing this crop.

*Onions* must be protected against repeated freezing and thawing; but they stand a temperature, even as low as 15 above zero, quite well if not handled, and if allowed to thaw out very gradually. Keep in a dry, cool, airy place. Never try to winter a considerable amount without having proper facilities for winter storage.

*Parsnips* for early winter use should be dug and stored like other root crops. For spring use leave them in the ground.

*Plowing* may be done now for earliest garden operations. The ground should be laid off in long and narrow beds, and left in the rough over winter. It will be ready for work as soon as the frost leaves the ground.

*Pineapples* under glass when in fruit need a warm, moist atmosphere. Young plants should be kept in a moderately dry air, and in a temperature of 55 to 60 degrees.

*Rhubarb.*—The plants in open ground should have a generous dressing of nice rich fine manure. They can stand a good deal of it; in fact, will not do well if stinted. For forcing under glass, take up some roots now and store in cold frame.

*Salsify* to be treated as directed for parsnips.

*Scions* of fruit trees to be used for grafting in winter or spring, to be cut, tied in small bundles and packed in sand or moss in the cellar.

*Spinage.*—The crop for spring use to be given a very light covering of straw; so light, indeed, that the green leaves can be seen fairly well through the covering. It is perfectly hardy. The crop in cold-houses will now need but little attention.

*Squashes* can be kept in a dry, not too cool place. Frost must never touch them.

*Strawberries* to be covered lightly with horse manure or marsh hay. Leaves will do if held on. Do not pile on so much covering as to smother the plants. Plants in pots for forcing are to be plunged into cold frames before severe freezing weather sets in. Water sparingly.

*Stocks* for root grafting should be taken up at once, and stored in earth or sand in the cellar, or in cold frames, so that they can be got at when wanted.

*Tools* to be gathered up, cleaned, oiled, and stored in a safe place for next season's use.

*Turnips* to be gathered and stored in barrels or covered heaps in a cool cellar for immediate use, or in pits out-doors for spring use.

FAGUS FERRUGINEA.

Known as American Beech, Red Beech, etc. (See page 742.)

# The American Garden

COMBINED WITH

POPULAR GARDENING AND FRUIT GROWING.

*Vol. XII.* *DECEMBER, 1891.* *No. 12.*

## QUICK RESULTS AFTER PLANTING.

AN IMPRESSION prevails widely that whoever would have fruit from trees and plants of his own setting has long to wait for the product. Men of sixty often assume that it is not worth their while to begin planting so late in life, who yet live many years after, in which they might as well enjoy fine fruits of their own. In May, 1889, almost exactly 29 months previous to this writing, the planting of a thirteen-acre place to fruit and other products was begun. This was to be the writer's home; and as the place was wholly without fruit, save a young apple orchard and some cherry trees, he hastened to put himself and family in the way of an abundant supply of fruits and vegetables.

Below is a record of the actual crops yielded, all within the brief period of 29 months from the beginning of the work. The planting was done in May, 1889:

| CROP AFTER 5 MONTHS—1889. | CROP AFTER 17 MONTHS—1890. | CROP AFTER 29 MONTHS—1891. |
|---|---|---|
| All kinds of seed-grown vegetables. | Strawberries, by the bushel.<br>Raspberries, Blackberries, Currants, Gooseberries, } light crop.<br>Rhubarb.<br>Asparagus.<br>All kinds seed-grown vegetables. | Strawberries, Raspberries, Blackberries, Currants, Gooseberries, } by the bushel.<br>Grapes, fine crop.<br>Botan plums.<br>Peaches.<br>Pears, a few.<br>Rhubarb.<br>Asparagus.<br>Vegetables. |

Outside of seed-grown products, it will be noticed that these choice products, rhubarb, asparagus and strawberries, figured chiefly among crops raised within 17 months from planting. These were all most satisfactory. Of strawberries there was not only a lavish quantity for table use and preserving, but neighbors were invited in to help themselves to the surplus. In that same period many quarts of bush-fruits—raspberries, currants, etc., were gathered for table use.

In the present year, 1891, within 29 months of setting, the plantation yielded, in addition to seed-grown vegetables, a bountiful supply of table and dessert products, beginning with rhubarb and ending with grapes, of which latter the crop this year amounted to hundreds of pounds. Some, like the winter-keeping Diana and Iona, will be enjoyed in a fresh state until February and March. Neighbors again were treated to a large surplus, and by means of a cook-stove evaporator, and by canning and preserving, a supply was laid up that easily will last until the crop of 1892 comes in. Plums, peaches and pears gave a taste, and prepared our minds for the prospective yields to come.

Wait long for fruit? By no means! What has been done here was only the result of fair, ordinary methods of culture, such as thousands of small land-owners can carry on. Let no one possessed of a few rods of land suitable for fruit be deterred from attempting the pleasant and profitable task of growing a quick and large supply of wholesome fruits, for the delectation of family and friends.

# THE ECONOMIC PLANTS OF JAPAN—X.*

PLANTS USED FOR SALADS AND GREENS (CONTINUED).

PIUM GRAVEOLENS, L.; Jap. *Oranda-mitsuba*, *Kiyomasa-ninjiu*. (The common celery.) It has been introduced in Japan and can be bought of the green grocers, who cater for the foreign trade. Both the celeriac and the ordinary celery are found there, but they are grown only for the foreigners; the Japanese, apparently, have no taste for them. The first name, *Oranda-mitsuba*, means literally Holland (or Dutch) three-leaved celery, and would indicate that it was first introduced by the Dutch when they traded with the country about three centuries ago.

ARTEMISIA VULGARIS, L. (*A. Indica*, Willd.); Jap. *Yomogi*. An extremely common weed, which grows wild everywhere in southern and central Japan, along roadsides and in waste places. In the north it is less common. The young shoots are used as greens, being gathered from the wild plants about the country when a couple of inches high. The greens are first boiled, then pounded in a wooden mortar till the mass forms a paste. They are then added to steamed glutinous rice, and the whole again beaten in the mortar till it becomes homogeneous. It is now baked, forming small loaves or cakes called *yomogi-mochi*; or *futsu-mochi* (*mochi* is the generic name for cake). These cakes have a slight aroma and a pleasant taste. Sometimes the leaves are used merely to color the cakes green without being beaten up with the rice. For that purpose they are first boiled, then pressed through a cloth, and the green extract added. They are also dried, ground to a powder, and then mixed with the rice. Green cakes and confections are very common, and the coloring material is obtained from this wild artemisia.

These rice cakes (*yomogi-mochi*) are always made for use on the third day of March, which is set aside for the amusement of the little girls, called dolls' feast-day. Devout parents then present stacks of these cakes to *Hina-sama*, the god who is supposed to have special charge of the girls. The boys have a similar feast-day on the fifth of May, called the *Go-gatsu-Lekku* (5th month's holiday), when these cakes are eaten and presented to neighbors and friends. It is also customary to hoist a flag on the boys' feast-day by every house in which a boy has been born within the last year. These flags, made in the shape of a river fish called the *koi*, a sort of trout, usually remain hoisted for several days. The *koi* fish is noted for the ease with which it jumps waterfalls and other obstacles in going up stream, and therefore it is adopted as symbolical of the boy's career. The custom is said to have been introduced from China, where there is a legend to the effect that when a *koi* succeeds in jumping the *Riu-mon* (Dragon's Gate) or great falls of the Yellow river, it is changed into a dragon, and becomes endowed with supernatural powers.

This artemisia has another and not less important use, as a medicine. It is used to cure rheumatism and similar ailments by burning it on the skin. The dried plant is made into little wads called *mokkusa*, which are neatly put up in packages, and can be bought in the stores. A fire-cure doctor will ignite pieces of this *mokkusa* and place it on the ailing spot, where it scorches and destroys the skin. This operation is repeated, usually seven times in the same place on seven successive days. Jinrikisha coolies may be seen every day who have whole rows of scars on their legs from these burns. It is the standard remedy for rheumatism, and the strangest thing of it is that it is said to cure by those who have tried it.

ARTEMISIA STELLERIANA, Bess., var. VESICULOSA, Fran. and Sav.; Jap. *Shiro-Yomogi*, is another species whose leaves are used for greens, but it is not common. It is a small spreading plant, with white leaves in dense tufts on the ends of the short reclining branches.

ASPARAGUS OFFICINALIS. Our cultivated asparagus has been introduced, and is grown at the open ports to supply the demand of foreigners. As yet it has not gained a foothold among the natives. The young shoots and leaves of two ferns are used for greens. They are: ASPIDIUM FALCATUM, Sw. (*Polypodium falcatum*, Thunb.; *Cyrtomium falcatum*, Presl.), Jap. *Yabusosetsu*; and OSMONDA REGALIS, L., var. TYPICA, Fran. and Sav.; Jap. *Zenmai*. (Royal Flowering Fern.) They are common in moist shaded places where they are sought, but are not cultivated as vegetables, though they may occasionally be found in some corner of the garden as ornamental plants.

Several species of the chenopodioceæ furnish greens and salads. The following are the more important:

SALSOLA ASPARAGOIDES, Miquoig (*Scoberia maritima*, Mey., var. *asparagoides*, Fran. and Sav.; *Suæda maritima*, Dumort.); Jap. *Matsuna*. (Sea Blite.) The young plants are gathered from the fields, and are also cultivated; the tops are used both boiled and chopped fine as a salad. It is wild near the sea-coast and grows some three or four feet tall, much branched with ternate leaves.

SALSOLA SODA, L.; Jap. *Oka-hijiki*, *Miru-na*, is used in the same way as the preceding, which it resembles; though it has a more spreading and branching habit, and the leaves are stiffer and more pointed.

KOCHIA SCOPARIA, Schrad. (*Chenopodium scoparium*, Thunb.); Jap. *Hahakigi*, *Hoki-no-ki*. (Broom Bush.) This is a native plant which has been brought under cultivation and improved. It is not grown so much for greens as for its seed, and for the stems which are used for brooms. The latter fact is indicated by the name *Hoki-no-ki*, *hoki* meaning broom, and *ki* tree or bush. It is an annual, attaining a height of three or four feet. It has an erect and very dense top with many slender tough branches. There are three or four varieties which differ from each in size. The seeds as well as the young tops are used for food, and the mature plant for brooms. Small patches of this crop are often seen about the farm houses in the north.

CHENOPODIUM ALBUM, L. (*C. giganteum*, Don.); Jap. *Akaza*, *Shirosa*. (Lamb's Quarters, Pig Weed.) A plant common both in Europe and America. It is also found in Japan, where it is sometimes cultivated for greens. It then attains a large size, with broad sinuate or dentate leaves, which are used only while young, when they are said to be crisp and palatable. Leaves of wild plants are also gathered.

BETA VULGARIS, L.; Jap. *Tojisa*, *Fudanso*. (The common Beet.) This is an introduced plant, and like most introduced plants, it has never become a favorite. When cultivated at all, it is grown more for the root than for the leaves, though the latter are eaten. The sugar beet has been introduced and is grown on the Northern island under the auspices of the government, a large sugar factory having been established at that place. In 1887 there were 823 acres of beets contributory to this factory. BETA BENGHALENSIS is likewise occasionally cultivated for its leaves.

Our common spinach, Jap. *Horenso*, was probably introduced by the Dutch, and is found here and there in the country, but chiefly at the open ports. It is sparingly cultivated as a pot herb.

BRASENIA PELTATA, Pursh.; Jap. *Junsai*, *Nunawa*, *Mikuri-nawa*, is a prolific plant of the water-lily family.

CLUMP OF PAMPAS GRASS NINE YEARS FROM PLANTING, ON THE GROUNDS OF EXECUTIVE MANSION, WASHINGTON, D. C. (See department, "Buds," etc.)

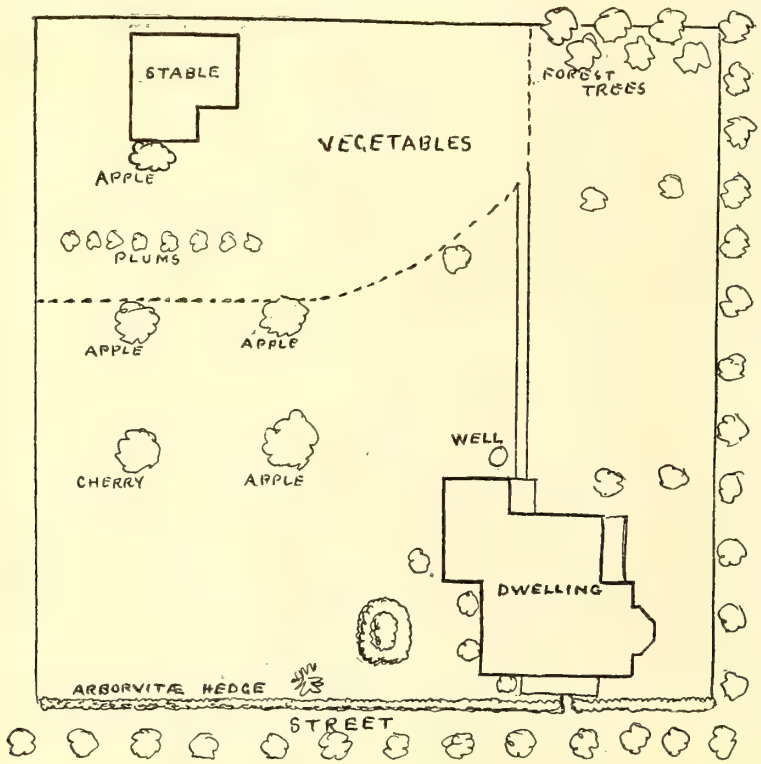
Saga and Ogawa are noted for them. The leaf stems and young leaves, before they expand, with the adhering mucilage or slime, are eaten as a salad with vinegar.

BUCKLEYA LANCEOLATA, Miquoig (*Quadriala lanceolata*, Sieb. and Zucc.); Jap. *Tsukubane*, *Hago-no-ki*.

The young leaves of this plant are used as greens, and are said to be fine, and the fruit is packed in salt and eaten with *sake*, and is also boiled. The plant is a shrub, wild everywhere in the mountains, especially in rich leaf mold and shady places. It grows some seven or eight feet high. The fruit resembles the *tsukubane*, which is Japanese for battledore. From this fact the plant derives its name.

CHRYSANTHEMUM CORONARIUM, L.; Jap. *Shiun-giku, Kiku-na, Mujinso.* (Summer Chrysanthemum.) An annual plant two feet tall, branching; stem and leaves rather thick and fleshy, the latter twice pinnately parted and clasping the stem. The flower is a rather large yellow or whitish ray flower, quite pretty, with purple or brown center. The plant is cultivated as a vegetable for the leaves, which are eaten as a salad with raw fish, being first crushed to a pulp or finely cut. They have a very pleasant spicy and slightly pungent taste.

CHRYSANTHEMUM INDICUM, L.; Jap. *Kiku.* (Flowering Chrysanthemum.) The flowers of several varieties are used as vegetables. The most common one is called the *Fudan-giku*, a large yellow very double one, with broad ray flowers. Another is a large red variety. Basketfuls of these flowers, pulled off the stems, can be seen at the green grocers' for many weeks during the fall. They are cooked in many ways, mostly boiled, and eaten as greens with vinegar and sugar, but also as salad, being first cut fine, then beaten to a pulp in a mortar. They are also packed in salt and thus preserved for winter use.




PRESENT DIAGRAM OF A CORRESPONDENT'S GROUNDS.
See "Taste and Tact" series, page 716.

CLETHRA BARBINERVIS, Sieb. and Zucc.; Jap. *Riobu.* (Sweet Pepper Bush.) The leaves of this bush or small tree are picked while young, and boiled, when they are eaten with rice in times of scarcity. They are not a common article of diet. It is a stiff, smooth bush with large obovate rough leaves, some five to seven inches long and two to three inches broad, on short petioles, and with serrate, sharply pointed teeth on margin. The flowers are small, white, in long racemes. Wild in many parts of the country, and quite ornamental.

CARDAMINE LYRATA, Burge.; Jap. *Midzu-tagarashi.* A pungent little cruciferous plant which grows on the sandy bottoms of shallow streams, where the leaves are gathered by poor folks to use as salad with fish.

CRYPTOTÆNIA CANADENSIS, De C. (*Sison Canadense*, L.); Jap. *Mitsuba, Mitsuba-seri, Ushi-mitsuba.* This plant, which is also found here, is an important vegetable in Japan, and is very generally cultivated all over the country. It grows about two feet tall, though as a vegetable it is used before it is full grown; it has palmately trifoliate leaves (*mitsuba* means three-leaved), leaflets doubly or irregularly serrate, rather large, ovate, pointed, often lobed.

It prefers a moist, loamy soil. The seed is sown in May between the rows of ripening grain, and covered with straw for mulch. When the grain is removed it becomes the sole occupant of the ground, and is manured and cultivated during the summer. The next following January it is usually manured with rice bran, and the earth is hilled-up over the roots so the leaves can bleach when they shoot through. The leaves appear in March, when they are pulled off at the roots, tied in bundles, and marketed. The tops are used for greens and to flavor soups, and the blanched stems are used both as a salad and boiled, and they are really a very desirable vegetable. Old plants are often lifted in the fall, and placed on gentle hotbeds made of rubbish, where they produce leaf stems for early use. These are some seven or eight inches long and quite slender. The root is also eaten when boiled and dressed with oil. This vegetable would doubtless meet with favor in this country. There are several varieties.

CNICUS PENDULUS, Fran. and Sav. (*Cirsium pendulum*, Fisch.); Jap. *Ma-azami.* An improved form of this thistle is cultivated in the province of Orni for the

succulent stems, which are said to be an agreeable vegetable.

CYNARA SCOLYMUS, L.; Jap. *Chiozen-azami*. (Artichoke.) This old and well-known vegetable from southern Europe and northern Africa is also grown in Japan. It is, however, rarely seen. There, as here, it is the receptacle and scales of the flower-beds which are used.

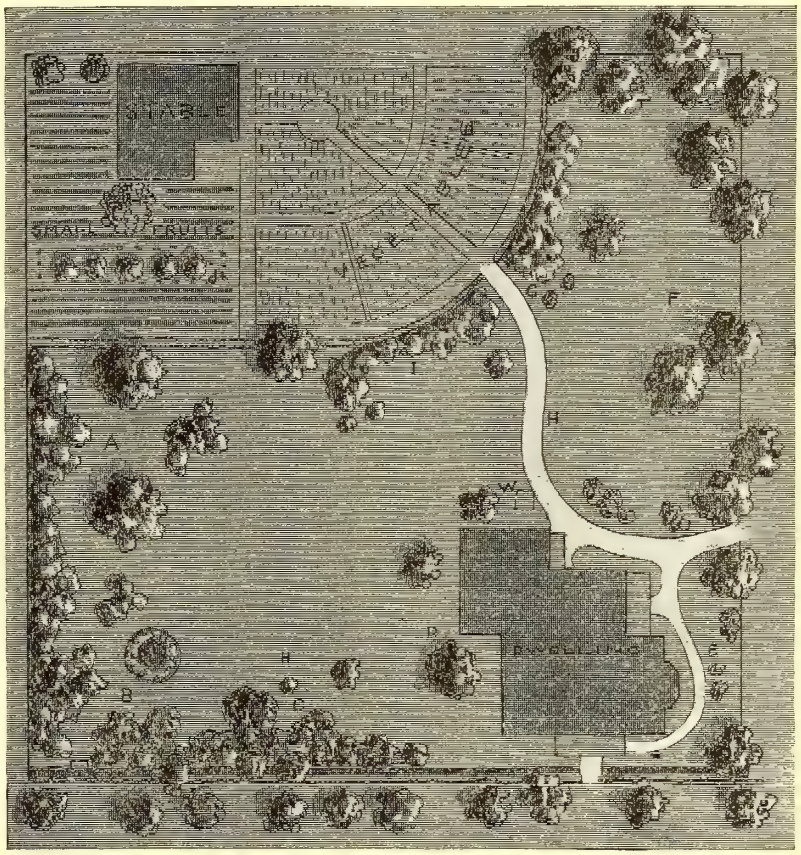
ERITRICHIUM PEDUNCULARE, De C. (*E. Japonicum*, Miq.); Jap. *Tabiraku*, *Kawarake-na*. The leaves of this wild herb are occasionally eaten as greens in early spring. The plant is low, spreading, rather rough, with alternate, sessile, obovate leaves and small, blue flowers in a false raceme.

GNAPHALIUM MULTICEPS, Wall. (*G. arenarium*, Thunb.; *G. lutea-album*, L., var. *multiceps*, Hook.); Jap. *Hahako-gusa*. The young leaves are boiled and used in the same manner as the *Yomogi*, in being added to glutinous rice from which cakes are made. It is a low plant, some ten or twelve inches high, with sessile leaves covered with white wool and yellow flowers in clusters on top of the stem.

The common Lettuce, Jap. *Chisa*, *Chishia*, has been introduced and is cultivated about the open ports, chiefly for the markets of foreigners. I have never seen it in the interior. This seems to indicate that it is not very generally popular among the natives.

LAMPSANA APOGONOIDES, Maxim.; Jap. *Ko-oni-tabirake*. A small herb growing wild by the roadsides. The radical oblong leaves are deeply and irregularly cleft. In the province of Mino, and perhaps other places, poor persons gather the leaves and boil them as greens.

LEUCOCASIA GIGANTEA, Scott.; Jap. *Hasu-imo*. This member of the aroideæ is grown for its leaf stalks, varieties having been developed with crisp and tender stalks. It is a semi-tropical plant and is grown mainly in the south. It resembles the colocasia, but is much taller, the leaf stalks reaching five or six feet in height. The stems are either boiled or served green, cut in slices, as a salad, with raw fish and other dishes.




IMPROVEMENTS SUGGESTED FOR A CORRESPONDENT'S GROUNDS.
See "Taste and Tact" series, page 716.

LYCIUM CHINENSE, Mill. (*L. barbatum*, Thunb.); Jap. *Oni-guko*, *Kuko*. A bush growing wild in the mountains, with small oval leaves, usually clustered about a small spine. Flowers small, purple, disposed singly in the axils of the leaves. The young leaves are gathered and used for greens. I have seen two forms of this bush, one having spines and the other none.

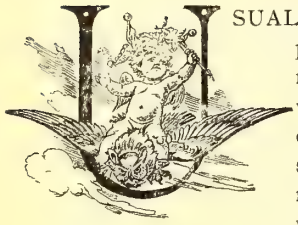
C. C. GEORGESON.

*Mark then, ye husbandman, the curious thought*
*Each several plant, after its kind, doth ask.*

—VIRGIL.

[*Continued from Popular Gardening.*]

# TASTE AND TACT IN ARRANGING HOME AND OTHER GROUNDS—XIV.



USUALLY in treating the ground plans that are being submitted to us by readers, we find it necessary to point out, as a chief fault, the unsatisfactory present arrangement of such features as walks, trees, shrubs, etc. But in the case now to be considered, the faults which our correspondent finds with his place are of another sort. We will let him present them in his own words:

DECATUR COUNTY, KANSAS.

TO THE EDITOR:

*Dear Sir*—Agreeably to your proposition, I submit herewith a sketch [see page 714] of my dwelling property, size 60x60 feet. It is deficient in shrubbery of all kinds, as the place is comparatively new. Had I been taking your journal at the time I built, I would not have made the fatal mistake of setting the house so close to the street. One hundred dollars would not repair this blunder. Yours truly,

G. W. K.

This applicant pays POPULAR GARDENING a pleasant compliment in saying that had he taken the journal at the time of building, he would not have made the mistake he did. It will give us pleasure to reassure him, by showing how his grounds can be made so handsome that we are certain, if the suggestions be followed, he will in time quite lose sight of the chief fault deplored, namely, that his house is in the wrong place. Moreover it is hoped that some comfort may be conveyed to other readers whose houses may be located similarly; for one of the objects of this series is to encourage every one to possess a fine garden, even though the surroundings are not in all respects of the most favorable kind.

In this case undoubtedly the owner is right in thinking that the house is too close to the street. Yet it will be observed that the fault is in the nature of detracting from the pleasantness of the rooms and verandas of the house, rather than in that of impairing the garden-making qualities of the place. Indeed, speaking from a gardener's standpoint, it might be laid down as a rule, that the farther the house is from the center of the lawn area, the better, as contributing directly towards the greatest of garden charms, breadth and repose. But when the gain is secured at the heavy cost of depriving the front rooms of delightful garden views wholly out of proportion to the extent of the grounds, the absurdity of such a rule is obvious. A defect is also apparent from this same cause, as it relates to the view obtained of the residence from the street; for the home is perhaps not in existence that does not appear, as viewed from without, to better advantage when surrounded on all sides by a fair extent of lawn.

Another objection that may be discovered in the present arrangement is the regular relations that not only the fruit trees (at the front of the stable and to the right), but the forest trees in the further right hand part of the lawn, bear one towards another and to the boundaries. The few shrubs near the house are too much scattered, and so located as to appear not to fit their places well. Altogether it is apparent that straight lines and angles in the outlines of the place, the direction of the walk, tree rows, etc., abound in a degree which has not met with due relief by past planting.

On page 715 is shown the result of a study to arrange our correspondent's place more pleasingly. A

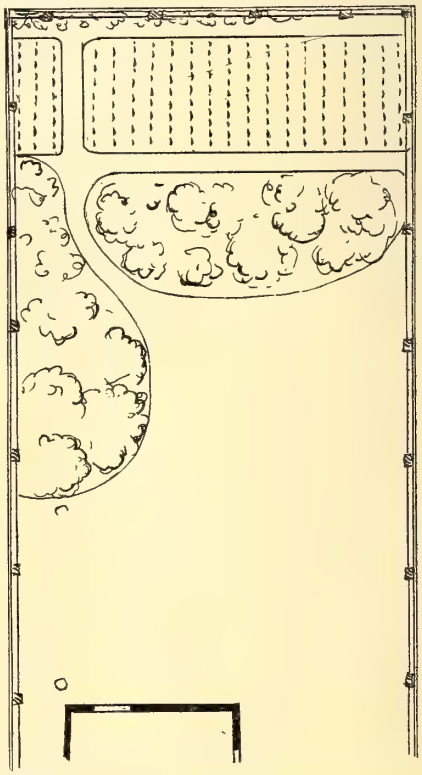


DIAGRAM OF PLANTING IN A CITY BACK YARD.
(See page 718.)

fundamental improvement suggested is the introduction of some bold curves in the walks and the vegetable garden partition, to offset the many fixed straight lines and angles referred to above. In conjunction with these

curves, the shrubs, plants and trees suggested for planting are to be located chiefly in masses of irregular outline, after nature's invariable suggestion for arranging such materials. As is apparent by a glance at the plan (page 715) the effort which thus is possible in connection with the broad open lawns is at once in the direction of a very handsome garden arrangement.

Proceeding to details, let us consider how the garden material may be made up with good effect. Of existing trees the removal of a few, for the sake of breaking up regularity, would undoubtedly be desirable. One of these should be that fruit tree which is nearest the house, of the four directly in front of the stable. Let another be the cherry tree to the right, about three-fourths of the way back through the right hand lawn plat. The middle one of the three forest trees at the extreme end of this part, also, had better come away, to obtain the best general effect.

VIEW OF A CITY BACK YARD.
Effect of Arrangement Shown on Opposite Diagram.

Proceeding to the part marked A, it is suggested that here, to the north of the dwelling, evergreens could be most appropriately introduced in a border of irregular outline, against the north fence, beginning at its east end; to include, among others, such handsome thrifty pines as the white or Weymouth, the Austrian and the dwarf mountain pines, the latter to be set in the foreground. Among the good qualities of the last named species are its suitability for small grounds (when given fairly generous treatment it assumes a decidedly handsome form), and its low price as compared with other dwarf pines. Next to the pines, and intermingling somewhat with them, could be placed a mass including Norway and white spruces, with a few of each of the conical spruces, and such dwarf varieties as Maxwell or Gregory spruces, and in due order some Siberian and other arbor-vitæs, the red cedar, the Irish and Chinese juniper, the hemlock, etc. The clump to the east, beyond the apple-tree line, might consist of some such choice conifers as the Colorado blue spruce, Nordmann's silver fir, plume-like retinospora, and Alcock's spruce.

It is not advised that evergreens be continued to the west end of this north border, but here, for about one-fourth the length and arranged to have the mass mingle at the edges with the evergreens, it is suggested that some deciduous trees and shrubs having striking foliage be located. When making up a list of such kinds the writer feels very friendly towards the common *Ailantus glandulosa*. This should be cut back near to the ground every spring. The aralias, especially the Japan and Chinese species, the garden and other catalpas, the chionanthus-leaved lilac, the *Paulownia imperialis*, the honey locust, the golden poplar and the cut-leaved elder, are all suitable companions to the ailantus. The strong-growers of this list may be cut back in the spring like the ailantus, with good effect.

The circular bed in front of this border would look well if planted to tulips and other brilliant hardy bulbs flowering in the spring; to be followed by geraniums, coleus or similar bright summer flowers and plants. Easterly from the round bed is shown a small irregular

mass of shrubs, which might consist of the brilliant purple-leaved plum (*Prunus Pissardii*), surrounded by the lower-growing variegated- leaved weigelia, or variegated-leaved cornelian cherry.

The border G may be planted with a general assortment of small-growing trees and shrubs, with some seed-grown or other flowering plants brought in here and there next to the grass. Suppose for trees that the Judas tree (cercis), snowy mespilus (amelanchier), white fringe (chionanthus) and the double-flowering plum be used, keeping these somewhat in the background. For shrubs, a selection consisting of flowering almonds, flowering currants, daphne, forsythia, bush honeysuckle, Japan quince, berberries, althæas, hardy plumed hydrangeas and others might here be included.

In the corner of the grounds to the rear of the round bed, would be a suitable spot for locating a garden seat; which no doubt would be a place much sought by the owners of the garden and their visitors.

At D, next to the house, a mass of small shrubs, say to consist of mahonia and variegated-leaved corchorus, might occupy the bed nearest the street, and a magnolia tree be located a little to the east and somewhat further away from the house than shown by our artist. The small bed to the rear of and close to the house would afford excellent accommodations for such partial-shade lovers as hardy ferns, hepaticas, trilliums, violets, daisies, etc.

In the angle of the part marked E, a rockery might be constructed to be planted with hardy bulbs, rock cress, saxifragas, aubrietias, sedums, thrift, dwarf campanulas, and other alpines. The bed located centrally in the plat would be suitable for receiving some lilacs in assortment.

In plat F, the shrub clumps directly back of the walk might be planted with an assortment of spiræas, covering a period of bloom from May to August. In addition to the spiræas, some deutzias, mock oranges, weigelias, etc., would also be in place here.

The two trees planted next east from the shrub clumps might be a cladrastis or yellow-wood and a River's blood-leaved beech. The mass of shrubs midway back through this plat, on the street side, could consist of plumed hydrangeas (*Hydrangea paniculata grandiflora*) with fine effect, as viewed from nearly all parts of the grounds. Still further to the rear a scarlet oak and a cut-leaved weeping birch would appear very suitable.

For a fence or screen separating the kitchen garden from the lawn, we would suggest a woven galvanized-wire fence, covered with hardy and tender vines. The selection might fitly include honeysuckles, wistarias, clematises, trumpet vines, akebias, actinidias, ampelopsises, together with seed-grown kinds like nasturtiums, morning-glories, scarlet runners, etc. Directly in front of this vine screen, on each side of the walk that penetrates it, should be located some borders (G I) comprising a general selection of hardy perennials, as well as of annuals, biennials, etc. At the extreme north end, as also in the smaller beds that stand out a little from the north border, would be the place we would recommend for hardy and other roses. H H H indicate where hydrants are now located on the grounds.

The unique feature of a vegetable garden having a curving outline on one side, would prove one of the most interesting parts of the grounds. Such a garden would not be difficult to lay out and plant at the spring garden making. The outside curves could easily be indicated by setting some stakes at a certain distance (measuring with a stick) from the fence; the inner curves by a line and stake, the latter set at the center of the circle partly to be marked out. The small-fruit garden north could be arranged in straight lines throughout.

In the selections named throughout, of course there is nothing arbitrary, and our correspondent could vary them in detail at will. But if adopted as here given, they no doubt would produce excellent results, such as would assure to him very complete and handsome grounds.

The cuts on pages 716-717 show how prettily the back yard of a city lot (size of lot, 27½ x 175 feet) can be arranged for including a bit of fine gardening. The home is located in the heart of the residence district of the city of Buffalo, and is in all respects a charming place.

It will be noticed that the foreground is devoted to lawn, while directly back and to the left are two ample borders planted with hardy and other flowers and shrubs. Immediately back of these borders is a small area devoted to vegetables and strawberries. Against the rear fence is a trellis covered with hardy grape vines that bear well. A single suggestion in order here would be, that the fences at the sides, not now obscured by shrubbery, be covered with flowering vines.

# AN INTERESTING ILLINOIS GARDEN.

A LAKE COUNTY "EGANDALE."

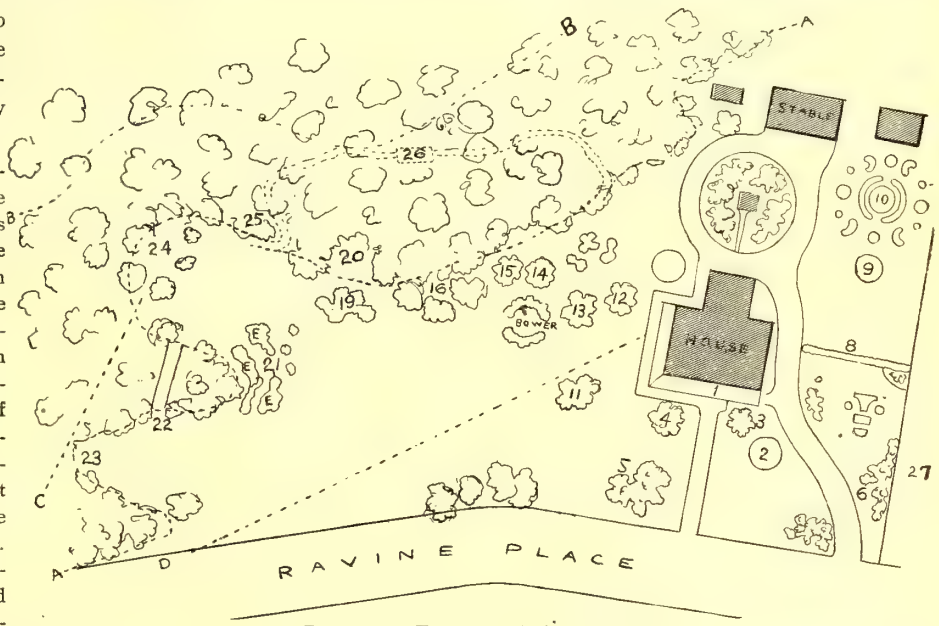
THE GARDEN which I shall describe, is shown in outline in the accompanying diagram. Its main avenue, extending about 460 feet along the street, lies from 75 to 80 feet above the bottom of the ravine shown by dotted line A A; the bottom at line B B. The ravine is clothed with grand old trees of hard maple, ash, oak, linden, iron-wood, etc., and underbrush, forming a dense mass of verdure, shutting out the view of neighbors across it. From the main lawn and from the house porch easterly is a view of the lake, as shown by dotted lines C D. The point (24), as seen from the house, presents a dense wood. The extreme part has three large double hard maples, transplanted, and under them is a small grove of sumach, intermingled with which, but more to the front, are some sixty *Lobelia cardinalis*, transferred from the neighboring swamp. So you can imagine the glorious coloring I have in view from the porch.

The improvements made include a walk and drive as shown. The drive leading to the barn encircles a space devoted to an outhouse, around which is a bed of perennials. The vault of the outhouse is cemented brick, carried two feet out from under the house at the back. This space is covered with a hinged lid running the entire length. Once a week *dry* slough muck is thrown over contents and the result is an outside wholly devoid of smell and offence. It will be covered next year with *Akebia quinata*. I have been experimenting with annual vines, but they are not nearly so satisfactory as those of a hardy and permanent character.

The pillars of the porch (1) of the house are covered with *Akebia quinata*, and the railings with clematis, including the large-flowered varieties. In front of the house to the right (2) is a bed 12 feet in diameter, of *Iris Kæmpferi*, fifteen selected varieties, which this summer were full of the "poor man's orchids," as I call my irises. At 3 is a Tea's weeping Russian mulberry; and at 4 is a Sargent's weeping hemlock. Between the house and the street is a group consisting of a retinospora (golden), kilmarnock willow, dwarf variegated catalpa, and *Thuya Hoveyi*.

To the right of the road as you enter from the street is a grouping of shrubs along the line of the fence marked 6 in the plan. This pleases us much on account of the contrast of color presented in its contents, namely: *Prunus Pissardii*, *Spiræa aurea*, *S. Thunbergii*, *S. Reevesiana*, *S. retinifolia*, *Deutzia scabra*, *D. gracilis*, *Rosa rugosa* and others.

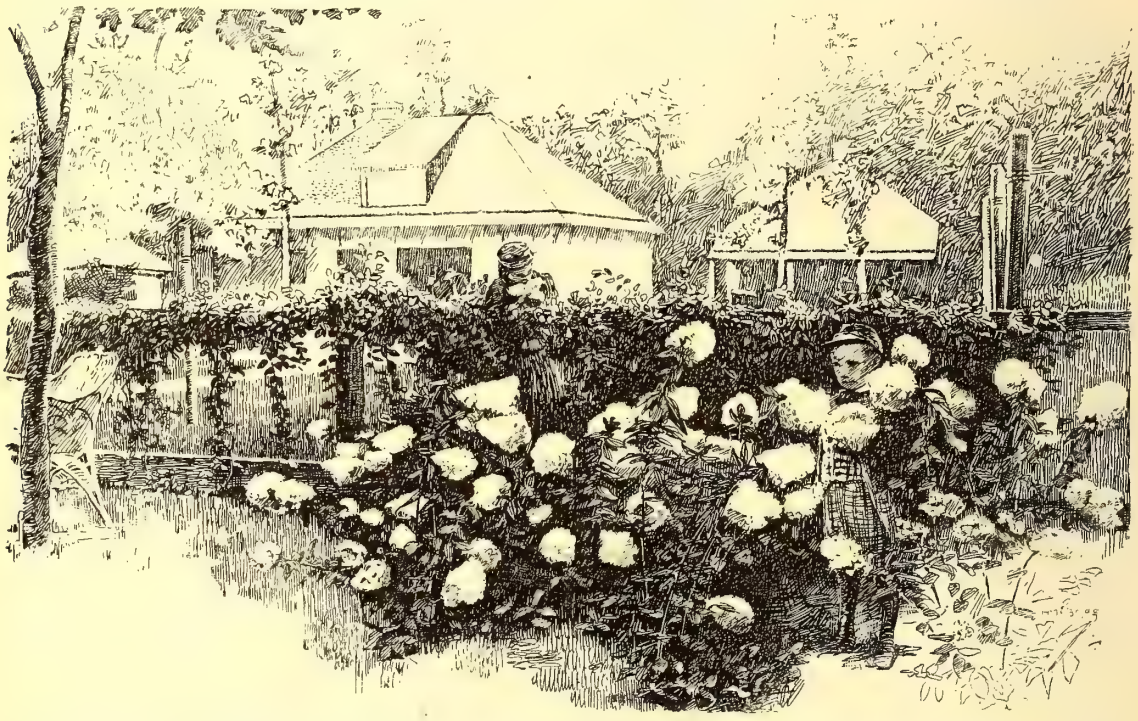
In the center of the grass plat, surrounded by native trees, is cut in the grass a handsome compound bed.




PLAN OF "EGANDALE" GROUNDS.

The front division of this contains gladiolus surrounding *Hyacinthus candicans*. Next back of this is a division filled with lilacs. In two circular divisions are *Eulalia zebrina*. In the front of the remaining division are a

few fancy-leaved caladiums, which serve fairly well, and French cannas. Cannas also line the sides, and at each end is an Ehemanni. At back and in the middle are dark red-leaved varieties, chiefly discolor. This is the handsomest and most thrifty bed of cannas I ever saw. It is naturally symmetrical, rising toward the back and center as if trained, the center being eight feet high. About 30 feet to the rear of this group a wire fence crosses to the main fence. In the angle of these two fences is a bed of plumed hydrangias (*H. paniculata grandiflora*). The wire fence is covered with lonicera, and serves as a screen behind which are kept ash and slop cans and refuse barrels, painted light brown. Between the honeysuckles and a rose-bed at 9 is a clothes-drying plat. At 10 are some small fancy-shaped beds



EGANDALE: LONICERA HALLEANA TRAINED ON THE FENCE; HYDRANGEA PANICULATA GRANDIFLORA IN THE FOREGROUND—ONE YEAR PLANTED.

of annuals, in front of the gardener's cottage. This gardener (?) is a Dane who could hardly speak English when he came to me last spring. He persists in planting everything in rows, and couldn't understand why I wanted my shrubs planted in irregular lines and in groups.

Returning again to the front of the house, some twenty feet south from the east end of the porch may be seen a group having a rosemary willow in its center, surrounded by three Douglas' golden juniper and three Tom Thumb arbor-vitæ alternating.

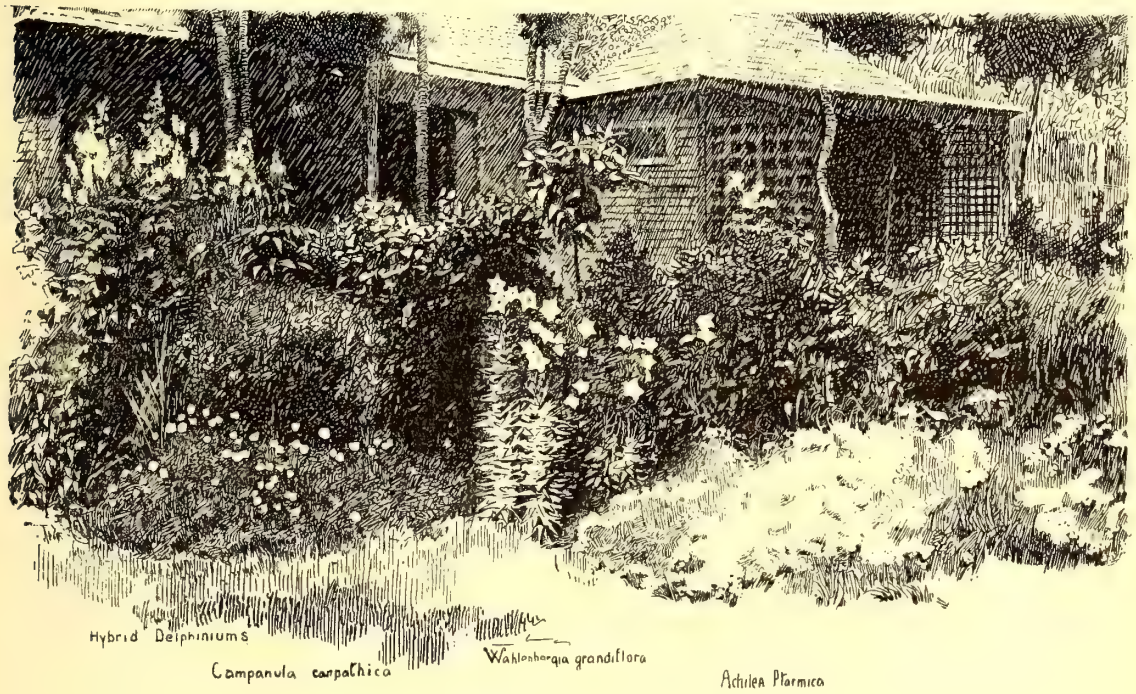
The house is set on a knoll, the northeast corner being eight feet higher than the part where the rockery is. The ground slopes toward the street and also towards the ravine at the back, thus forming a slight ridge running parallel with the street through the center and losing itself a little south of a bower of white and red oak—young indigenous trees bent over and brought together three years ago when I cleared the place. It is circular and some twenty feet in diameter inside having two openings—so that from the house we see through it. The top is dense and the trees healthy. Now that the top is an assured success, I will next spring put in some shrubs close to the tree trunks, so as to complete the verdure from the ground up.

Between the house and the bower are a River's purple birch (12), a Young's weeping birch, and between them and ravine an *Acer Woerli* (14), an *Acer Ginnala* (15), and a golden hop. Near the bower is an *Acer platanoides Schwedleri*. To the left is a natural group of oaks and maples, in which the hammock, swing and teeter tell of the children's domain. Near by (19) is a group of canna, yucca and *Eulalia Japonica*; while back of them in the ravine (20) is a bed of ferns. I also have a bed of maidenhair back of a bed of tuberous-rooted begonias near my perennials.

Between the two points of land formed by the lateral ravines is placed my rock garden. A crook of the ravine here was filled up, the filling being retained by a boulder stone breast-work across it, on which was planted some ground ivy. On the top edge of the embankment is a narrow hedge (?) of *Euonymus radicans variegatus* and Japan box. From this point one can

look down the gradually descending depths of the ravine, with its wooded sides and overhanging boughs, to its extreme end, some 200 feet distant. This is a most charming view. At the base of the boulder breastwork are planted, one on each side, two *Populus Bolleana*—Russian poplar—in hopes of having sometime two white-coated sentinels standing guard. The rock garden is about 275 feet from the house, and emphasizes the singular division of the southern end of my lawn. The native trees and those planted are so placed as to command from my porch an unobstructed view of each "tongue" of lawn, of my charming lake beyond the descending road, and of the rockery. This rockery was made in imitation of some of nature's rock gardens that I have seen in California.

natural pocket in one stone, and in numerous cup-shaped depressions elsewhere on the stone, I placed earth, into which *Sedum sempervivoides* and kindred plants were set. Among the rocks are planted *Cryptomeria elegans*, Japanese golden dwarf thuya, *Euonymus radicans variegatus*, common burning bush, *Daphne Cneorum*, *Rosa rugosa alba*, *Mahonia aquifolium*, Douglas *Thuya pyramidalis*, Douglas Tom Thumb arbor-vitæ, Douglas golden spreading juniper, creeping waukegan, juniper, hawthorn, *Rubus odoratus*, *Berberis Thunbergii*, *Serissa Japonica*, *Desmodium penduliflorum*, *Lonicera aurea*, *Astilbe Japonica*, *Thymus citriodorus aurens*, *Ampelopsis Veitchii*, fern-leaved sumach, *Lathyrus latifolius*, *L. l. alba*, clematis Duchess of Edinburgh, thunbergia, *Cobæa scandens*, *Callirrohoe involucrata*, climbing nas-




A Bed of Perennials at Egandale.

The sod is carried up and through the rockery, the point (21) being the highest place—probably three feet from the general level of the lawn. On the east side, at the beginning of the grass walk up and through the rockery, is one flat boulder forming a stone step—the top of which meets the sod—which gradually ascends to the highest place, then descends to the lawn on the west, and to the north through the center opening. The narrowest part of this walk admits the lawn-mower.

The beds E E E are irregular in outline—broken up and divided by boulders. I endeavored to have each section show an individuality on close inspection. The center bed of the rear or southerly group is bounded by sandstone and the rest by granite boulders. In a

turtium, *Tropæolum Canariensis*, *Yucca filamentosa*, French canna, *Eulalia Japonica*, common ribbon grass, fuchsia, dwarf coxcomb, double dwarf nasturtium, *Geranium sanguineum*, pelargonium, striped flag, *Gazania splendens*, mesembryanthemum, one palm, *Zea Japonica*, *Echeveria metallica* and *secunda glauca*, sedum, sempervivum, coleus, ricinus, calceolaria, torenia, lobelia, *Helianthus m. pl.*, ferns, one tall choice petunia, and two rabbit traps which have caught nothing! There has been a constant change in the beauty of this rockery from week to week. Take it the year through, the spot has been a mass of pleasing verdure.

South of the rockery and some thirty feet away, the sub-ravine has been spanned by a rustic bridge (22) which widens in the center and contains seats enough

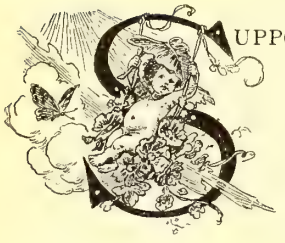
to accommodate nearly a dozen persons. The bottom of the ravine is some twenty feet below the seats. The point of land (23) nearest the street slopes gently towards the end, where it becomes precipitous, dropping suddenly some eight feet. At the end of the table-land point is a rustic bridge connecting the table-land with a triple oak tree opposite. This bridge or elevated plat also contains seats. There are steps at 25, made of sod, which lead down the bank of the ravine on the west side about two-thirds of the way, and then along the side and up to the table-land again, crossing a small gulley which is spanned by a rustic bridge (26). The watercourse at the bottom takes such an angle that by cutting out some of the underbrush I have opened the view from this bridge some 500 feet up stream. By a similar treatment of the bank above the bridge, an artistic view from the edge of the bank at that point and a pleasing variety of walk is obtained. To the north of the pleasure gardens is shown a lot running 300 feet north, and this is my vegetable garden and cow yard.

The sloping of the lawn from the house as seen from the street gives a charming effect, especially when backed by the ravine trees. This is evident in the excellent engraving on page 725. One enjoys refreshing rest to the eye and the sense of seclusion and quiet, by reason of the unlimited abundance of foliage on the ravine trees and the verdure of the lawn. The charming views obtained in looking down the sub-ravine, through the interlacing boughs, and the magnificent glimpses (along dotted lines C, D) obtained of the lake from several points within the grounds, together contribute, with all the other features described, to make a garden most delightful.

W. C. EGAN.

# THE EXILED MOONWORTS.

SOME FAMOUS HARDY FERNS AND THE BOTANISTS.—WHAT THE WISE AND THE IGNORANT HAVE THOUGHT OF THEM.



SUPPOSE our flowerless friends, the moonworts, to be endowed with sensibilities, and then imagine, if you can, the unhappiness—after being a felicitous filicis for centuries—discussed by philosophers, prized by alchemists, feared by the superstitious and the theme of poets' songs—imagine, I say, after all of this notoriety, the ignominy of being put out from among the royal family of cryptogams because the "powers that be" have at length decided that owing to the nature of its sporangia and the fact that the botrychium does not enter this world in the orthodox manner of ferns in general, it can no longer be retained among them!

For it is true that the botrychii, consisting of some dozen or more species, have been but are no longer considered ferns. All true ferns must, in scientific language, be "circinate in vernation," and no botrychium ever came out of the ground rolled up like a watch spring—a fashion prevalent among genuine ferns.

The straight vernation of both botrychium and ophioglossum has long been recognized; but until recent revisions of standard botanical works the distinction was not considered of sufficient importance to warrant the promotion of the sub-order of ophioglossum to the front rank, thus forming an independent family.

The various species are distributed throughout the world with the exception of Africa, where the genus is unrepresented. The plant is found in all zones, but is most abundant in the temperate regions of the northern hemisphere.

The root stock is always very short, with clustered fleshy roots which are full of starch. The fronds—if we may be allowed to call them so—consist of a common stalk, a posterior sterile and an anterior fertile segment; the base of the stalk also contains the bud for the next year's frond. The sterile segment of the frond is ternately or pinnately divided or compound. The contracted divisions of the fertile segment bear a double row of sessile naked sporangia; these are distinct without a ring, and open transversely. They are in reality a modified portion of the frond, and the sulphur-colored spores are formed from changes taking place in its inner tissue—a point of fundamental importance in the eyes of botanists.

Of all the recorded species we have the two extremes in *Botrychium Virginianum* and *B. simplex*. The former is the tallest and by far the handsomest member of the moonwort family. Its texture is very different from the other species, being thin and membraneous when mature, although it is thick and fleshy enough in its early stage. It is variable in size, often attaining a height of two feet and a breadth of sixteen inches.

Obviously the Virginia grape-fern or rattlesnake fern, as it is sometimes called, is a summer visitor, for its filmy robe of green withers at the lightest frost. The European range of this species is from Norway to Austria; it is also found in Asia and North America, and is common in rich woods of the United States.

CULTIVATION.—My own experience in the cultivation of this plant certainly does not coincide with Mr. Newman's theory that the moonwort is the easiest of all ferns to cultivate. Good specimens *have* refused to grow freely in spite of his assertion to the contrary. It is quite possible, however, that the trouble is in the taking up, for which he gives explicit directions: "First dig

up a large sod, where a few mature fronds are conspicuous among the grass; take care to have it broad enough and deep enough so that not *one* of the roots of the moonwort is exposed, much less injured; fit this sod in a large pot; place it in the open air, and be sure to add compost or rich vegetable soil."

Although the leafy portion of the frond of *B. Virginianum* resembles that of certain umbelliferous plants, there is nothing unfern-like in its appearance. But when we consider *B. simplex*, so *petite* and insignificant, we can but commend the judgment which remedied the atrocious blunder of ever calling it a fern at all. It is recorded as a native of California, British North America and the Northern United States; it is also at home in Europe soil.

*Botrychium Lunaria*, the best known and only British species of the genus, is the most interesting member of the family. It is a short stout plant, not exceeding four inches in height; the smooth dark-green leafy portions of the frond pinnate, the pinnæ, which vary in number from three to nine pairs, being crescent-shaped in outline. This form probably suggested some connection between the plant and the moon, whence the Latin name "*Lunaria*" and the English "moonwort."

Mr. Newman suggests that the plant is parasitic, but other writers do not concur with him. Its distribution is extensive. Mr. Britton tells us that it is absent from the American and Atlantic flora, yet it is recorded from Newfoundland and the northern United States.

In old times the moonwort was accredited with mysterious and magical powers, and until recently it was "considered singular to heal fresh wounds"; but its virtues were never manifested unless the plant was collected by moonlight. Parkinson, writing in 1640, says: "It hath been formerly related by impostors and false knaves, and is yet believed by many, that it will loosen locks, fetters and shoes from those horses' feete that goe in the place where it groweth; some alchemists also in former times have wonderfull extolled it to condensate or convert quick-silver into pure silver." The traditional power of the moonwort over iron is best described in the words of Culpepper: "Moonwort is an herb which they say will open locks and unshoo such horses as tread upon it; this some laugh to scorn and no smal fools neither; but country people that I know call it 'Unshoo the Horse.'" Coles also says: "It is said, yea, and believed by many, that moonwort will open the locks wherewith dwelling-houses are made fast, if it be

THE "ROCKERY" AT EGANDALE. (See pages 719–722.)

put into the key-hole." Another quaint early writer, Sir T. Browne (1646), says, it "hath a vertue attractive of Iron, a power to break lockes, and draw off the shooes of a horse that passeth over it. * * * Which strange and magicall conceit seemes unto me to have no deeper root in reason then the figure of its seed, for therein indeed it somewhat resembles an horseshooe."

In the days when the mumbling witches rode and the gnomes and fairies danced by moonlight, the name "moonwort" was also given to various other plants having real or imaginary superstitious associations.

Many poets have noticed this magical plant; among them Du Bartas has gracefully immortalized the prevailing sentiment in the following lines:

> "Horses that, feeding on the grassy hills,
> Tread upon moonwort with their hollow heels,
> Though lately shod, at night goe bare-foot home,
> Their master musing where their shoes be gone.
> O moonwort, tell us where thou hid'st the smith,
> Hammer and pincers, thoo shod'st them with?
> Alas! What lock or iron engine is't
> That can thy subtile secret strength resist,
> Sith the best farrier cannot set a shoe
> So sure, but thoo it shortly can'st undoe!"

*Vermont.* G. A. WOOLSON.

# HOW TO GROW MUSHROOMS.

SUCCESS WITHIN REACH OF THE AMATEUR.

THE purpose of this article is not to teach practical gardeners or the successful growers of mushrooms, but to aid beginners in a delightful as well as profitable pastime that any one can engage in. So much talk about manure and loam, and the like, may give one the idea that mushroom growing is dirty work; but it is not. Get some of the "men-folks" to turn and prepare the manure, and make up the bed, and there isn't a lady in the country who wouldn't gladly do the rest — pick the mushrooms!

For growing mushrooms we want a suitable place for the beds, good horse manure to make the beds of, spawn with which to plant, and loam with which to cover them. A suitable place is almost anywhere under cover in a temperature below 65°, dry at the bottom and overhead, and sheltered from draughts. A house or barn cellar is an excellent place; so, too, is a corner or empty stall in a stable, a nook in the carriage-house, woodshed, or any other outbuilding where water does not lie on the floor or rain leak through the roof.

I have tried a good many kinds of manures, alone and mixed, and have never found anything better than fresh horse manure. But this manure should be from horses fed on hay and grain, and not from animals fed with green grass, ensilage or roots. For although the manure from horses fed partly with green feed and roots is not useless for mushrooms, the manure from animals fed with dry hard food is by far the best. A little dry sheep manure is an excellent addition to the horse manure, for mushroom spawn runs beautifully in sheep manure.

The mushroom spawn looks like a whitish mold, and may be bought at the seed stores, contained in bits of dry manure. It is, in fact, mushroom in a dormant state, only waiting to be planted in a genial manure bed to burst into new life, and spread and bear. Our seedsmen have two kinds of spawn, one which is contained in hard, dry bricks of rotted earthy manure, each weighing about a pound, and which is called English spawn; and the other which comes in pressed tufts of short strawy manure, and which is usually sold in boxes weighing two or three lbs. This is called French spawn.

Loam is needed for covering the beds after they are spawned, and many very successful growers mix some loam in the manure, say in the proportion of one-fourth loam and three-fourths manure; but I have never had any better success with beds made of loam and manure mixed, than with manure alone. One of the chief motives for mixing loam with the manure is to prevent the overheating of the manure. Any kind of good common loam is good enough, but the fresher it is, the better; and all dirt, in the way of sticks, stones, iron scraps, and the like, should be removed. Besides, although this is not necessary, in order to get the spawn to work smoothly the earth should be fine and free from bits of sod, lumps and the like.

Now, having considered the place, the manure, the spawn and the loam, let us give attention to preparing the manure, making up and spawning the beds, and other practical details. Get some fresh horse manure, quantity in proportion to the size of bed you intend to make, and throw it into a heap to heat, after removing all the dry strawy part, but not the wetted rotting straw. Let this heap lie under cover to preserve it from being soaked with rain or snow. When it begins to heat it will heat violently and get white-burned, or fire-fanged, as we say, unless you turn it over with a fork, shaking it up loosely and mixing it well together. This done, tidy it around a little and stamp it down with the feet to make it firm; for firm manure will not burn as quickly as that in a loose heap. Repeat this turning once a day or once in two or three days, just as the condition of the pile may suggest. If it is hot it

must be turned. After two or three weeks the tendency to violent heating will begin to lessen, but the turning should be repeated till the temperature no longer will rise above 125°, and the rank smell is gone from the manure. If it is dry and chaffy it should be moistened with water, but never made so wet that you can squeeze a drop of water out of it. Wet manure is poor stuff. Now it is ready for making into beds.

The bed may be made flat upon the floor or rounded like a bank against the wall, or made like a ridge, and of any width and length you please and have material for. We generally make indoor beds, if flat, 8 to 12 inches deep; if banked, 12 to 16 inches in the deepest part; if in ridges, 16 to 24 inches high. A very thick bed is apt to get too warm when newly made up, and they are not needed, for the spawn seldom travels a foot deep. If the beds are flat, box in the sides with ordinary boards. You can make beds also on shelves, in tubs, troughs, wide shallow boxes or frames in a cellar.

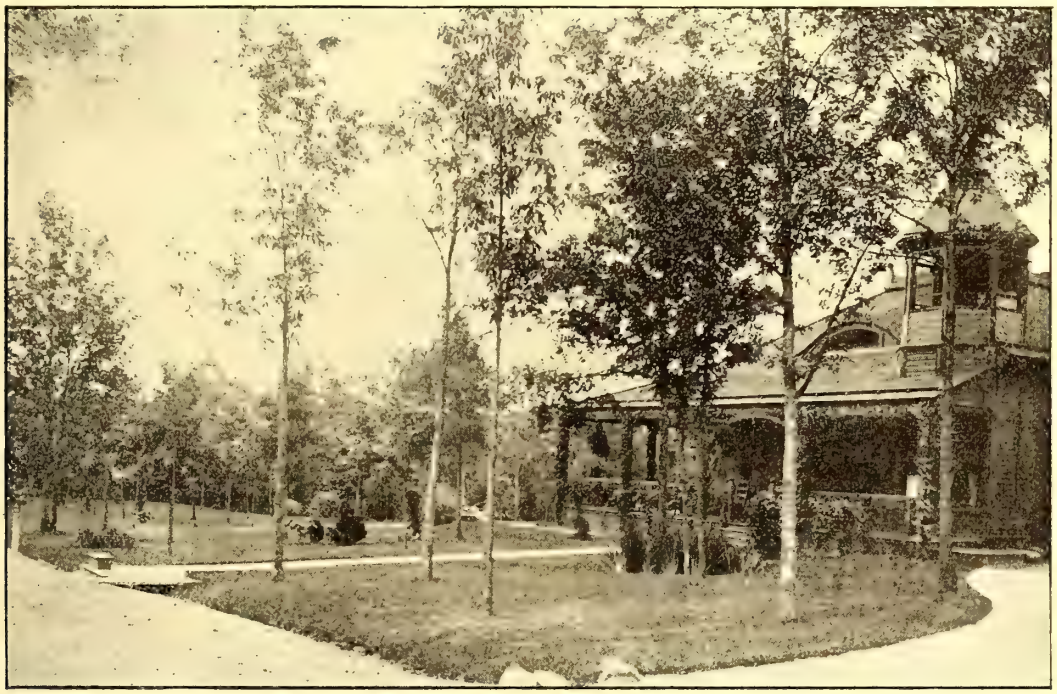
In making the bed shake up the manure well and spread it evenly over the space to be occupied by the bed, beating it firmly with the back of the fork as you go along; or spread on the manure in layers, and tread it down firm with the feet, till the required height is reached. In a few days the manure will probably warm up to 110° or 125°, but it must be let alone till it is on the decline and reaches 90° or lower. Then it may be spawned.

For spawning take bricks of the English sort, and break them up into 10 or 12 pieces, or take some French spawn and break it into tufts 2½ to 3 inches square, and insert these pieces into the face of the manure, about 9 or 10 inches apart each way, and just deep enough to be barely buried out of sight, and again pack the surface firm. Then let the beds alone for ten days, when you may earth them over.

Have your loam moist and in nice friable condition, and spread it over the beds so as to cover all the manure one to two inches deep, making it all very firm and smooth with the back of a spade. Five weeks after this work you may expect to see some mushrooms.

A temperature of 50° to 60° should be maintained, and an even one of 56° should give fine results. The manure will keep the interior of the bed warm enough, and it falls upon you to keep the atmospheric heat all right. If you can keep the room or cellar at this equable temperature, so much the better; but if you cannot, them with a thick covering of dry hay or straw laid over the beds you can maintain this heat in them to the surface, or you can make a box frame over the beds, and lay the hay, straw, thatch, mats or old carpet or anything else you use over the frame. This is better, especially when the beds are in bearing. And with a covering like this it matters not whether the beds are in an open-side shed, for the London market gardeners grow mushrooms in large quantity in winter in open air beds.

In gathering mushrooms always pluck them out by giving them a gentle twitch and a pull, and never cut them. Cook them when they are fresh.



EGANDALE: LOOKING TOWARD THE ROCK GARDEN. (See page 722.)

Whenever the beds or parts of them get dry, give them a good watering through a waterpot rose.

Don't dabble in artificial manures, or try to renovate an exhausted bed, till you know something practically about growing mushrooms. Don't be disappointed if your success is only partial to begin with. If you hope to have fair success don't limit your bed to a couple of bushels of manure or one brick of spawn, but put in a bed two or three yards square or more. Don't scrimp the spawn. Don't use old spawn, in any circumstances. Don't bother yourself about spurious fungi; any child can tell a good mushroom from a bad toadstool. Don't think you can't grow mushrooms, for you can just as well as I or anyone if you only try. There isn't one secret or anything whatever mysterious about growing mushroms, widespread reports to the contrary notwithstanding Our beds average four-fifths of a pound of mushrooms to the square foot, and my neighbor, Mr. Griffin, assures me he gets a pound to the foot, and neither one of us knows of any secret in the whole matter.

WILLIAM FALCONER.

# HOW TO MANAGE THE HOME FRUIT GARDEN.

SOME HEALTHFUL LUXURIES AT LITTLE COST.

DO YOU wish for a happy home? Then plant more fruit and live on it. The garden is a real source of comfort, health and wealth. Eating in most families consists in devouring what the stomach has a severe task in digesting. All the heat of the blood must be in the stomach for ten hours of the day to get the work done there. If the head has a job to perform, the blood is called off to do it, and the food is left to ferment, and by and by dyspepsia sets in.

Blood taken to do brain work from a half performed task in the stomach is charged with poison. In brief, the blood cannot do two things at the same time, and do them well. What is wanted most of all by Americans is good, wholesome, nutritious food that will not require so much time for digestion and assimilation. That means that instead of so much meat and coarser vegetables, we ought to eat more fruit.

It is the best sign for the people that the consumption of fruit is greatly on the increase. I have sold near home one hundred bushels of raspberries this summer. I believe that fifty years ago I could not have sold that much in all New York State. The increase in demand has gone on still more rapidly for peaches and grapes, while the consumption of pears and apples, though less noticeable, is quite as great. Here are sixty varieties of grapes in my vineyards. I have no trouble in disposing of two tons of grapes yearly without the aid of commission merchants, and not shipping beyond Utica, which is ten miles away. The bulk of my crop goes to private families, in small baskets for immediate table use. These baskets are assorted stock, white, black and red grapes nicely arranged to please the eye. A few customers prefer one sort—usually Worden. But the demand never slackens for really fine fruit.

Fifty years ago we only had the Isabella and Catawba. Then came the Delaware, Concord, Diana, in quick succession, and the experiments of Dr. Grant, and Rogers, and Arnold, and Ricketts, gave us at least a dozen choice sorts that are still retained; and many more that are dropping out. I believe a collection of grapes for home use and general comparative culture should include now about forty sorts. Each year adds half a dozen new ones, but knocks out nearly that number of old ones.

If I were to build a new home, or set about the improvement of an old one, I would do over again what I have done already—make fruit the prominent feature of the grounds. I would have a full succession from strawberries to winter apples and winter pears. There should be a profusion all along the seasons; so much, indeed, that there could be no temptation to economize in home use, but nothing to waste. There should be no hobby to ride to the neglect of other fruits, so that if that one failed, there should be no dearth for market and table. I find, however, that those who grow all sorts of fruits take good care of all; but those who grow only apples, or currants, are very likely to make a bad job of it. I have neighbors whose apple-trees are all the fruit property they have, and these are grown up to suckers.

Suppose we begin with strawberries. Next follow currants; then raspberries run over a considerable time until blackberries are ripe. Cherries are followed by early pears and early apples. Blackberries reach over to the earliest grapes; and plums join hands with cherries on one side, and fall pears on the other. If in a peach section, that fruit covers very nearly the blackberry season running on to winter apples. Of all these, the most wholesome and invaluable are cherries, currants, blackberries, peaches, grapes and apples. Strawberries poison a few persons. Two of my acquaintances cannot swallow one without immediately breaking out with a torturing rash. But I believe that for most people the strawberry is very wholesome. For my part, if I have a headache, I climb a Richmond or Morello or Montmorency cherry tree and eat all I care for before a meal. The currants eaten from the bushes are nearly as valuable. Large-seeded grapes ought to be discarded. Some of the Rogers' seedlings have very large seeds. Other sorts, such as Jessica, are half seeds, and are unfit to eat. Hayes, Iona, Brighton, are models the other way.

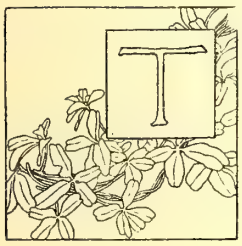
In order to have plenty of fruit it is not at all necessary to keep up vineyards and large gardens that require a vast amount of labor and expense. I gather from my barn and house bushels of fine Concords, Gærtners and Niagaras. Concords and some other sorts will run and climb as freely as wild grapes on trees, arbors, fences and rocks. Between myself and a neighbor a wire fence is loaded yearly with Delawares and Concords. Let me suggest a plan for an easy combination garden. Lay off a quarter of an acre, run across it trellises of grapes north and south, or as near that as convenient, twelve feet apart. Between these run rows of gooseberries and currants. Border them with rows of quinces. Then take another yard and set to raspberries and border with plums and cherries, and set pears in rows through the berries. Set the trees in the rows so as not to hinder your plow. Strawberries can be grown for a year or two under the grape vines. I pick bushels from young vineyards. As for blackberries, give them a corner of cool land, and cultivate till the second year; then let them fill up the land. After that you only cut off the tops and cut out old canes.

But the expense! Not so very great, my friend. The main point is to study vegetation, and study the nature of all you undertake to cultivate. To succeed, you must try to comprehend each sort of tree, bush and plant, to enter into sympathy with it, and deal with it according to its needs. A plant is exactly like an animal—it must eat; and you might as well feed hay to cats, as to try to get apples without knowing what apples eat. There are little secrets about every plant, and these must be found out. Why should we study how to grow corn or hops, and expect trees and bushes to take care of themselves? Why, indeed!

*Oneida Co., N. Y.* E. P. POWELL.

# THE NEW CELERY CULTURE.

WHITE PLUME PROLONGS THE SEASON.



THE introduction of White Plume celery marks a new era in celery growing. Heretofore the production of fairly well blanched stalks was supposed to be dependent on great skill, particular soil conditions, and so much hard work, that comparatively few gardeners have undertaken to grow their own home supply, and then only limited to the fall and winter crop. At any rate, it was thought to be quite an achievement for the amateur to have good celery in October.

The White Plume gives us a chance of beginning with the harvesting of pretty good celery for the table—and for sale, if we wish—by middle of July; and to grow this product with less than half the labor and painstaking than we used to consider absolutely required for the crop only a few years ago. What fine stalks it is possible to grow with ordinary good management may be inferred from the picture, here presented, of one of many plants taken up on our grounds toward the end of August and in September. Its natural size is indicated by the foot-rule across the plant. That such celery—almost as white as snow—would be in good demand at any time during that season, nobody will dispute, and we find there is just as much demand for it on the table of the grower as in the market.

Anybody can grow such celery. There is no secret about its culture, no great skill needed, nor a great amount of labor involved. The requirements of the crop are simple, and consist, chiefly, of (1) good plants set early in June, (2) lavishness in the application of good compost, (3) a continuous supply of moisture. The northern grower, if he has a greenhouse or hot-bed available in early February, can raise his own plants. Sow in flats, prick the young plants out in other flats, a few inches apart each way, or set in open ground (if you have a rich, warm, well-prepared piece of land); keep the plants well watered, not too warm if under glass, and in early June you will have plants worth setting.


A PLANT OF WHITE PLUME.

But whoever does not wish to go to all this trouble, if trouble it is, can buy good plants by June 1 for $3 or $4 per thousand. Another way is to buy, in April, small untransplanted seedling plants—the thinnings—from a professional celery plant-grower further south of him, and set them in open ground in rows a foot or less apart, and plants two or three inches apart in the rows. If the ground is rich and the season favorable, or if the bed is supplied with moisture by artificial means, should the

season be very dry, we can thus grow fine plants. Nitrate of soda scattered over the beds at the rate of a pound or two to the square rod has, in our experience, seldom failed to show very marked effects in promoting thrifty growth.

No matter how you get them, however, good strong plants you must have ; and the earlier in June they are set out, the better it will be, if early celery is wanted. In the preparation of the ground, our aim is to get plenty of plant food in immediate reach of the roots. For this purpose we open a deep furrow with the plow and fill it nearly full with old, well-rotted compost or barnyard scrapings and the like, then put the soil back, and mix soil and manure well together in any convenient manner, with hoe, wheel-hoe, cultivator, plow, or whatever tool we may prefer to use. The rapid growth of the celery depends on the amount and the availability of the plant foods placed in reach of the roots. For home production, we would not hesitate to plant on any soil at our disposal ; but whoever intends to plant extensively in a commercial way, will find it profitable to seek long and faithfully for the most suitable soil, none being superior to well-drained muck, and one, if possible, admitting of irrigation.

Little need be said at this time about planting. Make the rows directly over the manure-filled furrows, setting the plants, six inches apart, along a tightly stretched garden line, or in marks made with a marker. Always press the soil firmly about the roots. In a dry time, water the plants liberally right after setting them, and if possible shade, at least for a few days, by means of a board set on edge a little to the south or southeast of the row, and held slantingly over the row by a few short stakes. The same cultivation and general treatment should be given as that required for all other garden crops. Stirring the soil, by whatever implement it may be thought most convenient, gives life to soil and plant, and promotes thrift and luxuriance. This stirring can not be overdone.

Early in July the plants should be large enough for handling or firming. Let this be done in any way preferred, either in the old way by drawing soil around the base of each plant, or by winding a string once around each as recommended by Prof. Green, and illustrated on page 704 of last issue. The final blanching is done by boards, and these need not be excessively wide either. Part of our crop, this year, was blanched quite satisfactorily by boards only five inches wide. In such case, however we would prefer to hill up the rows at least four or five inches and then set up the boards. Boards eight or ten inches wide, of course, do better work than narrower ones, and involve the least possible amount of labor in the operation of blanching. There are few homes where old boards in sufficient number to bleach a full supply of celery, could not be found lying about, or at least readily available for this purpose. We use our stock of boards at least for two lots of celery during each season, and sometimes for three. As fast as the blanched plants are dug up and boards become available, the latter are put on a later lot of plants.

# FLOWERS AND FLOWER-SELLING IN SPAIN.

ALTHOUGH the capital of Cataluña and its vicinity are not the best places in which to judge of Iberian horticultural standards, still much is to be learned there about Spanish planting and plantation methods, and especially, of course, concerning fruit culture. Fat and tough cherries as big as walnuts, luscious Muscatel grapes larger than pigeon's eggs, and these at 10 centimes (two cents or one penny) per pound—such are two of the notable results of crop-raising in Hispania.

During three weeks the writer has been among the florists and their flowers a little way outside of Barcelona city. The public flower market is held daily on the most fashionable public promenade called Rambla de los Flores. On Sundays until mid-day this scene is unusually brilliant, and the air full of odors sweet and delicate. The glare of the sun is intercepted by the dense foliage of the trees, tall and stately, looming up on either side of the pleasant walk. The stalls are properly equipped stone tablets and benches, supplied with plentiful water. There are some forty such stalls, let out by the municipality.

Being near the sea, the palm world gets on well in the vicinity of Barcelona. Coniferæ would be out of their element here, but are at home in the interior. The cactus does fairly near the coast. P. Coll, Jr., Paseo de San Juan, has on exhibition the finest cactus show ever known in Spain. Some of the specimens are forty and fifty years old, and the biggest has two notable side off-shoots exactly opposite each other.

When it is possible, the Spanish horticulturist goes abroad for his training—to France and Belgium. Returning, he rents about 10 hectares of land and employs some 30 to 40 men, works them 10 hours daily, and pays each an average of 3½ pesetas (70 cents) per diem. His "plant" will be worth some hundred thousand pesetas. The running expenses will amount to forty or fifty thousand pesetas every year, and if he can draw an annual benefice of 10 per cent. or 2,000 duros, he will consider himself all right. He may sometimes own the land he works. Then, indeed, he is rich; for three hectares of land near the city is worth the high figure of 450,000 pesetas.

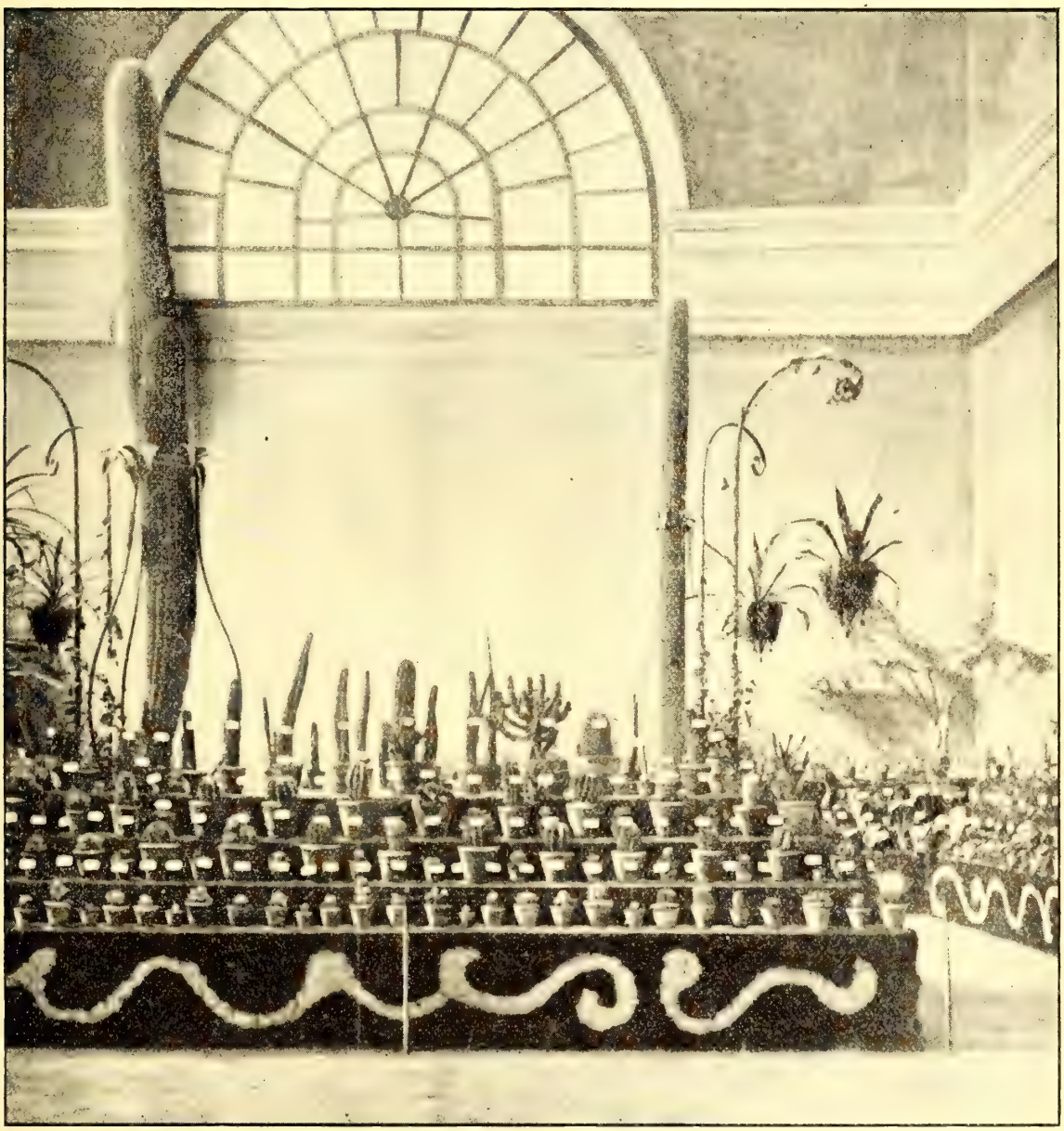
This estimate refers to the biggest establishment only. Of course there are a number of petty concerns covering from one to ten hectares. Full particulars about these minor growers may be obtained from the local horticultural society, who publish (or are now about to

publish) a regular journal for the Spanish flower and plant interests.

November to May are the months when the Spanish horticulturists are most busy. Then they are forcing flowers to supply the demand of fashion ; to adorn the ball room, etc. Then the rose and dahlia are much admired and sought after, and command highest prices.

The terms of sale ruling in Cataluña are generally spot cash ; or if purchaser dwells in the country, a bank draft. But for sums not exceeding 15 pesetas, stamps of 25 centimes denomination may be sent. The goods are sent into the nearest booking office, and there the responsibility of the tradesman ends. The buyer has to pay carriage and take all the risks of damage or loss. The conveniences offered by English and United States States growers to their customers are unknown in Spain, nor will competition impel the flower dealers to be more enterprising. The horticultural establishment proprietors have their duly instituted association, "Sociedad Horticultura Cataluña"; the employes have also their own organization ; a trade journal is also in existence.

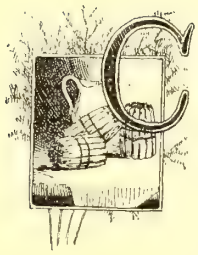
*Paris, France.* W. Lodia.



An Exhibit of Cactuses in Spain.

# GROWTH OF THE NURSERY INTEREST.

A GREAT AND RAPID INCREASE.



OMMERCIAL tree and plant growing on one side, and the production and consumption of fruits on the other, are in close mutual touch. Their relation is as cause and effect, but the lines are not distinctly drawn, and it is not easy to say which of the two is cause and which is effect. Increased demand for fruit calls for increased planting; this for increased nursery operations. The increase in the number of nurserymen again brings greater efforts in selling stock, which efforts result in increased planting, increased supply and increased use of fruits, and so on in a steadily growing circle. Its growth may be watched at any of the three main phases, viz., the nursery interest, the fruit supply, or the sale of fruits.

The growth of any link in this endless chain is a pretty fair indication of the growth of all the others. Just for this reason it is interesting to note the gradual increase of the nursery interest in the United States, from the two nurseries existing here previous to 1800, one in New York, and one in Connecticut, to an establishment of 32 new ones between 1840 and 1850, and finally to an increase of 1,757 such institutions between the years 1880 and 1890.

The census of 1890 was the first in which the nursery business was made the subject of special inquiry. J. H. Hale probably had some difficulties in getting at all the facts, but his skill knew how to overcome the obstacles; and we believe the figures given in the census reports and tabulations, so far as the nursery industry is concerned, are at least approximately correct. "It appears," says Mr. Hale, "that there are in the United States 4,510 nurseries, valued at $41,978,835.80 and occupying 172,801 acres of land, with an invested capital of $52,425,669.51, and giving employment to 45,657 men, 2,279 women, and 14,200 animals, using in the propagation and cultivation of trees and plants $990,606.04 worth of implements. Of the acreage in nurseries 95,025.42 were found to be used in growing trees, plants, shrubs and vines of all ages; and the figures, based upon the best estimate of the nurserymen, make the grand total of plants and trees 3,386,855,778, of which 518,016,612 are fruit trees, 685,603,396 grape vines and small fruits, and the balance nut, deciduous, and evergreen trees, hardy shrubs, and roses. The largest acreage is devoted to the production of apple trees, namely, 20,232.75 acres, numbering 240,570,666 young trees, giving an average of 11,890 per acre; while the plum, pear and peach have, respectively, 7,826.5, 6,854.25, and 3,357 acres, which produce respectively 88,495,367, 77,223,402, and 49,887,894 young trees, or an average of 11,307, 11,266, and 14,861 trees to the acre."

New York state leads in number of nurseries (530), acreage (24,840), capital invested ($12,202,844.50), and number of men employed (3,970). Next comes California; then Illinois, Pennsylvania, Ohio, etc. The figures clearly prove the steady growth of the industry, which appears to be general, the only states showing a falling off being Vermont, Maine (in several lines only), and Florida in respect to her orange production. This decrease is plainly traceable to local causes. Otherwise the continued growth and prosperity of the industry is well assured, as it is, in a measure, a self-feeder, producing its own stimulus.

The lower prices of nursery stock are offset by greater knowlege in the art of production. Better culture gives better stock at less cost. These are conditions favorable to the planter, and not in the least discouraging to the nurseryman who understands his business.

To allay all fears that the production of these millions of plants and trees in these thousands of nurseries would soon overstock the country, we might endorse Dr. Beadle's statement, made less than a year ago before the Ontario Fruit Grower's Association, that of 20 trees set out, only one will ever bear fruit. It is a sad reflection on our methods of transportation, and on the skill of planters, but it does not come far from the truth. We have here a great waste of material and effort, which it behooves those who buy and plant nursery stock to prevent to a great extent in future. In the mean time, however, it will take all the efforts of our established nurseries to supply the demand of tree planters. The loss of trees, coupled with the steady growth of the country and the increased taste in horticultural matters, must of necessity cause the demand for nursery products to be even greater in the future than in the past. Twenty years ago a fruit orchard 50 acres in extent was considered a wonder; now in nearly every state apple, pear, and peach orchards of 100, 200 and 300 acres are being planted, while in Georgia and California there are many peach orchards of 1,000 or more acres each. The greatest and most steady demand, however, will ever continue to be for plants and trees for the home ground and the fruit garden. The latter, a luxury a few years ago, is fast becoming a recognized necessity.

A Screen Bed the Second Season after Planting.

# SCREEN AND FRUIT CROP AFTER THREE YEARS.

NOTES FROM THE EDITORS' GARDENS.

Nature's Responses to our Efforts.—Perhaps the greatest of all the delights found in gardening comes from the ease with which the most gratifying results may be secured, if one but sets himself rightly about it. Nature is lavish indeed, in presenting us with the simple materials of gardening—soil, trees, shrubs, plants, seeds in a vast number of kinds—and invites us by easy methods to employ them for securing the most delightful ends. Not only are her materials, in surprising variety, very freely at our command, but they are so adaptable in nature, that the place hardly exists to which some kinds are not perfectly suited, so as to meet the particular desires of the users. So far as one spot is concerned, the above engraving, from a photograph taken on the writer's grounds, serves to illustrate the fact to which allusion here is made. The bed illustrated is of oval form, measuring 27 feet the long way. It was located at this point to cut off an undesirable view of the back yard from the much frequented front walk and lawn.

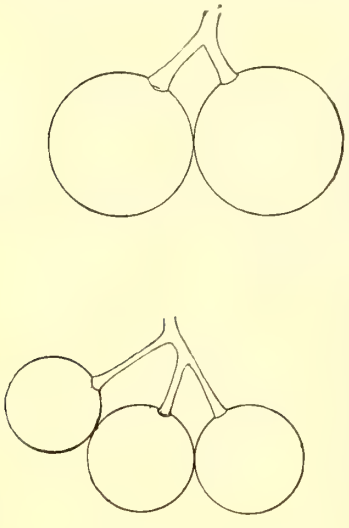
Let us go back only to the spring of 1889. At that time the drive leading to the back yard passed directly across the middle of the present site of the bed figured. By way of improvement, a new drive was carried considerably further to the right, as shown in the engraving; the old one was filled in with good earth, and the surface of this part was re-graded to make a continuous sweep from the house (at the extreme left) to the drive in its new course.

For cutting off the unpleasant view beyond the old drive course, a tight board fence or wall might readily have been thrown across at this point; but how incongruous that would have been in such a place! Gardener-like, we called in the assistance of Dame Nature, and as usual when she is becomingly treated, the outcome has been as satisfactory as possibly could have been desired. Indeed, as a result of her favors in this particular case we are more enthusiastic than ever before, over the kindly way in which she responds to her patrons' desires. What can be said of this screen bed is that it had reached the state shown by our engraving in less than seventeen months from the day of planting, the photograph having been taken in September, 1890.

In this instance, unlike in most of our planting experiments, the soil was quite highly enriched with a view to securing a complete screen of foliage in a reasonably short time. Still the manuring was not of an excessive kind. It could have been doubled in quantity without the slightest injury to any of the subjects planted.

The contents of the bed are as follows: To the left is a golden leaved poplar which branches from near the ground. (The foliage in the upper left corner of the picture is that of a cherry tree standing just outside the bed.) The height of the poplar when the view was taken was about seven feet. The conspicuous central tree with large leaves is an empress tree (*Paulownia imperialis*), which had reached a height of nearly eight feet at the time our camera was directed toward the bed. The

trees with feathery foliage somewhat back, both to the right and left of the last named, are ailantuses; but in the case of the right hand one, the foliage of two aralias, the Japanese and the Chinese, neither of them as tall as the ailantus, mingles with that of the latter, as seen in the engraving. The lower growths to the front are a Norway spruce and two cut-leaved elders to the right. On the opposite side and in the midst of the clump, but concealed by the dense foliage, are several golden catalpas, several dogwoods, a tricolor-leaved willow, a common aralia tree, besides an Austrian pine and a second Norway spruce.



THE CONCORD AND DELAWARE GRAPES, INDICATING SIZE.

The trees and shrubs, when planted, were of the ordinary size as they come from the nurseries. With the exception of the evergreens, all were cut back to less than eighteen inches from the earth line at planting time, thus causing them to branch low. Last March about one-half of them were again cut down thus low. It is the intention to cut them all back in this way either each spring or in alternate seasons.

During the summer just past the bed has presented even a denser appearance than our engraving shows. Altogether it has proved to be not only a most effective screen, secured in short order, but, with its abundance of large foliage, of peculiar forms and contrasting colors, it has turned out to be one of the handsomest beds of hardy growths we ever have seen, and a most attractive feature on our grounds.

OUR GRAPE CROP.—We have every reason to be enthusiastic over the results obtained in our vineyard. This is only the third season from setting the plants. No unusual pains were taken; ordinary drained farm loam, one or two shovelfuls of compost to the plant, good plants well planted and thoroughly firmed, a simple three-wire trellis, and good ordinary management throughout, being the features that led to this satisfactory outcome. Fruit had set in abundance, and severe thinning in the earlier part of the season was required to prevent injury to the vines from overbearing. In a general way we may say that all vines bore as much fruit as they could bring to maturity, and it is not easy to say to which variety belongs the palm for productiveness. The trial in bagging was also entirely satisfactory. We used the square-bottom two-pound grocery bags with a piece of wire fastened across near the open end, such bags having been advertised by a firm in Ohio, under the name of "Ohio grape protectors." They are quite handy and easily put on, although ordinary grocery bags, with flaps folded over the clusters and held there by means of a pin or in any other convenient way, are just as good. Whether bagging pays the commercial grower or not, we are sure it will pay the home grower. The clusters come out beautifully clean, and in all their freshness and bloom. While thus sheltered, they are reasonably safe from disease, insects, birds, and even frost. Where poultry has access to the vineyard, bagging the clusters on the lower trellis will insure their safety. For the sake of getting finer, cleaner and more attractive clusters, and of having them kept in perfect condition for a reasonable length of time, the home grower can well afford to take a little extra pains. Bagging at least part of the crop is not going to be omitted on our grounds hereafter, if we can help it.

Whatever may be said of the unprofitableness, so far as the fruit product is concerned, of a test patch like this, consisting of over a hundred varieties, it gives one great advantage, namely, abundant chances for pollination, and consequently perfect fruit-setting in all varieties, whether they have reflexed or erect stamens. The Brighton, for instance, is one of the sorts often reported to be unproductive. Our five or six vines, surrounded by the various other sorts, set fruit freely, and ripened a heavy crop of well-developed clusters. This is only in line with our oft-repeated observation that neglect to provide for the needed pollen at the proper time is the most prolific source of barrenness in tree and other fruits. Let the reader draw his own lessons from this.

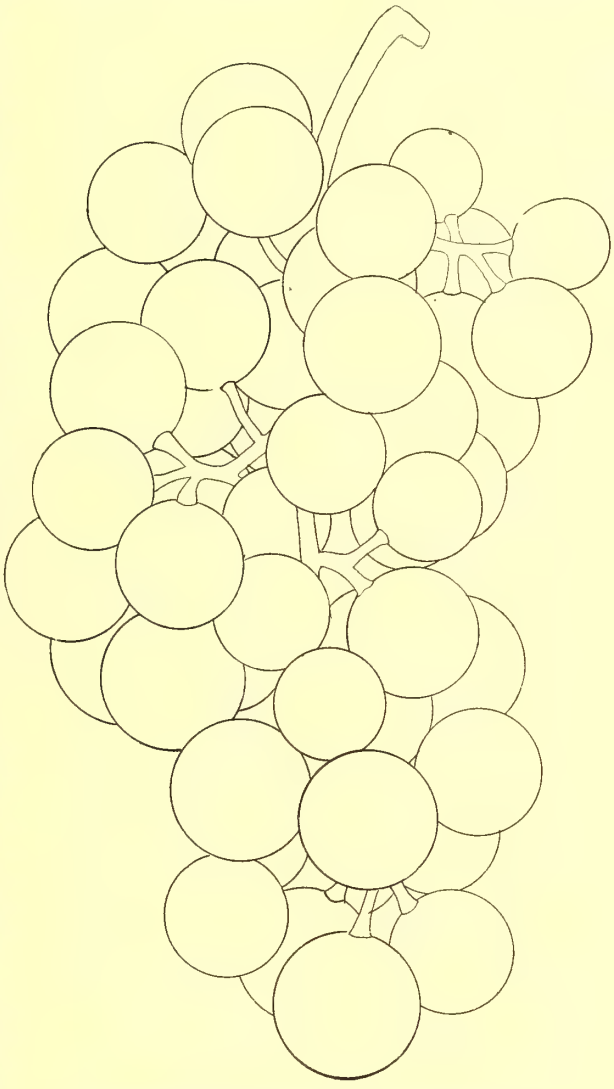
Disease has not yet invaded the young vineyard. We did not even think it worth while to resort to spraying this year. Now that a crop has taxed the vital energies of the vines, we must be on the look-out, and the intention is to spray next spring, early and thoroughly. Our own experience leads us to the conviction that spraying with the mixtures suggested for this purpose is a reasonably safe preventive of black rot. A number of older vines located on adjoining grounds quite a distance from the young vineyard were so badly affected with black rot last year that we hardly found a sound cluster on them. These vines, early this spring, and while yet dormant, were thoroughly sprayed almost to soaking with a saturated solution of ordinary green copperas (sulphate of iron), and this treatment was repeated a week or two later. After the leaves began to unfold, the vines were sprayed with the ammoniacal solution of copper carbonate, and this spraying repeated several times during the growing season. A few vines at the end of the row were left untreated. The disease appeared again, notwithstanding these applications, but in so light a form as to do only very slight damage. Only the untreated vines suffered quite severely. Not a spot was found on the bagged grapes anywhere.

A critical comparison of the different sorts in regard

to quality is difficult, because they are not all in their prime at the same time, and because we have to rely so much upon impressions made upon the palate at different times and under different conditions. A grape, also, which is an abomination when not yet fully ripe, like the Ives and many others, may be fairly or perhaps quite good at maturity. Some of the sorts that we condemned at one time made quite a different impression a week or two later. The grower should know the exact time when the fruit is fully matured and in best condition. On the whole, we believe a large part of the grape crop is gathered too soon, thus creating an unfavorable impression upon the consumer, not only in regard to the particular variety, whichever it may be, but to the goodness of the grape in general. It is one of the obstacles in the way of a more rapid growth of public taste for grapes. Nothing could more effectively stimulate the consumption of this fruit than the banishment from our markets of every cluster not fully ripe, or not prime in every other respect.

The extremely hot weather in September hurried up the crop, then rather backward, and brought all except a few of the latest sorts (Catawba, Diana, Jefferson, etc.) to full maturity. The following are some of our observations regarding varieties:

*Agawam* is a thrifty grower, ripening fruit toward end of September. The berries are large, dark red, sweet, and meaty. But the Agawam is not as productive as are our standard market sorts.



CLUSTER OF ELDORADO GRAPE; LIFE SIZE.

*August Giant* makes plenty of cane, but only small bunches, and not many of them. Berry black, of largest size and good quality, ripening late in September.

*Beauty* is a weak grower, and produced but little fruit. Berry red, late.

*Black Pearl* may prove to be a good wine grape. It is a very vigorous grower and heavy yielder of smallish compact bunches. Berry small, having a decided black-currant flavor, and dark purple juice. It was the first in the vineyard to show color on the berries.

*Champion* is our earliest black grape, and a thrifty grower. One can eat it when it is in its prime, but it is never a really enjoyable fruit.

*Centennial* makes a small vine, but the clusters are of fair size, shouldered. Color green with a trace of pink, and heavy bloom. Quality fairly good.

*Catawba* is quite vigorous in growth, making large, loose, shouldered bunches. Berry large, but ripening so late that it is of little use to us.

*Brighton.* Few varieties equal this in quality; we would place it only second to Eldorado in the list of our favorites. It gives us a fairly vigorous growth and healthy foliage, plenty of large shouldered bunches, and these fine red in color and beautiful in general appearance. Fruit ripened toward the end of September, and it is well worth having—pure in flavor, rich and luscious. It suffered somewhat from injury by insects. We only regret that we did not plant more than the five vines of this choice variety. If it can be made to bear as freely in commercial vineyards, by planting it with free pollen-bearers, as it bore on our grounds, we would advised that it be grown largely for market.

*Clinton* makes a fair growth. It is a late wine grape, somewhat resembling the earlier Black Pearl; the bunch and berry are rather small.

*Concord* is still the old stand-by as a grape for general purposes, and altogether indispensable. It is a grape we all can eat and enjoy, provided we will only let it get well ripened. It gives us the quantity, too. Our crop ripened about September 25.

*Diana* shows good growth and foliage, small bunches,

and a medium-sized berry. It is too late for us in a season like the present.

*Delaware* gives us a satisfactory crop, and we cannot dispense with it, notwithstanding its somewhat weak growth and foliage, and the small size of bunch and berry. We find it a reliable grape, and one that we can well enjoy.

*Creveling* is probably a good black wine grape, productive of large loose bunches. The berries are large.

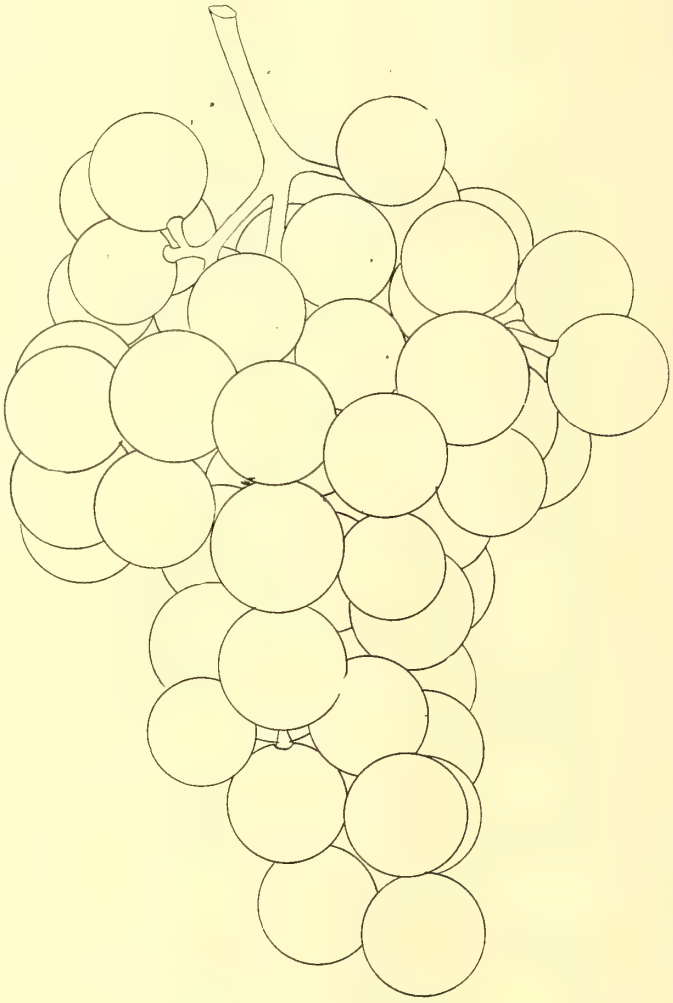
*Dracut Amber* has a bunch of hardly medium-size, but very large, dark-red berries, which are meaty and of good quality, with a distinct aroma.

*Eaton* is a thrifty grower, with berries of largest size. We do not like the quality.

*Early Victor*. Our plant is rather small; fruit black, very early, and pretty good. However, we could easily dispense with it.

*Eldorado* we unhesitatingly place at the head of our list of favorites. We have nothing in the lot that equals this in quality. It is rich, sweet, meaty. The berry has nothing of the watery juiciness of some sorts, nor of the toughness of pulp of some others. It has pulp, but this we can eat like plum or cherry meat—there is no occasion for gulping it down. The skin is quite thick. In a general way this variety shows the characteristics of the foreign grapes in quality and texture more than any other. It also makes strong growth and large healthy foliage. The bunch is large, and just loose enough; the berry medium, of golden green. Ripens about with Concord. The vine, as a bearer, was almost equal to the best, and superior to fully one-half the varieties in the vineyard.

*Empire State* was too late to give us much chance to test its quality. We are not favorably impressed with it.



CLUSTER OF BRIGHTON GRAPE; LIFE SIZE.

*Green Mountain*, or *Winchell* came out nobly. It surely belongs at the head of the list of first earlies, and compares favorably with later ones also. Sorts like this ought to crowd the Champion, and the unripe Ives, and other abominations out of our markets. Berry not above medium size, but bunch large and remarkably handsome. It ripens but little later than Champion, and keeps well for a long time, especially if bagged. Its quality is quite superior, sweet, pure and luscious. Besides all these points of merit, it also has strong canes and healthy foliage, and yields a fairly heavy crop. This variety will surely make its way into public favor. Whatever name will prevail for it in the end, the unpatented "Winchell," or the patented "Green Mountain," it is by far too valuable to be much longer ignored by the American Pomological Society. The latter, in refusing to recognize it officially, will simply remain in the rear of enlightened sentiment.

*Goethe*, by oversight, was left without proper training, and consequently the fruit did not come to maturity.

*Eumelan*, although of only moderate growth, was fairly productive. Bunch of fair size, and berry medium; a late black grape of good quality.

*Etta* is late, yielding small, compact clusters of greenish golden color, and with heavy bloom, that gives it a handsome appearance.

*Hartford*, though very early, is not fit for planting. Its quality is poor until the fruit reaches full maturity in October. Moderately productive, making good growth and foliage. Bunch good sized, shouldered, somewhat loose.

*Highland*, like Goethe, was allowed to overbear, and fruit consequently did not fully mature.

*Huber's Seedlings* show Concord characteristics. The

growth is quite thrifty. Berries large and bunches loose. We failed to see sufficient points of merit in them to recommend them for the general grower.

*Jessica* has made a weak growth. This is an early white grape, ripening a few days after Green Mountain; bunch small; berry sweet and seedy. The Green Mountain is worth a number of sorts like the Jessica

*Ives* ripens rather late, and while an abomination when first colored, becomes quite good when fully ripe. It is a strong grower, of the Concord type.

*Iona* appears to be a somewhat weak thing, but fairly productive. The bunches are of good size and handsome. It ripened too late to give us much of a chance to test its quality.

*Lady* gives us handsome bunches of superior quality, ripening toward end of September, but the growth is weak and the vine not productive enough.

*Lady Washington*, a fair grower, is lacking in productiveness. Berry of fair size, but bunch smallish and rather loose.

*Lindley* is large in cane, bunch and berry. Quality good, it is one of the best of Rogers' hybrids.

*Martha* made a good growth and a fair crop. The bunches are rather small, but the berries have somewhat the appearance of the Niagara. Little fault can be found with its quality.

*Massasoit* pleases us, being satisfactory in growth and productiveness. Clusters are of fair size, berries large, and the quality suits us.

*Norton's Virginia*, a thrifty grower, is the well-known southern wine grape, producing a heavy crop of its smallish black clusters, but too late for this climate.

*Moore's Early* is good and sweet, the earliest good sort of the Concord type, but not productive enough for market purposes.

*Marion*, a thrifty grower and heavy cropper, is too late for us. Small in bunch and berry, the former being very compact.

*Moyer* appears to be a week or ten days earlier than Delaware. The berries are of honeyed sweetness almost as soon as they begin to color. Unfortunately the vine lacks thrift and productiveness, and the bunches are unreasonably small.

*Moore's Diamond* gives us only moderate growth and productiveness. The bunches are small; the berries good sized, but of inferior quality.

*Montefiore* is probably a good black, and *Riesling* a good white wine grape.

*Niagara* must be considered the great grape for this county, its own home; unsurpassed as a market grape, of thriftiest growth, and productive almost to a fault. It outyields even the Concord. Finer looking clusters than our Niagaras, when fully ripe, will not be found very easily. The berries then appear almost as golden as the Pocklingtons. As to quality, we will agree not to complain if we always have as good grapes as the Niagara on its native heath.

*Noah* is thrifty, quite productive, of good quality—in some respects resembling Niagara, but rather later.

*Oneida*, a weak grower, gives us small bunches and large greenish-red berries of fairly good quality.

*Pocklington* produces a good crop of small golden bunches, ripening rather late. The berries unfortunately are badly spotted with russet, and have a little too much of the well-known "native aroma."

*Prentiss* is not thrifty, and bears but little fruit, but this is of quite good quality.

*Triumph* bears a large crop of sour fruit. We see no good in it.

*Telegraph* was allowed to overbear, hence fruit did not come to maturity.

*Worden* is one of our very choicest sorts. It resembles Concord, but is somewhat earlier, sweeter and just as productive. Perhaps it adheres less firmly to the stem.

We have many other varieties. Some of them were planted a year later, and may be expected to bear next year; others, set out at the first planting in 1889, have made so little growth that they were not large enough to bear this year.

Our favorites—the ones we would plant for home use, are the following: Green Mountain, Eldorado, Niagara (white); Brighton, Delaware, Dracut Amber, Massasoit (red); Worden and Concord (black).

*La Salle-on-the-Niagara.*

## THE MOSS-ROSE.

(*Translation.*)

*The Angel of the Flowers one day*
*Beneath a rose-tree sleeping lay—*
*That spirit to whose charge 't is given*
*To bathe young buds in dews of heaven.*
*Awaking from his light repose,*
*The angel whispered to the rose:*
*"O fondest object of my care,*
*Still fairest found where all are fair,*
*For the sweet shade thou giv'st to me*
*Ask what thou wilt—'t is granted thee."*

*"Then," said the rose, with deepened glow,*
*"On me another grace bestow."*
*The spirit paused, in silent thought—*
*What grace was there that flower had not?*
*'T was but a moment; o'er the rose*
*A veil of moss the angel throws,*
*And, robed in nature's simplest weed,*
*Could there a flower that rose exceed?*

—KRUMMACHER.

# THE FUTURE FRUIT-GROWER.

WHAT HE MUST DO TO SUCCEED.

HILE horticulture has made vast strides in the last decade, there is still much to learn. One thing is certain; we in these parts must change our tactics or be left in the rear. The California fruits are making such inroads in our fruit trade as are seriously felt by the growers here. That the California pears and peaches are inferior to ours in flavor, all good judges of fruit know; but this makes little difference in our markets so long as California fruits excel ours in beauty and size, freedom from insect injuries, and gilt-edge style of package.

Well, what are we going to do about it? That is the question! Simply plant only of the best and most popular varieties; prune and cultivate properly; use arsenites at the right time to destroy the codlin moth and curculio; thin out the fruit at the right time, and do it thoroughly.

Some say it won't pay to thin out apples on a large scale; but if it pays on a small scale it will pay on a large one. I have seen orchards where the owner would have done well to employ active men at five dollars a day to thin out his apples. In one instance there was a large orchard of Jennettings so heavily loaded with fruit that they never attained a size fit for market, and brought the owner little or nothing, though if properly thinned out the fruit would have been worth fifty cents per bushel in the orchard. Besides this, his orchard was nearly ruined by limbs breaking from the exhausted vitality of the trees. This thinning out of fruit I have practiced and advocated for forty years, but I have not yet reached quite the right gauge when at it; that is, I have not learned to take enough peaches off when the trees are full. The fruit of such varieties as Susquehanna, for instance, should not be nearer than six inches to each other. Healthy trees in good soil properly cut back at the right season, if the ground be well cultivated, will give fruit that always commands a big price, no matter how much the market is glutted with ordinary stock. The same holds good in regard to pears and apples.

ABRONIA UMBELLATA.

MIMULUS CARDINALIS.

Grapes, as a rule, are allowed to bear three bunches where two, and I believe in many instances one bunch alone, would be better. I can grow Concords to weigh a pound to a bunch, and such grapes will bring nearly double the price that the ordinary ones do, besides bearing better; and in this we will be well paid for our labor of clipping out the smaller bunches. Then there is much time and expense saved when we go to bagging them; and this we must do, as we have formidable enemies in the curculio and other insects. Near my vineyard is an apiary of near a hundred bee-hives, full of industrious little yellow-banded workers that know what grape juice is. I will not admit that a bee can puncture the skin of an ordinary grape; but when the birds, wasps and yellow-jackets begin, the bees follow and will soon wind up the crop of a small vineyard. Spraying I do not like. Others may do it, but not I.

When we have the fruit raised, we must send only perfect fruit to market, put up in neat and clean packages of uniform size all through, with the grower's name on the package. Then, and not until then, can we compete with the fruit-growers beyond the Rockies, who understand these little points which go so far to attract purchasers.

Vines can now be pruned at any time, and the half-hardy ones cut loose from the trellis ready for their winter protection.

An illustration of the importance of sending only good fruit, properly put up, has occurred in St. Louis within a week of this writing. A cargo of Western

New York apples commanded fifty cents and upwards more per barrel than western fruit in St. Louis market. Why? Simply because they came in clean new barrels, were free from worms and scab, were alike all through the barrels, and because the barrels were all of one size. Herein lies the secret of success; and as I stated before, we must learn it if we wish to succeed.

In all this I think there is more in properly thinning than in any other one part of the programme. The time is at hand when it will pay to hire little girls to go along the rows, and with scissors to clip off great numbers of the strawberry blossoms. I have tried this enough to know that it will be well repaid, since large berries bring a fair price at times when ordinary ones won't pay for boxing, freight and commission.

*Montgomery Co., Mo.* S. MILLER.

# CALIFORNIA WILD-FLOWER NOTES.

THE PINK *Abronia umbellata* has the fragrance and color of the trailing arbutus; but it covers the sand with a rosy cloud here by the shore, in the city of San Francisco, in one spot where we have found it in blossom all the year round (save in January) for the past ten years. The leaves are fleshy, of irregular shape; the stems pink and salmon color, rising up from the sand, which sticks all over them, the plant being covered with a glutinous gum. It is called the "Sand Verbena," but belongs to the nyctagineæ (four-o'clock) family. I myself can see no resemblance to the four-o'clock, save in the various colors; but four-o'clocks do not grow here for me to compare them.

About twenty of these beautiful salver-shaped flowers, each with a greenish tube a third of an inch long, concealed in which are the yellow stamens growing on the sides, and the little stigma, bloom in umbels on delicate pink stems three inches long. When the little bunch blooms it is all at once, as there are no buds in the center as in the verbena and heliotrope. The moment it is gathered it proceeds to fade; no persuasions of mine will make the root live. Seeds I have not tried. The pod is about an inch across, and looks somewhat like the star-leaved maple's round seed-vessels, with points all over it, one cell and one seed to every flower.

MIMULUS GLUTINOSUS.

The *A. latifolia* has bright orange yellow flowers, deliciously fragrant; the (calyx) lobes more rounded, not as delicate as in *A. umbellata*; the leaves are thicker and heart-shaped, and it hugs the sand more closely, making a pretty gold and green carpet for the Pasidio soldiers when they are off drill. Dozens of the carrot-like perennial roots were dangling from the bank where the stormy waves had washed the sand away to help raise the harbor-bar that has just wrecked the "Palestine."

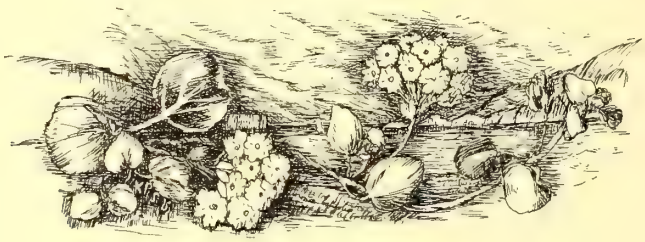
MIMULUS LUTEUS.

*A. maritima*, with bright red flowers, grows at San Diego. *A. fragrans* has white blossoms, and is found on the Columbia river. The yellow variety is common on all our sea beaches, with the trailing *Convolvulus soldanella*, that has a bright pink corolla and handsome, shining, smooth, reniform leaves, such as we found at Nassau, Bahamas.

For all who like the fragrance of musk, the *Mimulus cardinalis*, with large, bright scarlet funnel-form corollas and yellow throat marked with red, is very desirable. It grows abundantly in gardens, but the sticky leaves catch all the dust. In its home in Mercer county it lights up the ferny brook-sides beautifully. The side lobes roll underneath, the calyx is long and curved, the stems twisting, so the flower seems upside down, and the spatula-shaped stigma and downy yellow stamens are conspicuous. The musk perfume is much stronger all over *M. cardinalis* than in *M. moschatus*, var. *longiflorus;* creeping, with yellow flowers an inch long. *M. luteus* also grows readily from seed, to four feet in height in wet places; is particularly handsome near Fort Winfield Scott, where its bright yellow flowers, spotted within, cover the banks. The smooth, ovate leaves are dotted with purple. *M. tricolor* is but a few inches high; flowers

about one and a-half inches long, pink, each lobe with a spot of crimson at the base, the lower lip having a yellow stripe. *M. Douglasii* is similar, but with a larger throat and hardly any under-lip or stem or leaves. We have forty varieties in the state. The sticky shrub, blooming all summer on every dry hillside, is *M. glutinosus*, with salmon colored flowers. *M. luteus* is the most showy variety; the form of its pretty flowers is shown on page 737.

*California.* MRS. K. P. S. BOYD.



# WINDOW-FLOWER CULTURE.

A FEW SIMPLE SUGGESTIONS.

THE window, with many, is the only available space for flower culture; but by making the best use of it we can secure through the long winter months the enjoyment of abundance of fragrant flowers. Often persons are deterred from attempting to gratify their taste for flowers in this way, because of the supposed difficulty in the way of producing flowers in the winter. To such mistaken people the following brief outlines may be useful:

Select a window facing the south, that as much sunlight may be had as possible. Arrange a shelf or stand against or near the window; on this arrange the plants. Set the soft-wooded or tender plants nearest the light, and the hard or smooth-leaved plants in the background. In making a selection of plants, no more should be taken than can be properly cared for, nor those varieties chosen which are of difficult cultivation, unless their requirements are well understood. The following is a very good selection for a novice: Geraniums, double and single, and of all colors; oxalis, candytuft, ivy, heliotrope, mignonette, fuchsia and some monthly roses; and, if there be room enough, some bulbs, such as crocus, hyacinth and tulip, may be added. These plants, if given the simple culture they require, will produce an abundance of bloom throughout the winter.

All the plants named will thrive in a soil composed of two parts rich leaf-mold, and one of sand or sandy loam. Put into the pots first some bits of charcoal or broken crockery, to give drainage; then the soil and the plants. Press the soil firmly about the roots, then sprinkle moderately, and set them in the shade till they are to be given their place in the window. Pot bulbs in similar soil, and put them in the cellar, or elsewhere out of reach of frost. In a short time they will root. They may be brought out about New Year and placed in the window, where, in a short time, they will blossom freely. If kept cool after the flowers open, they will last much longer.

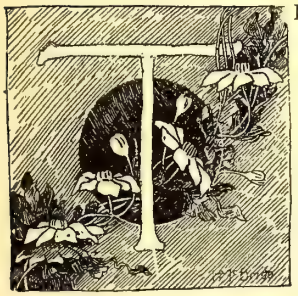
As a rule, water all the plants twice a week with soft water, brought to about the temperature of the room. Plants that grow most rapidly require more frequent watering. When the soil at the top of the pots becomes hard and dry, we may conclude that watering is necessary. Most failures come from dryness, or from too much watering. Dryness is liable to occur in a room heated by a stove. It causes plants to fade and die; and to prevent this a basin of water should be kept on the stove. This is also conducive to health.

Plants should be kept from draughts; therefore ventilate from the top of the window. This should be done two or three times a week, and in the pleasantest part of the day. Turn the pots half around occasionally, that the plants may grow straight and symmetrical. For the needed stirring of the soil use an old table fork, taking care that the roots are not rudely disturbed.

To sum up, keep the plants from extremes of heat and cold; give air and light as freely as possible; moisten the foliage regularly; avoid saturating the roots with water; when necessary fertilize the soil with liquid drawn from manure, or with a little finely pulverized hen manure. If such a course is followed, satisfactory results may be expected by any one who loves flowers.

*Greenville, Ky.* JAMES I. BAIRD

# THE LARGE-FLOWERED ROSE ACACIA.



THE COMMON rose or moss acacia, *Robinia hispida*, affords an instance of a native shrub of the southern states proving quite suitable for cultivation throughout the north as well. It has long been in cultivation in all the older sections of our country; and there is small wonder that it is a favorite, on account of its numerous, large, deep rose-colored and showy flowers in racemes. The bloom appears in June and sometimes at intervals later. The habit of the plant is decidedly irregular and spreading.

Those of our readers who have numbered the above shrub among their favorite garden subjects, will be pleased, if they have not yet met it, to make the acquaintance of a variety of the same which in many respects is its superior. We refer to the large-flowered rose acacia (*R. hispida* var. *grandiflora*) of which an engraving from life, the drawing of which was made on the writer's grounds, is shown here. The superiority of this variety lies in its having much larger flowers and foliage than the parent, and it is a finer plant in every way. The objection raised by some to the species, that it is too straggling in habit for beauty, does not apply with much force to this variety. With a little attention to pruning, it may be had either in the form of a well-rounded shrub, or by growing it to the trunk style, that of a handsome moderate sized tree. In either case it will in its season of bloom delight every beholder, with its very profuse crop of elegant, bold racemes of drooping rose-colored flowers. Altogether there is in this small tree, between the magnificent bloom, the strong leathery foliage of deep green color, and the habit, a little off from the regular, a degree of picturesqueness that cannot well be spared from any considerable collection of shrubs and trees. We do not recall a single hardy subject that better deserves to be called a superb bloomer, than this. The flowers, like those of the parent, possess little or no fragrance; but this, so far from being a fault, may be esteemed a point in its favor by those who consider offensive the excessive fragrance of its near relative, the common yellow locust.

SPRAY OF THE LARGE-FLOWERED ROSE ACACIA.

Trees of the large-flowered rose acacia may be had of the leading nurserymen who advertise ornamental trees and shrubs. The price is but a trifle above that of the parent species.

Mention may here be made of another well-known ornamental robinia, namely, the species known as gum or clammy acacia or locust, *R. viscosa*. This is a tree resembling the common yellow locust, but not so large a grower, and has flowers of a pale pink color, without fragrance. Its compact habit, beautiful foliage and pretty blooms make it a very desirable tree for grounds of moderate extent. * * *, N. Y.

# USES FOR THE COLEUS:

BOTH OUT-DOORS AND IN.

COLEUS is not only useful for ribbon borders and for filling tropical beds that are to contain plants of large size, but small thrifty specimens also make fine ornaments for the drawing-room and the window garden. For standing in halls on each side of the doorway, large specimens in twelve and fourteen-inch pots should be selected, and the plants kept upon a suitable stand.

The plants thrive well in a mixture of good loamy soil, leaf-mold, and a liberal amount of sand. Some good rotten manure can be added with advantage. They can also be grown successfully if treated in the same manner as pelargoniums. Cuttings of about three inches in length root readily if inserted in small pots filled with sandy loam, and submitted to a temperature of 70°. The cuttings, as soon as rooted, should be shifted into four or five-inch pots. The leading shoots must be pinched several times to cause the plants to become bushy.

If very large specimens are required, the cuttings must be struck late in the fall, or as early as possible in the new year, and the plants given liberal treatment and grown in a temperature not lower than 70° until they have attained the size required. These plants are very sensitive to cold, and choice varieties that may be outside in late summer must be housed before the nights become cold; otherwise, they lose their lower leaves and become sickly.

It is an excellent plan for the ordinary grower to raise plants from seed rather than keep the plants over winter. The seed is very small, but if good, it will speedily germinate, and plants can be obtained by this means with foliage as beautiful as many of the best named varieties. The seed should be sown early in February, in shallow boxes filled with light soil. But good serviceable plants can be obtained if the sowing is delayed till March. When the young plants become large enough to handle, they should be potted into small pots, and grown in a temperature of not less than 60° at night. The bright colors of the foliage will be found to be much intensified if the plants are allowed the full benefit of the sun's rays.

Those who have window gardens, and are unable to raise the plants either from cuttings or seed, should purchase a few plants at the florist's, and treat them in the same manner as geraniums during the summer. Plants thus managed will be found to do well, and to put up with a considerable amount of rough treatment.

The coleus when growing rapidly requires plentiful supplies of water, and it is wonderful how quickly the plant will revive after watering has been long delayed, and the plant is in a very drooping condition. Care must be used also to keep off the "mealy bug." The coleus is known to many persons only as "Joseph's Coat."

*Baton Rouge, La.* H. W. SMITH.

# FLORIDA HORTICULTURISTS.

NOTES COMPARED AT A FRUIT MEETING.

AT THE spring meeting of the Florida State Horticultural Society many good things were brought out, of which we have room for but a few :

Baron Von Luttichau considered the White Diamond grape the most promising new variety. In many years success with European varieties, he has found that Chasselas, Chasselas Luttichau and Blue Madaline all ripen early before the summer rains begin. Black Hamburgs are fine, but ripen about ten days too late and are hurt by rains. He has raised bunches weighing three pounds. He girdles the vine for extraordinary results. The only successful stocks for foreign varieties are Taylor and Lindley. Wild vines are also good to graft upon. Scuppernong fails after a short time. Niagara does well on Taylor roots, yielding eight to ten pounds per vine. He puts no fertilizer in holes in planting. Recommends bone meal for fertilizer for bearing vines and advises caution in using ammoniated fertilizers. Does not favor deep planting. Uses no compost or stable manure, but a pound of bone to the vine applied by dropping into holes made near the roots with an iron bar.

Mr. Bielby believes in fertilizing on the surface. His finest trees were set in 1883 and have had but fifteen pounds high grade fertilizer. In orange tree culture Mr. Bielby thinks the time to cease cultivating depends somewhat upon the distance the roots are from water. From five to ten years they may be left uncultivated. Girdling the fig caused it to produce more ; sixty-two pints of fruit were put up from one tree thus treated. White Genoa and Purple Brunswick are varieties recommended for high pine land. White Marseilles also has proven successful.

In the kaki (or persimmon) discussion, much confidence was expressed in this fruit for profitable shipments, but the badly mixed nomenclature was complained of. Dr. Hawks recommended the underground cleft graft as superior to any method above ground, and advised using wax. Growers plant the wild seed, and bud on the seedlings the next June. Buds should be cut for June working with but little wood in the bud. Major Rooks said they must be transplanted in December to have the best success ; and said he had found a borer that worked in the roots, which eats the inside out, leaving only a shell. The limb girdler has troubled him considerably. He burns the fallen limbs to destroy the eggs. James Mott favors getting the different varieties together and re-naming them. The Imperial, from California, drops its fruit when a young tree, but not when older. Some think it best to take all wood out of bud. Mr. Bielby kills the borers with carbolic acid, diluted and forced into the holes with an oil-can. Mr. Mead buds as soon as the sap rises, or late in the fall, and uses no wood in bud.

Mr. Bielby, in his remarks on fertilizers for orange groves, said opinions differ very widely on the proper kinds to be used. He still believed in mineral fertilizers, as sulphate of potash, bone phosphate and sulphate of ammonia. He applied all on the surface. He would use everything available, including stable manure and even muck, but thought "sawgrass muck" not very profitable hauling. He thought the secret of the results with muck was in what additions they made to the composts of other fertilizers. Tobacco stems gave good results in his neighborhood. Groves fed on tankage (blood and bone) looked well ; when fed on bone meal they looked still better. Stable manure used fresh on the surface is very beneficial. Ammonia from fish produced the best growth. He strongly advocated the use of raw phosphate rock. It is slow at first, but its effects last for years. He believes in fertilizing this year for years to come, not the "hand to mouth" method for this year only, and thinks lime on land where grass grows would be valuable, and that sulphate of potash is preferable to the ammoniated potash, because of the chlorine in the latter. Had used kainite with good results, applying as much as ten pounds to the tree. Pine soils require a complete fertilizer, as they are deficient in all the food elements. Mr. Williams, in treating the Indian River hammock soil, had burned nothing in clearing, but worked it all into the soil, as a result shipping fine crops for several years without the use of fertilizers. He knew of an orchard on which raw muck had been used, which grew worse, till finally, after three years of feeble growth, it died. Adjoining groves were still vigorous. Mr. Healey stated that he had twenty-four acres fertilized with "sawgrass muck," on which he raised from 50 to 100 bushels corn per acre and hundreds of crates of cabbage. At Kissimmee cane is raised, on land thus treated, as large as his arm. It must contain much original fertility. It was thought by some that muck makes pine land more subject to drouth. It was shown in the discussion that there are many grades of muck, and the results depend upon its nature and conditions. It was generally conceded that it is valuable as an absorbent.

It was stated that the disease known as orange blight was the most serious obstacle to orange culture in several sections of Florida. Its symptoms are the withering of the tree and a gradual dying of the branches, beginning at the top and finally involving the

entire tree. The cause is unknown and no remedy has been discovered. Its occurrence is becoming more frequent throughout the orange region of the state, and its attacks prove fatal in every case. It had been known by some present to have attacked "sweet" seedlings, also. Mr. Williams stated that when it first appears the leaves become smaller, the tree blooms more profusely, buds appearing nearer the stem than in healthy trees. He thought it would attack all the groves in the state if not checked. He had sent samples of affected roots to Washington, but nothing could be found on them. Had tried bisulphate soda, arsenate lime and many other things, but none had proved effective. It was voted to have the society petition the agricultural department at Washington to send down a special agent to investigate and report upon the destructive blight of the orange tree.

Mr. Williams found in citrus culture that sweet oranges propagated on "rough lemon stock" gave a fruit which commission men were puzzled to distinguish as being lemons or oranges. Several delegates preferred the "rough lemon stock" to any other, and found no trace of sourness in the fruit. Mr. Woodworth found that the lemon stock was tender and would bud low. Others stated that the "rough Florida variety" has proven hardy. Major Rooks thought all Navel trees should be budded on this stock. Trees on this stock have been known to live thirty years. President Dudley stated that the confusion as to longevity is due to there being two kinds of stocks used—the small bitter everbearing, known to be short-lived, and the "rough Florida lemon" which is a long-lived tree. Mr. Philips stated that the lemon stock produced much larger crops than the "sour" or "sweet" orange stocks. By "double working," using the lemon for the middle piece, he made Navel trees bear very heavily, but the fruit is varied.

Major Norton, of Eustis, has six desirable varieties of native plums. It was said that by getting the different wild plums they would fruit from May to November, giving excellent materials for jellies and preserves and to eat. He spoke of the May plum as probably a valuable early market plum. Dewberry does best if allowed to run over an old dead log, or grow as it desires in the orange grove. Kittatinny blackberry succeeds well, but Mr. Woodworth finds the huckleberry so valuable that he has given up the blackberry.

In the discussion of insect and other pests it was stated that arsenical sprays will prevent the tent-tree caterpillar from defoliating trees. This insect works on persimmon and pecan trees in Florida. A nail suspended in a bottle and hung in a tree will tinkle and scare crows, lime and other birds. The most effective device used to keep birds from crops was to run strings from pole to pole over a field. It was thought that the Florida jay-bird would not pay attention to any of these. 'Coons are kept away by the use of strychnine in fish.

Much interest was manifested in beautifying the home. W. H. Holdridge, of Grove Park, urged the planting of native ornamentals—the magnolia, holly, sweet bay, cherry, laurel, the live-oak and water-oak.

Of tropical fruits the imported mangos (Durian and Mangosteen) from India, were doing well at Lake Worth. The surinam or cayenne cherry is a very ornamental fruiting plant. It bears heavily as a tree, and its fruit can be used for every purpose for which we use cherries. It is hardy enough to endure some frost, and although it has a pungent flavor, is quite good. Mr. Phelps questioned its utility on account of its turpentine flavor. Other members found them very fine and readily salable on the markets at good prices. Some prefer it to the strawberry. The taste for it is acquired.

## THE AMERICAN BEECH.

(*See Frontispiece.*)

THE BEECH of America (*Fagus ferruginea*) although smaller than some of the famous beech trees of Europe, is yet a magnificent native tree, often reaching and exceeding a height of eighty feet. The leaves are larger, thinner and less shining than in the European species, the straight veins running into the salient teeth. What is known as the red beech is now regarded only as a variety of the common white beech, with the wood softer and of more easy cleavage, and perhaps a slight difference in foliage.

Aside from its quiet grandeur as a forest tree, the beech should be a favorite for planting in all grounds of considerable extent. Its smooth, gray bark, possessed of the unique quality of never becoming furrowed, as in the case of other old trees, but spotted in time with horizontal belts or patches of light gray, makes the beech tree trunk an attractive and cheerful object among other trees, as well as a convenient surface on which to carve or write. Attaining good size and forming deep shadows, it is, nevertheless, at all times a cleanly, cheerful-looking tree; and in winter the great number and light color of its radiating branches and abundant spray is a pleasant characteristic.

A beech tree in leaf is an interesting object of the landscape, on account of the contrast it presents with other trees, because of the peculiarity that its shadows are disposed horizontally in layers or strata like those of the pine and spruce family.

The roots of the tree come close to the surface, for which reason grass does not thrive so well in its shade as it does under most other trees.

As a young tree, the beech is not a very rapid grower, being in this respect about equal to the sugar maple. After it has attained a height of 20 or 30 feet, its growth is more rapid. Still, good cultivation is appreciated by the beech, and if the soil be kept tilled over the roots for a number of years, it makes very satisfactory progress.

# THE HOME LOT.

WHEEL TOOLS VS. BACKACHE IN THE GARDEN.

DECEMBER is none too early to think what we shall do next for the garden. Now is the time for reading and for making plans for another season. Now is a time to sum up the results of the last season. One of the most interesting of these results, to the writer, was the discovery that entire crops can be raised in a home lot without once stooping down, except to pick the crops from the ground. Though the papers are full of advertisements of improved tools, for various reasons he had not tried such tools until last season.

A "Planet Jr." seed planter, plow, hoe, rake and cultivator combined, was purchased. The entire summer's work was done with the new tool. No doubt other implements equally good are in the market.

The entire half-acre garden was spaded or forked up in April as fast as needed. This was done by hired labor, and lasted about five days. No further help was employed, as the work was performed by the writer afternoons, in the midst of pressing business cares in the city.

For instance, a new strawberry bed was wanted. The ground was spaded up. Then the plow attachment was put in the machine, and a furrow struck twice. Then strawberry plants were gathered in a basket and dropped by hand into the furrow. A touch of the foot set them in place, and then the plow was used to strike a furrow along the plants, throwing the soil over the roots. Of a hundred plants thus planted in less than twenty minutes, without once stooping over to set them in place, not one died; and in September they had made a fine matted row, ready for fruit next year.

Fertilizer was sown on the soil, and then the cultivator was run along the row on each side to cover it. This work was done three times in the course of the season. To keep the weeds down, the ground was cultivated with the machine once a week at about the speed of a moderate walk. The entire garden (half acre) was cultivated, or hoed, or raked, in about two hours each time at a rapid walk, and it was the cleanest garden the writer ever took care of. It was only a pleasure to push the machine through the soil, and by doing it often, the weeds were kept under control perfectly.

Another instance—potatoes. The ground was well fertilized before spading, and then furrows were struck by the plow (going twice in the same furrow) at three feet apart. In this furrow the seed potatoes were dropped, and then the plow was run along once to cover them over. When the plants appeared, the cultivator was used once a week till they began to grow tall, when the plow attachment was used to throw the soil toward the plants. This earthed them up sufficiently to keep the weeds down. The crop was excellent—large handsome potatoes, with a good yield in the hill. Not till the potatoes were dug was a hoe used or the back once bent to the ground, and only then to pick up the tubers.

Peas, beans, radishes and beets were sown in rows by the machine and cultivated with the machine. Corn was also planted in rows (not hills) with the machine, and cultivated with the plow. The crop was as large and fine as if raised in hills with hoe and backache.

Currants in the spring were plowed by turning the furrows toward the plants, and afterward using the hoe or the cultivator, and sometimes the plow. The old strawberry beds were kept clean with the hoe or the rake attachment. Raspberry bushes were cultivated first with the plow, then with the cultivator, and the young shoots kept down with the hoe part. In short, all the work of the garden the entire season was done with the machine, excepting a few moments' work in cutting out an occasional weed between the currant bushes or the raspberry canes. All the work was done at a smart walk, without special fatigue, done completely, thoroughly and quickly, and without once stooping over, except to clear the teeth of the rake or the points of the cultivator.

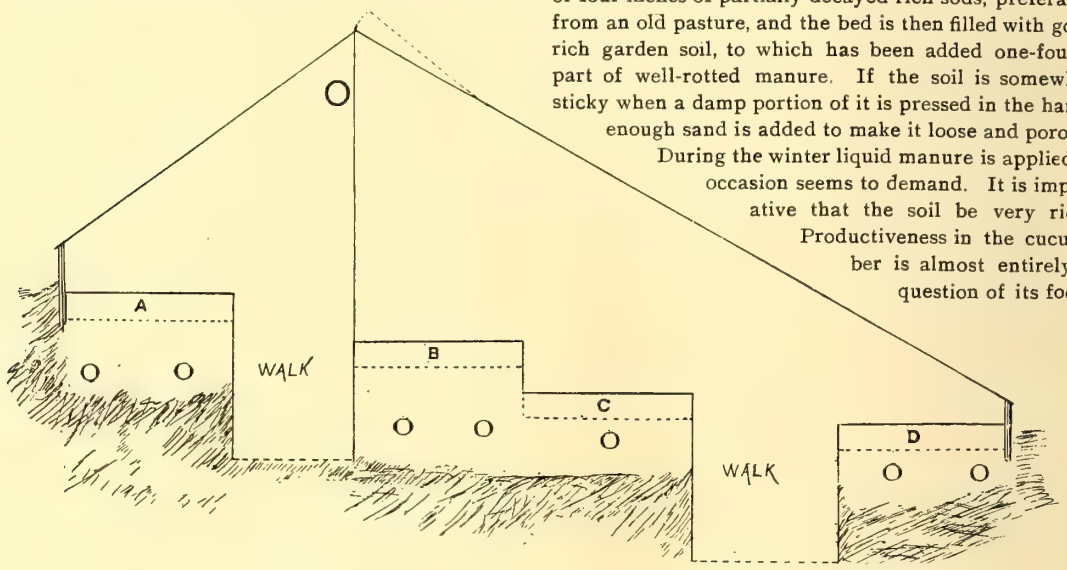
Of course, the ground was absolutely free from stones, was all underdrained, was level and dry. Gardening ceased to be a back-breaking labor, and was only a sort of athletic record-breaking, with more fun than work.

Some such wheel combination tool will make the home lot pay. It saves time. That's the great point. A man with ordinary hoe can cultivate a row of small plants at about one-tenth of a mile an hour. With a good machine on wheels he can hoe, rake or cultivate a row of small plants at about one mile an hour. In the writer's experience, with a clean, dry soil, a strip twenty inches wide can be cultivated at the rate of two-and-a-half miles an hour, or at the speed of an easy walk; not continuously all day, but at that speed for an hour on a stretch. This seems to point to a solution of the labor question in the home lot. CHARLES BARNARD.

# THE FORCING OF ENGLISH CUCUMBERS.

RESULTS OF TRIALS AT CORNELL EXPERIMENT STATION.

THE ENGLISH forcing varieties represent the most improved type of the cucumber, and many of them are so distinct in appearance from our common kinds that visitors often fail to recognize them as cucumbers. They deserve to become better known in this country. The market demand is yet small but steadily increasing for these, as for all the better winter products of forcing-houses. The smaller and cheaper varieties are better adapted to the general market, but the careful grower who has access to the larger markets, by rail or otherwise, should be able to control a select and very profitable trade in the English sorts, particularly when grown in connection with tomatoes, beans and other winter crops. Good fruits sell at from twenty-five to seventy-five cents apiece, and on special occasions even higher.




CROSS-SECTION OF CUCUMBER HOUSE. (*Scale, one-fourth inch to the foot.*)

GENERAL REQUIREMENTS.—The general requirements of houses, temperature and moisture are essentially the same as for the forcing of tomatoes and beans. The house is built upon a side hill, and is therefore of uneven span. It extends east and west. The inside width is twenty feet, and the ridge stands nine feet above the floor of the upper walk. The beds are eight inches deep. The house is heated by steam, which is carried in one 2-inch riser overhead and seven 1½-inch returns under the benches. The ventilation is effected entirely from the top by windows hinged up on their lower side. The framework is very light, and the glass is 14 x 24 inches. All this arrangement affords a light and warm house with brisk bottom heat. We prefer night temperature of 60° to 65°, and during the day of 70° to 75°, although the temperature will sometimes run up to 85° and 90°, or even more, in full sun and with ventilators open. Cucumbers are vigorous feeders, and water must be supplied abundantly to prevent flagging. In bright weather the air should be kept moist by wetting the walks, both to assist growth and to check the ravages of red spider.

In preparing the beds, we place about an inch of clinkers or potsherds on the boards; then follow three or four inches of partially-decayed rich sods, preferably from an old pasture, and the bed is then filled with good rich garden soil, to which has been added one-fourth part of well-rotted manure. If the soil is somewhat sticky when a damp portion of it is pressed in the hand, enough sand is added to make it loose and porous. During the winter liquid manure is applied as occasion seems to demand. It is imperative that the soil be very rich. Productiveness in the cucumber is almost entirely a question of its food.

The plants are started in flats, upon small squares of inverted sods, or in pots. I prefer the pots. We use 3-inch rose-pots, filling them only a third full of earth. When the plant has formed a pair of true leaves and stands well above the brim, the pot is filled with earth. This affords additional root space, and renders transplanting unnecessary. When the pots are well filled with roots, the plants are transferred directly to the beds. The young plants are very liable to the attacks of aphis and fungi, and any failure in the bottom heat will seriously affect them. The aphis must be kept off, or the plant will be ruined even in a few days. A stunted cucumber plant will make a short, bunchy growth at the top, and the leaves will be small and yellowish; it may remain almost stationary for some weeks. Even if it finally resumes vigorous growth, it rarely

becomes a profitable plant. Some plants become stunted without apparent cause. To insure a good stand, I advise starting three or four times as many plants as are needed. The most vigorous ones are set out a foot or a foot and a half apart. As soon as the plants are established, the weaker ones are destroyed, leaving the remaining individuals from two and a-half to three feet apart. A good plant will grow vigorously from the start, and sometimes the lower leaves will fall off, giving it a scraggly and diseased appearance; but so long as the growing portions are vigorous and the leaves are not attacked by mildew, the plant is in good condition.

The plants must now be trained. We make a simple trellis of No. 18 annealed wire. When there is sufficient room above the benches, the plants are trained upon a perpendicular trellis, but on low benches they are trained along the roof. The wires are stretched lengthwise of the house in parallel strands from a foot to one and a half feet apart, and cross wires are run down from the rafters every four or five feet to prevent the strands from sagging. The vines are tied upon the wires with raffia or other soft cord. Two or three strong main branches are trained out, and only enough side shoots are allowed to grow to cover the trellis, the remaining ones being pinched out as soon as they appear. It is essential that the plants do not become "choked" or overcrowded with young growth, and some of the large leaves may be taken off in the dark days of mid-winter, if the foliage becomes very dense. The branches are all headed-in as soon as they reach the top of the trellis or begin to encroach upon the space allowed for neighboring plants. If the plants grow very rapidly and the trellis is large, some preliminary heading back may be useful, but we have not practiced the very close pinching-in system recommended by English growers.

Earliness is not a characteristic of the English cucumbers. From the sowing of seed to marketable fruits, in mid-winter, is an average of 80 to 100 days, in our experience. From a month to six weeks are required for the fruit to attain salable size after the flower has set. The plants continue in bearing for three or four months under good treatment, and a plant ought to yield at least eight good fruits. If the plants are pinched in after the English custom, and allowed to bear but two or three fruits at a time, the fruiting season can be extended, and probably a larger number of fruits can be obtained; but it is probably more profitable, especially in small houses, to secure the returns more quickly, in order to obtain a

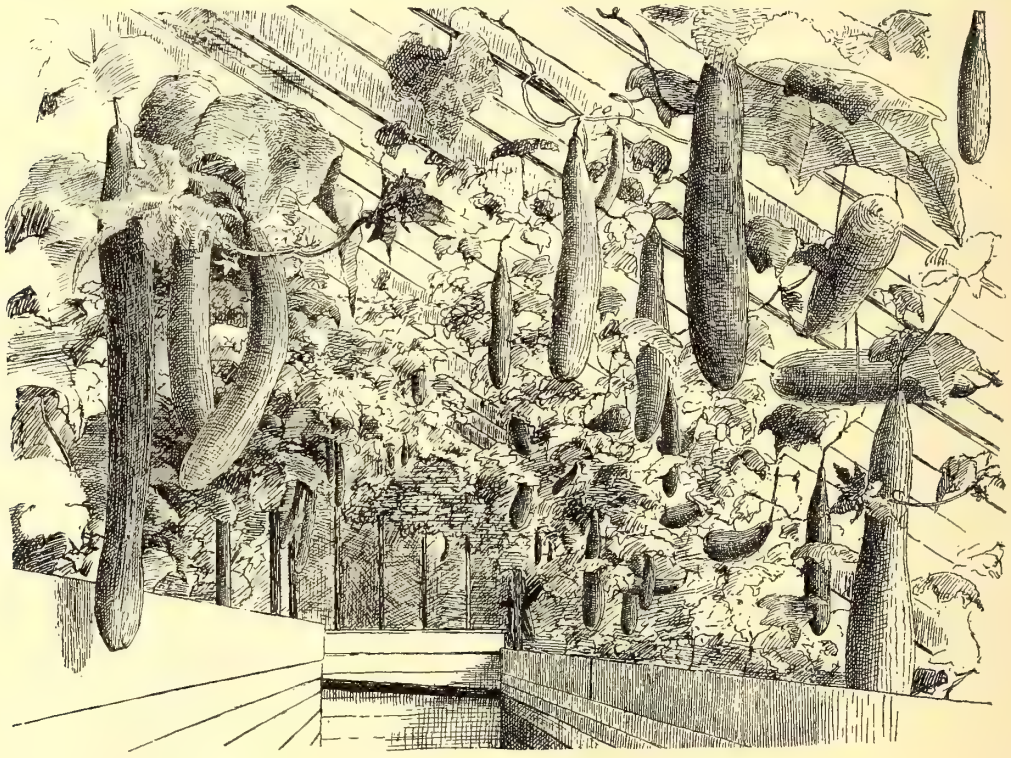
ENGLISH CUCUMBER—THE LORNE (MARQUIS OF LORNE).

larger supply at any given time. Care must be taken not to allow the heavy fruits to pull the vines off the support, and those which do not hang free should be held up in slings, for if allowed to lie on the soil they do not color evenly. This swinging also appears to exert some influence upon the shape of the fruit.

VARIETIES.—There are many good varieties of English cucumbers. We have grown Sion House most, and for general purposes prefer it. It is of medium length, averaging a foot or fourteen inches when fully mature, smooth and regular. It would probably sell better than the larger sorts in markets which are unaccustomed to the large English varieties. Telegraph is also a favorite variety. It is a smooth, slender and very handsome fruit, ordinarily attaining a length of eighteen or twenty inches. Kenyon (Lord Kenyon's Favorite) is also an excellent smooth, slender sort, of medium length. Edinburgh (Duke of Edinburgh) is a spiny and somewhat furrowed variety, attaining a length of twenty to twenty-four inches. We prefer others. Lorne (Marquis of Lorne) is one of the best of the very large sorts.

The flavor of English cucumbers is somewhat different from that of the common field sorts, the texture being, as a rule, somewhat less breaking. But this is not an evidence of poor quality; it is simply a different quality, and evidently belongs to these fruits as a class. The English sorts retain their green color longer than the field varieties. They are ordinarily picked before they attain their complete growth, although they remain edible for some time after they have reached maturity.

POLLINATION.—In cucumber-growing out-doors, the pollen is carried from staminate to pistillate flowers by insects, but pollen-carrying insects are absent from the greenhouse. If the flowers are fertilized in the house, therefore, the pollen must be carried by hand. There is a question, however, if pollination is advisable in the house, for the English cucumber will grow to perfection without seeds and entirely without the aid of pollen. We have made several unsuccessful efforts to grow Medium Green (Nichol's Medium Green) in the house without pollination. White Spine sets without pollen, apparently. Many gardeners suppose that pollen causes the fruit to grow large at the end, and they therefore aim to produce seedless cucumbers for the double purpose of saving labor and of procuring straighter and more shapely fruit. We have found that it pays to pollinate by hand, if early fruits are desired. The early flowers nearly always fail to set if pollen is withheld, but late flowers upon the same plant may set freely with no pollen.



VIEW IN CUCUMBER HOUSE.

ENEMIES.—The most serious enemy with which we have had to contend in cucumber forcing is the spotted mite, which feeds upon the under surface of the leaves, destroying the green tissue. We keep it in check by the use of Hughes' fir-tree oil, one-half pint to two gallons of water, applied with a fine syringe or knapsack pump.

A large, coal-black aphis or plant-louse has been a serious pest. It is the worst aphis with which I have ever had experience, and every effort should be made to prevent its becoming established on the plants. It can be destroyed by the fir-tree oil, as above. The powdery mildew (*Oidium erysiphoides* var. *cucurbitarum*) is a serious enemy to cucumber culture if it once gains a good foothold. It will soon ruin the plants. It is a mold-like mildew, appearing in large white spots upon the leaves. Our earliest treatments of this fungus were made with sulphide of potassium, but we later used the ammoniacal carbonate of copper with better success.* But evaporated sulphur appears to be better than either. Flowers of sulphur is placed in a small basin and set upon a small oil-stove in the greenhouse. The house is tightly closed, and enough sulphur is evaporated to completely fill the house with strong fumes for a half hour. Care must be exercised that the sulphur does not take fire, for burning sulphur is very injurious to plants. By a proper use of this means we entirely cleared our house of the mildew last spring.

L. H. Bailey.

* Three ounces of carbonate copper dissolved in one quart ammonia. Dilute with water to 25 gallons.

# THE ENGLISH SPARROW AND HORTICULTURE.

A MUCH-ABUSED IMMIGRANT, WITH VIRTUES WORTH CONSIDERING.

WE HAVE been roundly criticised for taking grounds somewhat favorable to the English sparrow. We are not prejudiced for or against this bird, or any bird, save that in general we recognize in the feathery tribes most important allies against the increasing hordes of insects, and therefore are glad to cherish them as far as consistent. Our point in favor of the English sparrow is simply this: After seventeen years experience in gardening, in which period we have always been surrounded by the lively little Europeans, we have yet to record the first serious objection to them as coming under our own actual observation. As much as this cannot be said for our other favorite, the robin, because we have been obliged to share so many cherries with him. In Buffalo and other towns where the rank-growing Virginian creeper covers the sides of many buildings, the sparrow found in the growth a congenial place of abode; and this meant noise, filth, and a consequent enmity to the bird. Of late, however, the much handsomer close-clinging *Ampelopsis Veitchii* has largely superseded its relative named, and in this we think the sparrow does no bad work.

We now request reports of experience, so that we may learn whether our observation is exceptional. A free expression from all horticulturists for publication would be welcome. We desire your actual observation as to the injurious habits, or otherwise, of this bird, outside of its occupying the Virginia creeper where grown against buildings. We want no guess-work, no quotations from "experts," no hearsay statements; but purely what your own eyes have seen, unfavorable or otherwise to the sparrow.

Regarding the charge that the sparrow drives away other birds, our experience by no means supports such a charge, and our grounds are thronged with large numbers of birds. One forgets from year to year; hence it is difficult to speak with much positiveness on this point. That they appropriate bird-boxes is true; but with us trees are so numerous that we have never felt the need of erecting bird-boxes.

Now for a wide expression of observations regarding this much-discussed bird; let us know whether the destrucive pursuit of it is right or wrong. In Pennsylvania a practical indication of complete reversal of opinion on this subject was the repeal of a scalp bounty act for supposed injurious birds, which, upon closer investigation, were found to be decidedly beneficial. — The Editor.

# CHRYSANTHEMUMS AT MADISON SQUARE GARDEN.

THE LATEST TRIUMPHS OF THE AUTUMN QUEEN.

THAT GOOD management goes a long way toward success, the great New York Chrysanthemum Show fully testified. A varied programme, with new attractions daily, and the duplicating of about 40 premiums, insuring fresh plants and flowers for the latter part of the week, held a constant drawing power over the crowds whose attendance meant both financial and horticultural success.

Messrs. Siebrecht & Wadley, Pitcher & Manda, and T. H. Spaulding were among the largest exhibitors, but nearly every florist and grower of note near New York aided in creating the admirable display. In addition, F. R. Pierson, of Tarrytown, H. A. Dreer, of Philadelphia, E. G. Hill & Co., of Richmond, Indiana, and John H. Dunlop, a rose specialist of Toronto, Canada, added their quota to the exhibit. Chrysanthemums, the great feature, were supported by roses, carnations, orchids and greenery, all of which attracted about as much attention and admiration as the gorgeous chrysanthemums themselves.

A noticeable feature of the exhibition was Pitcher & Manda's display of specimen plants; standard and trellis forms and low bushes. Much was due to the varieties selected, mainly two seedlings, both of which were awarded special certificates of merit. One of these, Mrs. Hicks Arnold, an exquisite bronze having gold-backed petals lightly lined with red, showed a proportion of its flowers almost pure gold in color, giving the plant a rarely beautiful appearance. Besides many specimen plants, a mass of this variety covering 50 square feet was shown. The other was a fine, broad-petaled sort, cream white, shaded to palest yellow at the base of the petals, with some blooms showing the petals loosely whorled, and others showing a large, yellow center. Three other fine seedlings of this firm were Harry May, Annie Manda—a Mrs. Alpheus Hardy improved in habit and depth, and covered more heavily with the glistening, plush-like surface pile—and that desire of every florist's heart, a yellow variety of the hairy type, in which the pride of the firm exhibits itself by giving it the name of W. A. Manda. Once the furore over Mrs. Hardy had quieted somewhat, it became apparent that our growers would feel no satisfaction until they had reproduced the beautiful type in all the favorite colors. Louis Boehmer, although gushed over to a considerable degree, was an alien, and was never satisfactory in color, the tinge of purple spoiling the pink; but the new yellow is of the purest color and of good form, although not very full.

The great attraction to growers lay in the classes for new seedlings; this was a special for Wednesday. Thursday was the day for the dinner-table decorations, in the interests of the city florists, and Friday for the seedling carnations not before exhibited. The chrysanthemum seedling exhibit was large, but space forbids even the mention of many fine sorts which carried off certificates of merit. The silver cups donated by Mrs. Astor and others were awarded as follows: That for the best new white seedling, to a medium-sized, high, rounded ball of pure white, named Miss Mabel Simpkins; for the best pink, to a huge white-hearted sort with pink-tipped petals lined with purplish red, christened Edward Hatch; for the best yellow, to a pure lemon yellow named E. Hitzeroth; for the best red, to the medium-sized deep velvety maroon sort, so high as to be almost pointed, known as Emily Ladenburg; for the best bronze, to the magnificent Harry May, of the largest size and finest form, dull gold at back of the petals and reddish within, full of broad petals to the very center, and of lusty habit—indeed, the originators say the best in habit of all varieties they have ever been permitted to see; for the best in "any other color," to a grand bloom shading from pinkish fawn through yellowish fawn to pale gold at the heart, to be known as H. F. Spaulding; for a new variety shown previous to 1891, but not yet in commerce, to a huge bronze with yellow reverse of petals, thinly lined with red, resembling Harry May, although not so good, named Col. R. Smith.

Strange to say, the seedling which attracted the most attention and admiring comment was none of these, but a sort named Brydon, Jr., almost the exact counterpart of E. Hitzeroth in every point except color. This was nearly the shade of Harry E. Widener. It was really more beautiful than either Hitzeroth or Widener, but it lacked the well-built-up, rounded form so dear to the heart of the chrysanthemum grower—as did Hitzeroth also, for that matter. A sort that received a certificate, and of especial beauty, was Miss Grace Brown, a pure yellow with twisted and drooping petals of large size and very artistic form.

Just as our poultry friends are going back to the old method of comparison-judging, the talk about a scale of points for judging chrysanthemums is crystallizing in the florists' camp. Some claim that such a scale was really used during the exhibition just past; others assert that the "scale" amounted to no more than a

resort to the recognized points of comparison—distinctiveness from all known varieties, form and size, and general make-up.

Cut blooms of chrysanthemums were largely staged with the use of "Bunyard's standard exhibitor." This is a new and good thing. To those who saw it in use by the side of various older devices, Mr. Thorpe's testimonial that it is the most complete combination of all that pertains to the correct staging of cut blooms, and that it is far superior to any thing previously used, merely confirmed their own judgment. A disc for sustaining the flower, wired above a tube for holding water —a tube which, being movable, allows the specimen to be raised or lowered at will above the foundation japanned "board," and an adjustable bracket to hold the 12 label cards in their proper order, are some of the features of this new invention.

A fine mass of dwarf white potted chrysanthemums, which secured the premium for the best group of white not less than 50 feet square, looked more like the everyday flower that amateurs might attain unto than was usually the case. But unfortunately the name of the variety was not made known. This, it may be said, was a rare defect, nearly everything shown being so plainly labeled that all might read.

F. R. Pierson showed, side by side, some fine cut spikes of the two dwarf cannas—the French seedling, Mad. Crozy, and the American seedling, Star of '91. The ground color in the two is almost identical. The latter has possibly the more brilliance, being lightly flaked with a lighter shade, almost orange; Mad. Crozy has, however, a more rounded form, with petals not so pointed and of better substance apparently. Either forms a fine color mass, if thickly set, and at a short distance it is almost impossible to distinguish between them. A close observer felt pretty sure that the 50-foot mass of "French" cannas shown was French mostly by antecedents, and that Star of '91 helped largely in its make-up.

But one entry was seen in the class of new roses of American origin, and this not of a sort to call out much enthusiasm at sight. In size, the rose was equal to American Beauty; in color more pleasing, a good clear pink, some shades paler than the Beauty; in shape flatter; in fragrance fine. It might be said that it was distinctly inferior to the old cabbage rose, if appearance only were considered; yet, should it prove to have vigor, freedom, and continuity of bloom, it would, no doubt, be a good addition to our present list. John Burton, of Philadelphia, was the exhibitor. The sort was thought worthy of a silver cup, but not of a name, as would appear from its lack of a label.

In the interests of private gardening it might not be amiss to note that two of the chrysanthemum cups went to private gardeners; James Brydon, gardener to John Simpkins, of Yarmouthport, Mass., and James Griffen, gardener to Adolf Ladenburg.

A "new and rare" plant in flower, that attracted attention, was a *Cuphea Llavæ*, from Pitcher & Manda's houses, having two deep red petals, a downy violet center and a hairy tube, shading from brownish-red to green.

Boldly asking admiration among the orchids were two plants from Siebrecht & Wadley, of the lovely *Cattleya Dowiana*, the one carrying three, the other four blooms. This plant, though not new, is somewhat rare, on account of the difficulty of importing it; its color combination is fine, the upper petals being fawn-yellow splashed with red, and the lip velvety violet-purple, heavily striped with almost orange-yellow. Siebrecht & Wadley had almost a monopoly of orchids, and the collections of which these formed a part were highly decorated with the coveted blue cards as an addition to the color scheme. This firm also received the magnificent $50 Cutting silver cup, for the best basket of orchids arranged for effect.

At the carnation table the interest was great, the duplication of the prizes adding to its duration, and many sorts carried off special certificates. Orange blossom, a lovely shell white, shaded pink at base of petals; May Queen, shown by John Taylor, of Bayside, Indiana, of pale pink ground color, striped with white; Iago, a dark, but bright, long-stemmed maroon, shown by John McGowan; Daybreak, an exquisite shell pink; Hoosier, a very large and well-formed clear red, and an unnamed seedling of fawn-yellow with red splashings, all called for attention. The real queen of the exhibit, however, was rightly named Salmon Queen, a delightful pale salmon-pink in color, with almost invisible darker flecks; large, of fine shape, and well fringed. Among varieties lately introduced, Ohio, Edna Craig, Lizzie McGowan and Louise Porsch, a pale yellow, showed up well.

Among growers' houses erected at the Garden, Hitchings & Co. showed a commercial rose-house, with large sized glass and light purlins, which hardly seemed to lose any sunshine through obstructing mediums. Under the class for the best working model of a greenhouse for amateur use, the only entry seen was a complete house, strictly portable, with double slope of roof and glass also in sides, and with a tiny potting-room at the end. If the price could be put down, this would prove irresistible to thousands of plant lovers; but with the price for the 8x16 size at $230 aside from the heating apparatus, it will hardly capture the masses, although it did gain the gold medal and was a beauty.

The new system of bench drainage invented by W. P. Wight, of Madison, N. J., having to do with the very existence of the flowers, and promising great things for the future, was possibly of more interest to the growers than even the flowers themselves. Being porous, perforated, and corrugated on the under surface, it promises to prove far in advance of anything now in use. The tiles intended to compose the bottom of the bench are flat, six inches wide by ten to twelve in length, and are to be laid closely upon a bench frame formed of T and

angle iron. They can, however, be used upon the old bench floors if so desired. One advantage claimed is a saving of labor, as the sodding and whitewashing are completely done away with. This is, of course, the testimony of the father of the system, who may have natural prejudice in favor of his bantling; yet a system that could at first sight so impress growers with a belief in its merits that they at once declared their intention of putting it in for trial, certainly deserves investigation. As late as August of this year, florists in convention were assured by one of their number that nothing in known use could equal slate; yet the advantage of a bottom porous and perforated, over the flat slate slabs, needs but a glance to carry assurance of its value. Probably the cost will be the greatest deterrent to its general use in the near future.

In connection with the "exhibitor" should have been mentioned a frost-proof case for shipping the cut blooms in their several tubes. Five shelves receive the tubes from two "exhibitors," and the case is lined with thick felt, and lettered at top: "Cut-flowers in water; this side up with care." C. V.

# A PRELIMINARY EXHIBITION.

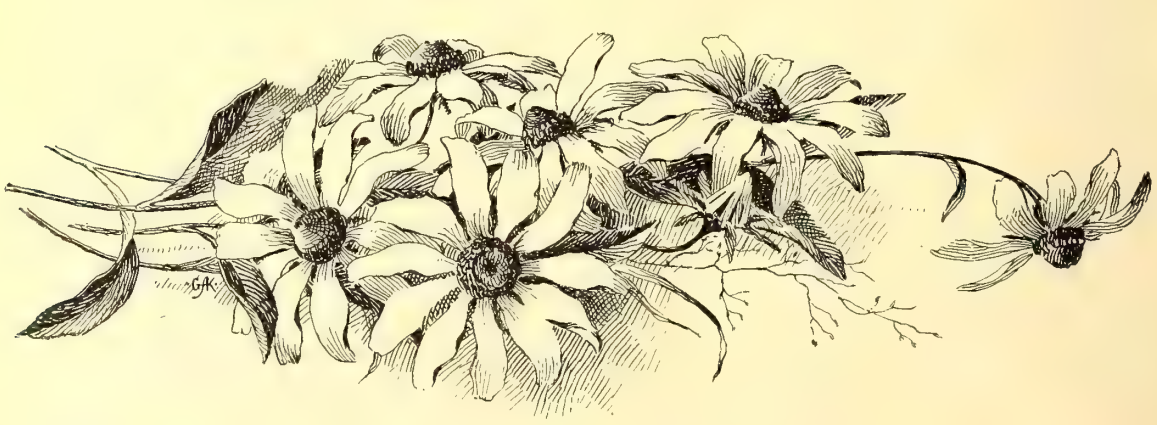
ORCHIDS, PALMS, CHRYSANTHEMUMS.

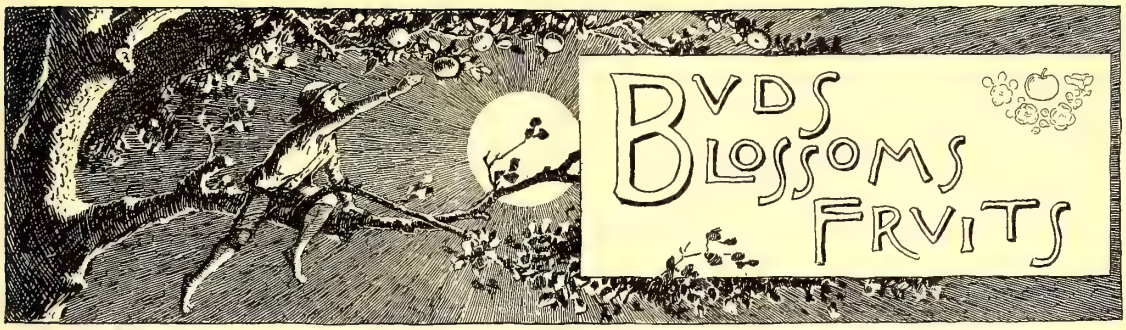
DURING the week preceding the Madison Square Garden show, the friends of the United States Nurseries at Short Hills were invited to a "private view," which was of itself an exhibition of no mean extent. This great establishment, with its wealth of orchids, palms and "'mums," was well worth a visit. Messrs. Pitcher & Manda have recently very greatly enlarged their plant-houses, as well as added facilities for transacting a seed and bulb business on the same scale as their plant operations.

The "private view" was largely attended, many interested coming from a distance. The chrysanthemums, filling seven large houses, were the main attraction, but among the orchids were some notable things. An immense plant of the noted *Vanda Sanderiana* had 23 open flowers. Other features were blooming plants of *Cypripedium tesselatum porphyreum*, *Cattleya Eldorado Wallisi*, a chocolate-colored form of *Lycaste Skinneri*, a natural hybrid lælia, and many other beautiful or rare orchids. The superb display and arrangement of palms, tree-ferns and decorative plants was interesting and remarkable.

The seedling chrysanthemums shown were a great advance on previous years. The new yellow Mrs. Hardy named W. A. Manda, and described above, attracted great attention, equalled only by that given to Mrs. E. D. Adams, a grand creamy white flower of remarkable size and body—the writer measured one flower seven inches across by five inches deep. Harry May forshadowed its popularity at Madison Square Garden, while lesser lights were Mrs. W. S. Kimball, of white water-lily coloring; R. Flowerday, a singularly pure magenta incurved flower; Miss M. Colgate, a superb incurved creamy white of regular shape; Tyro, a remarkable tubular salmon, with sulphur center; New-York Herald, a fine yellow anemone-flowered sort; Dr. Mandeville, which is practically a yellow Mrs. E. D. Adams; and Ulysses, an exceedingly rich dark crimson reflexed variety.

Of seedlings as yet unnamed there were some especially fine flowers. No. 343 showed a bright crimson upper surface, with light lemon on back of petals; No. 169 resembled a large pæony in shape; No. 366 was a great flower of the Wheeler type, bronze color; No. 351, reflexed petals, very oddly striped with pink; No. 176 was very large and double, and of a light sulphur yellow. All these were entirely distinct from existing varieties.






*NOTICE.—As a special inducement to lead our readers to contribute short notes on cultural methods and devices, and to send in sketches and photographs of choice plants, fruits, flowers, vegetables, garden scenes, implements, etc., the publishers hereby make the following offer for a limited time: For any good article that occupies a half-column or so of space, or for any sketch or photograph from which an acceptable picture can be made for these columns, a year's subscription to this journal will be given. The articles will not for a moment be judged from the standard of fine writing or composition, but by the practical and useful ideas or suggestions in them. But besides this premium, the gain accruing mutually between readers by the telling of experience should be sufficient inducement to contribute such notes. We shall look for a hearty response to this offer from our readers.*

## I. LITTLE TWIGS.

Boys like black walnuts.

The joys of gardening are pure.

Roses now are in the background.

Encourage the children to garden.

Brighter days for the house plants soon.

Gardening was the occupation of Paradise.

Horticultural shows are great educators.

The berberry reaches twelve feet in height.

Pound pears have been very common this year.

Chestnuts fruit in about ten years from planting.

Even a poultry-yard is incomplete without fruit trees.

"Gardening for the Million," is this journal's motto.

We are looking for a big subscription crop in this prolific year.

To the flames with all garden leavings, and prunings, and rubbish.

Autumn monk's-hood is a frost defier; it bloomed beautifully all through October.

There are at least 100,000 persons who should be readers of such a dollar journal as this.

Wild-flowers in large variety are used with excellent taste in Graceland cemetery, Chicago.

If our directions were followed, there should be Roman hyacinths in bloom this month.

Poetry of Leaf-Fall.—The melting tears from the seared tree-tops on a sunny, frosty morning.

Thus far a small thorn, *Cratægus cordata*, takes the palm for beautiful autumn coloring on our grounds.

A remarkably fine autumn! Where's the excuse for having been caught unprepared by the winter's cold?

It remains for Buffalo, N. Y., to boast of having a vegetarian cat. Such a cat, a strict vegetarian, is a fact.

How to make a live paper.—Every one contribute at least one valuable idea from his experience each year.

Lay down at least part of the hybrid perpetual rose plants; then note the difference in the bloom next year.

In this wonderfully fruitful year even the ginkgo trees have borne fruit. Several instances have beem reported.

Work for Specialists.—Cannot some diversity in the colors of our many superb species of sunflowers be wrought?

Some neighbor or friend would be glad to subscribe for this journal when you renew, if you would but suggest the thing.

Though we have roses the year round, we by no means tire of them. Could as much be said of the 'mums if they were with us always?

The black currant seems to be dubbed "black sheep" by the majority of growers; but those who like it seem to like it extremely.

Brevity.—A sign over the door of a country store out west reads thus: "Black, red, rasp, straw, huckle and other berries for sale here."

A garden exchange encourages the growing of berry-bearing wintergreen plants in the window. It transplants with so much difficulty.

Our readers will kindly bear in mind that we want to receive for engraving any beautiful photographs of plants, trees or garden scenes.

Spiræas and Rose Chafers.—A. S. Fuller plants the former near his grapes to attract the chafers, which show a special fondness for spiræas.

Who ever saw a floral design representing a person or a portrait, which was anything but hideous. It is an abuse of flowers to make such designs.

The orange-growers of Florida say that the depletion of the forests in that state must be stopped, or else the culture of the golden fruit be dropped.

On another page Judge Miller strikes the key-note of successful competition with California fruit. Thin for size; the eastern article excels in flavor.

ONE THING AT A TIME.—We can not do two things at once—at least not well; as, for instance, raising weeds and vegetables, lice and eggs, caterpillars and fruit, etc.

MADAME CROZY.—F. R. Pierson, the Tarrytown, N. Y., florist, is quite enthusiastic over the merits of this gladiolus. The spike of bloom is very massive.

BARK-BOUND TREES.—Did you ever have to slit the skin of a growing animal, in order to adjust the conditions of growth? Why perform this operation on trees?

TEN ACRES of pampas-grass in one plot are found in Anaheim, California. A full crop of this plumy product is expected to yield 100,000 heads, worth 5 cents apiece.

THE BLOOD-LEAVED Japan plum (*Prunus Pissardii*) looks about as pretty as ever, at this date (Nov. 5). This can be said of hardly any other shrub among hundreds of kinds.

SOMETIMES the educational value of public gardens is overlooked. Many persons can trace their first real interest in plant beauty to their visits to some of our attractive town parks.

LAYING DOWN peach trees for winter protection is a regular practice with Peter M. Gideon, of Minnesota, originator of the Wealthy apple, and with the result of raising regular and satisfactory crops.

CUBA is now open, free of duty, to our potatoes, onions, turnips and other vegetables and fruits, fresh or preserved, besides most other products of the land, except wheat and corn flour and meal.

THE ANNUAL banquet to florists, nurserymen and gardeners, provided by the bequest of the lamented Henry Shaw, of St. Louis, founder of the Botanical Gardens of that city, took place November 10.

TWO CROPS of grapes on a Herbemont vine in one season are reported by H. R. Buck, of Tangipahua Parish, La. The second crop was still hanging on the vine at end of October, well matured and of good flavor.

OUR FRIEND J. Wilkinson Elliott, of Pittsburg, is one of the men who devote themselves to encouraging a better style of horticulture by furnishing plans for laying out grounds. He sets forth his relations to this matter in a pretty little circular just received.

FROM OTHER LATITUDES.—There are no disadvantages to be cited against obtaining seeds, trees, etc., from points considerably north of where the planting is done. We are not so certain that the reverse of this rule, in going towards the equator for planting stocks, is equally true.

AN ENGLISH professor, after six years of experiment, has worked out a number of "doses" of artificial plant-foods for certain specific purposes. This reminds us of the nineteen soil-compounds which the elder Buist recommended some forty years ago. American gardeners never took well to the idea.

THE CANNAS, from having been chiefly grown as plants of attractive leaves, are, through the new type represented in the dwarf French strains, fast assuming prominence as flowering plants. We hear that florists are beginning to force them for winter bloom, the varieties Star of '91 and Mme. Crozy being favorites for the purpose.

WE HAVE pets in our garden. One of these is a very dwarf and pretty "snowball" bush, known in the catalogues as *Viburnum opulus* var. *nana*. It is only one foot high and one foot across; and as its branches are very close, it is so dense as to remind one of the hairs on fur. It never flowers, but its lobed foliage is very pretty.

LEMOINE HYBRID GLADIOLUSES.—Expert E. V. Hallock points out that the hardness of the stalk of these prevents the opening of the buds after the stalks are cut and placed in water, as so often happens with the ordinary kind. Novel as are some of the characteristics of this race, there is no danger of its ever supplanting the older types in popular favor.

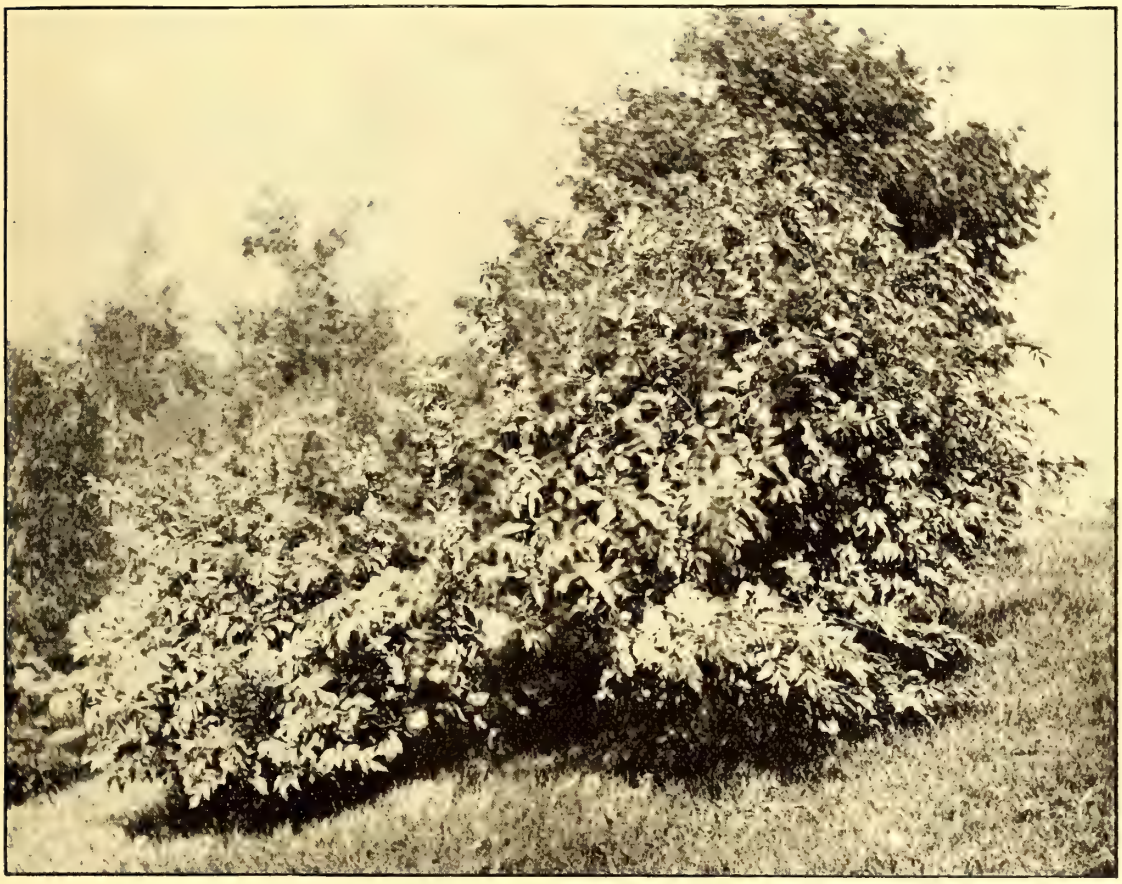
A FINE SUNFLOWER.—For an effective clump, either singly or in the midst of a border, we heartily recommend *Helianthus Orgyalis*. The stalks run up to a height of six or eight feet, and are clothed with the long, gracefully-curving linear-lanceolate leaves of refined appearance. It is of the easiest possible culture, and once started with however small a piece of root and eyes, it will soon develop into a strong clump. It blooms in the autumn among the latest of the species. For the wild or picturesque garden, it is perhaps not excelled by any plant known. Twenty-five cents or less will give you a start with it from any of our leading plant nurseries.

## II. THRIFTY SAPLINGS.

**The Brazilian Passion-Flower** (*Passiflora edulis*) bears its luscious fruit freely in gardens of North Wales. The vine is exceedingly pretty when in bloom. The fruits, which begin to ripen at the end of June, resemble large egg-plums, are deep maroon in color, and have a tough, thick skin. The yellowish pulp, although by no means of attractive appearance, has a brisk, agreeably acid flavor, reminding both of melon and pear. It is largely used as a dessert fruit.

**Apples in Niagara County.**—Our neighbor fruit-growers in Niagara county are highly elated over their apple crop this fall. While a few varieties, notably the Baldwin, have largely failed, other standard winter sorts have yielded more heavily than anticipated at midsummer, the fruit often being of extra size. Some farmers who two months before harvest were expecting 200 barrels, later found their crop to reach double that quantity. Prices in October ranged from $1.50 to $2 per barrel. With 40 trees to the acre, multiply by five, as representing the average yield in barrels per tree, and we have 200 barrels per acre. These, sold at $1.75 on an average, amount to $350 per acre. Undoubtedly many of our fruit-growers obtain such results, and are well satisfied at present with fruit-growing. What other crop requiring no more attention gives anything like equal results?

**Free Mail Delivery in the Country.**—Much could be said in favor of the movement now on foot, asking that mail matter be delivered free in the country as in the cities. This course would be more popular and operate with greater justice to all our citizens than the reduction of letter postage to one cent. Just think of the time spent by country persons in successful and unsuccessful trips to the post office, in rain or shine, over roads good, bad and indifferent; and how the efforts of the fifty or a hundred receivers of mail matter could be saved by the employment of one man to make the rounds, delivering the mails directly and expeditiously as soon as they arrive! It would be a great thing for country persons thus to have the same privileges of informing themselves of the doings in the outside world now enjoyed by city persons. A course like this could not fail to make that class closer readers, more frequent writers (thus increasing the receipts to the department), greater thinkers, and better farmers. Let us have the free mail delivery, at least in all portions of the country reasonably well populated.



Golden Elders in Buffalo Park.

**Two Golden Elders.**—The view here given is from a photograph taken in Buffalo Park last summer. In the foreground are seen two fine specimens of the golden elder (*Sambucus nigra* var. *aurea*), which illustrate the fine proportions this comparatively new ornamental shrub attains in time. Besides being a fine grower, the peculiar value of the shrub is found in the remarkable golden color of its foliage, which may be said to be as handsome as it is rare among hardy trees and shrubs. There is, in fact, nothing of its color that really equals it. The color of the leaves may be described as being of a golden green, with the growth, at some stages, of a brilliant golden hue. Unlike some hardy growths of colored foliage, this one retains its brilliancy in a marked degree the season through. For enlivening a collection of shrubs and trees after midsummer, when the bloom season is almost wholly over, there is nothing in its line that can excel this shrub. It is sold at a moderate price in the nurseries.

**At the World's Fair.**—Mr. Thorpe's active brain is devising one marked attraction after another for giving interest to the horticultural department of the coming World's Fair in Chicago. One of the features is an extensive rock and Alpine garden under the central dome of the horticultural building, to reach the dimensions of

100x100 feet, and 70 feet high. The idea here is to construct a miniature mountain, clothed with plants in large variety. A mountain stream, descending by a circuitous course between and over rocks from top to bottom, will be one of the features. Underneath the mountain will be a cave, in which experiments on the effect of electric light on plants will be in progress during the fair. Mr. Thorpe shows good judgment in undertaking also to make roof gardening a feature of the fair, thereby to demonstrate to town residents the opportunity within their reach for attractive gardening above *terra firma*. His field for display in this line will be the roof space around the dome of the horticultural building.

**The Interest in Botany.**—A recent report, issued by Barnard College, of New York (the woman's department of Columbia College), conveys a gratifying testimonial to the increasing interest in botany at the present day. This is to the effect that more students are interested in the botanical classes than in any other, in the proportion of nineteen in botany to seven in chemistry. The botanical department is under the direction of Dr. Emily L. Gregory, who is a graduate of Cornell University. In alluding in the report to the value to young women of a thorough education in botany, the doctor says: "Aside from its value in a purely intellectual way, it has a practical value in furnishing occupation, with remunerative salaries, to an increasing number of persons. One of these fields is that of pharmacy. Adulterations are constantly made in the use of drugs, and we are just learning the importance of a methodical study of the inner structure of plants. This also applies to the students of medicine, but more particularly to the pharmacist. A much wider field for trained botanists is found in our agricultural stations. In the agricultural department in Washington one of my former students is now doing work in mycology, and her position commands a good salary. The call for this work is the increasing devastation made by parasitical plants on our grains and food-plants. Before anything can be done to prevent failures in crops from rust, smut, blight and mildews, the nature and habits of the parasite plant must be known. Such investigations are made, and the results published in journals, and the scientific advancement of the country may be marked by the number and worth of such publications. In every state these experimental stations have been started. The work of the botanist is such that a woman is specially fitted for it"

**Conifers from Japan.**—At the recent conifer conference in London, H. Veitch read an interesting paper on this always absorbing subject. He noted that it is practically within the last thirty or forty years that the conifer has become known in its great diversity of character to horticulturists. As regards the many attractive Japanese kinds, although Kæmpfer in the last century takes notice of them, it was not until 1842 that Siebold published his flora; but the real awakening came in 1859, the time of the opening up of the land of flowers to English enterprise. John Gould Veitch proceeded there at that period, and the intrepid collector Maries introduced many valuable kinds. It is interesting to know that Japan includes more conifers among its flora than any other country in the world, and comparisons were made between England and Japan as regards climatic conditions, the average yearly temperature being similar; but there the resemblances stop. There was in Japan a wealth of gigantic trees; and the various types are chiefly confined to Nipon, between the 35th and 40th parallels, but as this portion is the most thickly populated, very little is left of the original vegetation. Several species were touched upon, a great point being their hardiness, which adapted them for English plantations and gardens. Mr. Veitch made reference to the true pines, of which there were about five, all valuable. When mentioning the umbrella pine of Japan, *Sciadopitys verticillata*, he said there were complaints that it would not grow; but as it wants constant moisture at the roots, in moist Nipon and Cornwall it makes luxuriant growth, enjoying the abundant rains. *Cryptomeria Japonica*, the retinosporas, thujas and other genera were described.

**Are White Grubs**, the larvæ of the May beetle, soon to be a thing of the past? According to a recent account in the *Revue Horticole*, of Paris, a Frenchman by the name of Lemould has experimented in destroying this pest with a cryptogamic-plant parasite working on the grub. So effective were the experiments, according to report, that in a meadow in which the grubs were so numerous that sods could here and there be lifted by hand, three-fourths of the grubs were estimated to have been killed within two months of the time the disease was introduced. Similar experiments with the same parasite were made by other scientists, with the results of reducing the grubs with enormous rapidity. It is stated that certain French chemists are already placing the remedy in market, put up in tubes as vaccine is prepared. This miserable pest is a serious source of trouble to the cultivators of all lands, we believe, and a remedy that would practically annihilate it would be an inestimable boon.

**Seckel Seedlings.**—A box of pears closely resembling the Seckel was received on October 21 from E. H. Cushman, Ohio. They ripened a few days later. Mr. Cushman writes that the tree is about 35 years old, has never blighted, bears annually, and has yielded over three bushels in one season, the fruit selling at $4.50 per bushel. It took first premium at the Ohio State Fair the last two years, as "the best unnamed seedling."

**Gifts that do Good.**—At eight o'clock Monday, October 5, the annual free distribution of plants by the city authorities of Boston began at the city greenhouses in East Chester Park. The *Boston Transcript* says that long before the appointed hour an expectant crowd began to gather about the closed gates at the nurseries. All ages and colors, and nearly every nationality, were represented. Little toddlers just able to walk, octogenarians barely able to crawl, colored people and white,

Irish, Italians and Germans, as well as native-born Americans—all wanted their bunch of plants. The plants and loam were handed out by sturdy gardeners who stood in the gate-ways, to the people on the side-walk outside. Each bunch was made up as follows: geraniums, ageratum, four kinds of alternanthera, vinca, abutilon, feverfew and lobelia. About 380 of these bunches had been given out by eleven o'clock. It is expected that the total number of bunches distributed will fully equal, if not surpass, last year's aggregate of 3,000 bunches. Sometimes applicants were dissatisfied with the plants included in the bunches, and expected to be supplied with rubber plants or palms, or some other highly expensive growth. But by far the greater number seemed greatly pleased. Most of them wanted a supply of potting loam, but neglected to bring anything to put the loam in. One buxom German woman, who was thus neglectful, presented her handkerchief with the request that some loam might be tied up in it; while a stout Irish woman, more provident than her German sister, handed in a bushel-basket to be filled! A by-stander suggested to an Italian, who had nothing to put the loam in, that he make use of his hat. Quick as a flash he retorted: "Give-a me yours an' I will-a." About one o'clock the school children began to gather, and then there was a grand scramble. The gardeners had a rather lively time while the children were there.

MME. G. BRUANT ROSE.

**Mme. G. Bruant Rose.**—The rugosa roses of Japan are comparatively new to cultivation in this country. Wherever tried they have at once attracted favorable attention by their peculiar qualities, which may be summed up as vigor of growth, hardiness, handsome shining leathery leaves which insects rarely touch, and an extended season of bloom. The class, since its introduction, has been one of constant interest to hybridizers, and not a few hybrids have been the result. One of the most promising of these to date is the Mme. G. Bruant, which is now being disseminated by our leading nurserymen. A life-size engraving of this variety is here shown. In the bud state the flowers are long and pointed; when open, semi-double, pure white and fragrant, and produced in clusters. The plant is vigorous and has tough, handsome foliage very similar to the true rugosa type, and enjoys a freedom from insects in large degree. It is classed among hardy roses at Rochester, New York, and seems likely to be very valuable.

**A Bottled Label.**—I write the name on a slip of paper, place this inside of a small bottle or vial, and fasten the latter to the tree with a copper wire. It lasts.—C. J. FOLK, *Ohio*.

**Wild Cherry** is a most beautiful ornamental fruit tree. There are many varieties. The fruit of some is as large as a gooseberry and very delicious. The berries are the best tonic and expectorant. The trees bear when quite young, and grow to a large size in a short time. Birds are very fond of the fruit and will leave grapes and other fruits for them. The mulberry is also a good fruit and the timber makes the best of posts and grows rapidly. The fruit is relished by most persons, and chickens are very fond of it. It is sweet and glutinous. Our native sorts are the best, especially the black ones. They are propagated successfully by seed. Start some for your odd corners next season.—C. H. ENGLISH, *Missouri*.

**Utilizing the Scrub-Palmetto.**—Certain parts of Florida are famous for their scrub-palmettos, and scrub-palmettos are famous for their general worthlessness. Doubtless this pest has been responsible for more groans and bad words on the part of Floridians who come in contact with it, than any other nuisance in the state. But now all is changed. It remained for a couple of bright New-Yorkers in the persons of Messrs. Cook and Libby, now residents of St. Augustine, to utilize this nuisance. They are purchasing scrub-palmetto roots at from $4 to $5 a cord delivered, and after putting it through the several processes of barking, drying and sawing, and the secret one of separating the fiber, they place on the market a palmetto brush. According to the fiber, these brushes are in use as flesh brushes, clothes brushes, scrub brushes, and almost any purpose for which a brush is needed. Here we have one good use made of an apparently worthless product.

But our friends go still further, for they have discovered that the dust and shavings made in the process of manufacturing brushes contain a large enough percentage of tannin to render it valuable to leather men for tanning purposes. A waste product making two profits is not bad.—G. R. KNAPP.

**The Virgin's Bower.**—One of the most graceful of ornamental vines is the *Clematis Virginiana*, or common wild virgin's bower. For training over windows, porches and arbors, it can scarcely be excelled, as its dainty foliage affords plenty of shade without excluding the air, as so many of the heavier-leaved vines do. Growing in our woods and often along osage and other hedges, it can easily be procured, bears transplanting well, and thrives in almost any situation. Though the blossoms are not as large and showy as those of many of the cultivated clematises, yet they have a delicate beauty peculiarly their own. A spray of *C. Virginiana* leaves and blossoms is the very embodiment of graceful beauty. August is the season of bloom, and during this month the vines are literally covered with pretty green-white blossoms, and the ground beneath drifted over with the fallen sepals. This vine, like others of its family, climbs not by tendrils, but by the clasping petiole. The leaves and flowers, growing in threes, are symmetrical. Need we go to the florist for a high-priced clematis for our porches, when this lovely native can be had for the trouble of transplanting? Like many other native flowers, it is seldom seen in cultivation because it is common and "plebeian."—ERLA ERLE, *Tama county, Iowa.*

**Agriculture in the Schools.**—I am glad to see an effort is being made to teach rudimentary agriculture in the public schools. In Springfield, Mass., one thousand chrysanthemums were distributed to the school children this spring, with directions how to care for them. That is an object-lesson that interests them at once. The old-fashioned way of teaching botany was a weariness and source of disgust to the children. What care they that the true name of a dandelion is *Leontodon taraxacum*, and to learn by heart page after page of the hard names that filled the text-books. But tell the boys how to plant trees, and what are the enemies that destroy the fruit. Have the horticultural journal for a text-book, and encourage talk and comparing notes on real live subjects. Interest the girls in seedlings, slips, potting and flower gardens in general. As winter approaches, have lessons on window gardens, with prizes offered for the best looking shelf of plants raised by the pupils. Some one was trying to impress these views on a teacher, and she said: "The idea is a beautiful one, and would be sure to interest the pupils, but we haven't time. The studies we have are more than enough to occupy us." Yes! but if half of them were left out, and practical subjects put in their places, the children would be gainers. In most cases, a year after the pupils have left school the algebra and geometry, and many of the "'isms" and "'ics," have mainly gone out of their heads; while the practical lessons on agriculture would be sure to stay there, and if not made a daily business might be a delightful recreation and the means of much enjoyment.—SISTER GRACIOUS.

**Sending Plants by Mail.**—Use a wooden box, strong but light; lay in a piece of oiled paper large enough to wrap around the plants. Wet the plants you wish to send, before taking up; then shake off all the earth that does not readily adhere to the roots, and after laying some wet moss on the oiled paper at the bottom of the box, place in the plants, laying more moss over the roots. Proceed in this way till the box is filled, being sure to put in sufficient moss to make firm; then fold over the oiled paper and fasten down the cover. When the weather is very hot, it is a good plan to cut an opening in one end of the box, almost an inch square, to let in the air and prevent heating. When received by mail or otherwise, unpack with care, place the roots in a basin of warm water, and let them remain an hour or two, or till the leaves have revived. Then separate and dip the roots of each plant in fine sand (scouring sand), roll them in it till well covered, and plant in good compost. Use small pots; those three inches across the top are sufficiently large for the average plant sent by mail. Place a piece of broken crockery at the bottom, fill one-third full of earth, then press in the roots, and fill tightly with the soil. Water, but not too much, keep in shade for a few days, and in a week they will have taken root in their new quarters, and begun growing.—MAY MACKENZIE.

**Chrysanthemums for the Show Rooms.**—It takes extra care to procure chrysanthemum blossoms worthy of the show room, but when brought to perfection they will repay all such trouble. Procure well-rooted slips in spring. Seedsmen usually send them out in small pots. Transplant immediately in pots holding about a gallon, filled with rich soil. In some sheltered place, where they can have partial shade, sink the pots to the brim in the soil, and keep the soil in the pots moist continually during hot weather. Plants for the show room must never be checked in growth from the time they are taken from the greenhouse until they come to the show room. About the first of September, if rightly treated, little roots will run through the bottom of the pot. These must be kept broken off by turning the pot once or twice a week, or whenever the plants are watered. As soon as the buds appear, go over each plant with a pair of sharp-pointed scissors, and clip out all buds but one on each branch. Feed liberally twice every week with liquid manure. After the buds appear, the pots can be lifted out, cleaned and painted, and after the show is over, you have a "thing of beauty" for the sitting-room.—MRS. JOHN GAILLARD, *Girard, Pa.*

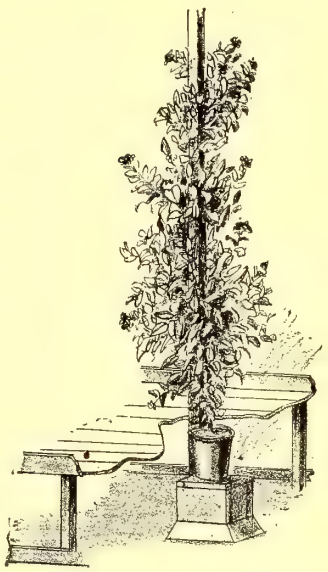
**Mistake Ladders.**—"I shall not try to care for a plant again," said a lady to me. "Just as surely as I have a geranium or primrose, and get to loving it, so surely it dies." "Ladders," said I. "Make your failures and mistakes with plants a means of rising, and of gaining more knowledge in horticulture." "But it's expensive," said she. "So it is," said I; "but every-

thing that's worth having, costs something." One spring I spent two dollars for seeds for hot-house plants, cyclamen, cineraria, calceolaria, etc. Not one of them sprouted. The next spring I bought one package of choice primrose seed, carefully followed directions, and six thrifty plants gladdened my eyes the following winter. I learned not to put two dollars into plants, the successful culture of which required a good deal of experience, but to take one package at a time, and care for it thoroughly. Another mistake is to buy large plants of a florist if you do not know how to treat them. Buy a small one in a thumb-pot, and ask the florist how to care for it. As a general thing, the florist is very willing to advise you. Don't try everything you hear of as good for plants. A friend of mine, having several thrifty geraniums, heard that wood-ashes was good, and mixed a quantity in the soil of each pot. Every one of the geraniums died. Another lady heard that arsenic was good for fuchsias. She did not have any arsenic, but thought rough-on-rats to be the same thing. So she put a teaspoonful in each pot. Every leaf on her fuchsias the next morning was withered. Every plant raiser has plenty of these mistake ladders to climb on.—SISTER GRACIOUS.

**The Myrtle.**—One plant deserving of garden culture in the south is the myrtle. While seldom seen, it is quite as valuable as the sweet olive, if not more so. Certainly it is more beautiful in appearance, and the leaves as well as the flowers are fragrant. The culture of the plant is of the easiest possible kind, as it requires only to be planted to insure success here; but further north it would require some protection from severe frosts. The plant may be readily propagated from cuttings taken with a small heel just as the wood is beginning to harden. These cuttings should be planted, several together, in pots filled with sand, and placed in a warm spot out of the reach of the sun. They will root more readily if covered with a glass. The plant may also be increased by layering. In a garden where a small screen might be considered desirable, the Roman-leaved myrtle would be the most suitable plant for the purpose. The sprays and flowers are very useful for mixing with bouquets. The plant will endure ten degrees of frost without harm.—H. W. SMITH, *East Baton Rouge Co., La.*

**Possibilities of Our Native Grapes.**—The October number of the GARDEN did not reach me in time to have some printer's errors in my grape article corrected in the next issue. The following are the errors: (1) On page 580, D. Bunsly should be D. Bundy; (2) on page 581, first column, Highland is put down as "Seedling of Triumph × Jura Muscat." It should have been Concord instead of Seedling of Triumph; then Seedling of Triumph is ditto-marked opposite Irving, Jefferson, Lady Washington, Mansfield and Niagara. Had Concord been used in the first place, instead of Seedling of Triumph, the ditto mark would have been all right. (3) Highland is put down as originated by Munson, whereas it should bave been J. H. Ricketts. (4) D. Crehone, page 581, second column, should be D. Crehore; (5) on same page and column, the parenthetic note under Onderdonk seems to apply to that variety, whereas it should have been a starred foot-note to Imperial, above, and S. Ricketts following Imperial should be J. H. Ricketts. (6) After the name Onderdonk, under cut on page 581, should have been inserted "(See page 584)." My theory of Thompson's Seedless may be erroneous, as a note received from Pomologist H. E. VanDeman indicates. Under date of October 22, 1891, he writes: "I noticed in your very excellent article on native grapes, in the last number of THE AMERICAN GARDEN, what I feel sure is a very grave mistake on the part of whoever wrote the sentence in parentheses under figure 1, which relates to a grape called Onderdonk. This is certainly a very different thing from the variety known in California as Thompson's Seedless. I have seen and examined the latter carefully, and it is a true vinifera. Now I know that you did not originate the one that they have in California, as it went there from Rochester, New York, and is known as Lady de Coverley by some persons. Mr. Gustav Eisen, of California, is here now, and he corroborates this statement. I have had this information for some months, but have been looking for some other name for this grape which I think it must have in Europe. It is quite distinct from Sultana." This matter should receive further investigation. —T. V. MUNSON, *Texas.*

**The Heliotrope in the Greenhouse.**—I have found this an excellent plant to grow about a post in the greenhouse. The roots are confined in a large pot, and this is lowered so that its top is about even with the bench bottom as shown by my sketch. A well established plant under such conditions, in a house of 60° at night, will throw off a large amount of bloom during the winter, and prove a most attractive ornament as well. When the soil in the pot becomes somewhat exhausted, the plants should be watered with weak liquid manure at intervals. In bringing on the plants from the cuttings of the previous summer, they should be frequently pinched back, especially in the side shoots, to induce a strong upward growth. I must not neglect to warn those who grow the heliotrope in this way,



HELIOTROPE TRAINED TO POST IN GREENHOUSE.

against the damage this plant readily may suffer, if tobacco smoke is used in the house to kill green-fly. The injury from smoke may be averted by lightly syringing all the foliage with water just before lighting the fumigator.—C. L. L., *Tioga Co., Pa.*

**The Pampas-Grass in Washington, D. C.**—I send an illustration [see p. 713] of a pampas-grass (*Gynerium argenteum*), taken on the grounds of the Executive Mansion, September 22 last. The plant is nine years old from seed, and is now 10 feet high, has 65 perfect plumes, and measures 10 feet in diameter. It forms, with another specimen of the same size, a great attraction on our grounds. Many of your readers may be glad to know that this gynerium can be grown out-doors, in dry spots not too much exposed to cold winds, as far north as New England, provided a slight protection is given them during the winter months. Here we cover the ground around the roots to the depth of six inches with dry leaves. The foliage of the plant is then twisted down and over the root and its cover, in such a way as to keep the water from the heart of the plant. An empty box or a hogshead is set over the plant to keep out the cold winds. Few plants are finer and more effective than a well-grown gynerium as a single lawn specimen. Transplanting does not benefit them, and it is best to plant them as soon as large enough from seed to handle, in the place where they are to be set out. If transplanting be deferred until the plants are large, it will often stop their flowering for one or two seasons.

This species of pampas grass is so called from its being found covering the vast plains or pampas of South America. According to Henderson, in his "Hand-book of Plants," it is the best known species for cultivation. There is reason to believe that some varieties of this form are better in habit than others, and flower earlier. In such cases it might be better to divide them than to trust to seedlings. Considerable variation is known to exist in the sorts that are cultivated, some of a delicate rosy color, one variegated, and several dwarf and neat in habit. If convenient, they should be favored with a place somewhat sheltered, so as to prevent, as much as possible, the constant searing away of the foliage, which occurs wherever the plant is much exposed. Its bright silvery plumes also show off much better when backed up with shrubs or some of the finer evergreens. In localities where the plant lacks hardiness, the clumps are sometimes taken up with a large mass of earth and kept in any convenient place away from frost during winter. In southern California the plumes are grown largely for the northern and European markets. This species was first introduced to cultivation in 1848.—Henry Pfister, *Washington, D.C.*

**Remarkable Tenacity of Life.**—Under this caption I wrote the *Prairie Farmer* in April, 1880, as follows, concerning two remarkable specimens that had come under my personal notice: "Hon. F. Buler, living four miles southwest of Indianapolis, has a Scotch pine tree from which the bark had been removed for a space of almost a foot, when about three inches in diameter. At this point the wood is as dry and lifeless as a table leg, but above, the top is healthy, making regular and thrifty annual growths, bearing and perfecting seed, and to all visible appearances as healthy as though nothing unusual was the matter with the tree. This condition has existed for years, and the growth above the girdled point has increased to more than three times the size of the tree below." "A tree of the same species (*Pinus sylvestris*) on the farm of Allen Miles, near Belleville, Hendricks county (Indiana), was completely girdled for a space of several inches. The wood is as dead and dry as if it had been in a dry-kiln for years. Above this point it is greatly enlarged, perhaps quadrupled in size, but still alive though declining. Will some one versed in the science of vegetable physiology explain the mystery of these remarkable cases?"

Later, having noticed various comments on the above statements in such papers as the *New York Tribune*, the *Scientific American*, and others, in which doubts were expressed as to the veracity of the statements I again wrote: "I have to-day (December, 1880) cut the specimen first referred to, which grew on the farm of J. A. Miles, near this place (Clayton, Indiana, my home at that time), and sawed it open lengthwise. I find it to measure two inches at the girdled point, and above it is seven and one-fourth inches in diameter. It is as completely dead and dry as a last summer's bean pole for a space of six inches, the bark having all decayed and sloughed off; while above it is alive and apparently healthy, the wood being solid and firm. I shall preserve the specimen in the museum of the Indiana Horticultural Society at Indianapolis." I herewith enclose a copy of the printed label the specimen bears. My attention has been recalled to these cases by your reference (in connection with an illustration, which would pass for the ones I have in mind) on page 705, November number of your excellent journal.—W. H. Ragan, *Secretary Indiana Horticultural Society.*

[The label which Professor Ragan encloses is as follows: "This Scotch pine tree (*Pinus sylvestris*), grown on the farm of J. A. Miles, near Belleville, Hendricks county, Indiana, was accidentally girdled 11 years ago, as the annual growths show; but contrary to all known cases, it failed to die from the effects thereof. This case most completely confirms a theory of vegetable physiology, viz., that growth is formed by a downward flow of sap, or, more properly, cambium, thus greatly enlarging above the girdled point, while life is sustained through the unclosed pores of the alburnum, or white wood. The resinous character of the pine wood, resisting as it does the effort of nature to dry up and close the pores of the alburnum, certainly accounts in a measure for this singular prolongation of life. This specimen was presented to the museum of the Indiana Horticultural Society by James A. Little, of Cartersburg, Ind., December, 1880." This is certainly a remarkable instance of the persistence of a tree after girdling has taken place, but it is not inexplicable. It has long been known that the sap passes up the stem in the young

wood, and not in the bark; and the fact was proved experimentally so long ago as 1731. But this case should attract the attention of vegetable physiologists as affording an illustration of the sap movements in coniferous trees.—ED.]

**Strawberries in Illinois.**—Dry weather has been the rule again this summer, and with strawberry plants here it was a struggle for existence, resulting in the development of few plants on any variety. We had a large crop of fruit. Michel's Earle was the first to ripen, yet not much in advance of Haverland. Sucker State followed, and Warfield No. 2 next; then Downing and Captain Jack. The picking from Michel's Early lasted two weeks, from Haverland, Warfield and Sucker State, nearly or fully a month. Parker Earle stood the hot, dry season of last year, and bore a full crop this season of medium to large berries. The yield and fine appearing fruit of Haverland was an agreeable surprise, and will induce large planting. Warfield yields abundantly, fruit of rich glossy color, and firm. Prices were uniformly low. The Chicago market controls the price within a radius of 300 miles, and when seventy carloads of strawberries were received in one day, as was frequently the case, the bottom dropped out. There was an over-production, and growers north and south realized the fact, very much to their chagrin.—E. HOLLISTER, *Madison Co., Ills.*

**Camellia Japonica.**—In this latitude the gardens are rendered very beautiful by their wealth of camellia blossoms. This beautiful plant is commonly known here as the japonica, and but seldom spoken of as the camellia. The plant thrives here and is very plentiful, and may be seen from a foot in height, having two or three blossoms, to a large shrub fifteen feet high and loaded with flowers. The pure white and the red varieties are the most common. The weather the past season has been cold, and frosts have occurred that somewhat marred the beauty of the earlier flowers. The plants receive no protection whatever, and it is only occasionally that one notices any means taken to protect them from the biting north wind. A finer sight can hardly be conceived than a camellia twelve feet high and six or seven feet in diameter loaded with white flowers. Four plants ranging from six to nine feet in height grow here on less than twelve square feet of ground. The plant in this locality receive no special culture. When the young plants are first set out they take two or three years to get started, but once fairly rooted they rapidly increase in size. The soil is alluvial, of great depth, and contains plenty of moisture at no great distance from the surface. The plants are generally propagated by layering, very few people understanding how to increase them by cuttings.—H. W. SMITH, *East Baton Rouge Co., La.*

**A Northern Clintonia.**—*Clintonia borealis* is a neat and very attractive American wild-flower. It grows from the Atlantic coast to the Mississippi, and from the Carolinas to the far north, on wooded hills and mountains, or in mossy swamps. The broad handsome leaves are all radical, flat on the ground surrounding the base of the flower stem. They are a rich shining green, from six to ten inches long, and two or three inches wide. The flower stalk rises from five to nine inches high, bearing an umbel of two to eight very pretty greenish-yellow nodding flowers, about as large and nearly the same shape as those of the hyacinth. These are followed by berries, size of large peas, and of the richest amethystine blue; in fact, pretty as are the flowers, the berries are even more attractive. They remain all winter. Oftimes, in my botanical excursions (I have spent years in botanical work), while wandering through one of those great tamarac swamps such as are frequent in Michigan, I have suddenly come to a mossy place covered by these woodland beauties, and although they could not compare with many of our native flowers, they possessed a neatness, grace and modest loveliness such as aroused my admiration. A moist, shady rockery or Wardian case, or some cool, mossy spot beside trickling water in the shade, is just the place for this floral amethyst with emerald setting.—WILFRED A. BROTHERTON, *Michigan.*

**Pittosporum Tobira.**—I would ask readers in my latitude, Have you ever tried *Pittosporum Tobira* in the open air in winter? It makes such a handsome evergreen shrub here, without any protection, and withstands every vicissitude of weather with such impunity that I am inclined to think it will be hardy much further north. Many years ago I saw a statement that it survived the winter unhurt in Philadelphia. Broad-leaved evergreens are so scarce northward that the pittosporum is worth experimenting with. In the sharp and sudden freeze here in March, 1890, when the clover fields were blackened to the ground, and all sorts of shrubbery nipped, a row of pittosporums in my neighborhood did not show a singed leaf.—W. F. MASSEY, *Wake Co., N. C.*

**Insect Intelligence.**—A hop vine was a source of comfort and pleasure to us all summer, the dense foliage giving a grateful shade. Towards fall it became the home of numerous ugly caterpillars, which finally went into the cocoon state and suspended themselves by a needle-like point from the surrounding wood-work. In time butterflies emerged from the cocoons, and soon were dancing among the flowers. But an enemy was waiting for them. Perched upon a scarlet geranium flower, his head erect and his long arms extended as if in prayer, is a praying-mantis, popularly called the "Johnnie Cock-horse." His head is small, but it contains intelligence enough to teach him that the charms of the flower will attract the butterfly. Soon a gay beauty flutters up to the flower, Johnnie Cock-horse makes a spring, and poor butterfly is in his grasp. The body is devoured and the wings are scattered around as trophies. At night Johnnie retires under a broad leaf, but emerges next day in time to capture more victims for his breakfast.—S. L. B., *McClellanville, S. C.*

# DICTIONARY OF SEASONABLE GARDEN WORK.

## I. PLEASURE GARDENING.

*Abutilons* in bloom like occasional doses of liquid manure. Young plants to be shifted and pinched back according to need. Propagated from cuttings when desired and young wood can be had.

*Acacias.*—Unless watered freely, loss of foliage and flowers will result. Shift the young plants as needed. Propagate from seed as you may desire.

*Acalyphas* do best in full sunlight, a temperature of 55° to 60°, and when given occasional doses of liquid manure.

*Achyranthes* to be treated as advised for alternanthera.

*Adiantums*, or maidenhair ferns, succeed readily in the window under the treatment given to other ferns. A temperature of 55° to 60° and a moist atmosphere is most congenial to them.

*Allamandas* to be given water quite sparingly after growth ceases.

*Ageratums* to be turned from time to time, and occasionally watered with liquid manure.

*Alternantheras* to be given a temperature of about 60°, with ordinary treatment. If much young stock is wanted in the spring, begin to propagate at once, and push this as fast as good cuttings can be had.

*Alyssum*, for strong plants in spring, to be grown from seeds or cuttings now.

*Anemone Japonica*, after flowering, should have water quite sparingly. Place under the greenhouse bench or in a cool cellar.

*Aspidistras* like plenty of water at the roots, and to have the leaves sponged off frequently.

*Azaleas* to be treated like aspidistras; encourage growth of young plants by keeping them in a warm place; plants in bloom are better off in a dry and cool atmosphere.

*Begonias.*—The flowering kinds should have a sunny situation in a temperature of 55° to 60°. After bloom a partly shady place will suit.

*Cactuses.*—Treat as advised in November number.

*Callas* should now have water quite freely. Sponge off the leaves from time to time. The young plants may need repotting.

*Camellias.*—Plants not in bloom to be syringed twice a week. Extremes in watering and temperature are liable to cause the buds to drop, and should be avoided.

*Carnations* to be aired freely. Light doses of liquid manure may be given once a week.

*Christmas rose* (hellebore), lifted in the fall, now to be placed in a cool window where it will bloom freely.

*Chrysanthemums* to be cut down after flowering, and removed to any place where there is little or no frost. If the temperature is too low for growth, light will not be needed. Water sparingly.

*Cobœa scandens* make a house plant of easy culture, if the greenfly is kept off. Give manure-water occasionally.

*Crotons* should have the leaves sponged off occasionally.

*Cinerarias* can not stand heat or frost. A moderate temperature, a light place, plenty of air and ample space and pot room—are what they require.

*Coleus.*—See directions for alternanthera.

*Clematis.*—Spread good manure over the roots; then lay down the plant, and give some protection for winter by evergreen boughs or similar material.

*Cyclamens* in bud or bloom should have plenty of water. Keep close to the glass.

*Cytisus* to be given a cool, rather light situation.

*Daphnes* to be managed like Camellias.

*Deutzia gracilis.*—Plants for early bloom to be brought to the light.

*Desmodium penduliflorum* on the lawn to be cut down close to the ground.

*Dutch Bulbs.*—Roman hyacinths, Duc Van Thol tulips, and other early kinds, potted early in October, should now be near bloom. Bring all the early batch to the light, and give water. Hyacinths like sun; tulips will get along with less light. Keep in a moderate temperature, and air freely. Liquid manure or soot-water applied as the flower stalks develop, will help the bloom. Hyacinths may yet be started in glasses.

*Evergreens* on the lawn are liable to be injured by heavy snowfalls. Be sure to examine them carefully after every snow-storm, and shake the snow off the branches. Plants in tubs will be benefited by a weekly showering.

*Ferns* require no shading overhead from now on. Apply water moderately. Remove decayed leaves; air a little daily.

*Fuchsias* to be given plenty of pot room, and light, rich soil. Never crowd the growing plants.

*General Management.*—During these dark days the grower's skill and ability will be put thoroughly to the test. Now is the time for taking extra pains with all plants, for much of the later success depends on the manner in which the plants pass through the ordeal of the dark days. Air should be given whenever the weather will permit. The temperature should always be lower during the night than in daytime. Water must be given sparingly in dark weather.

*Geraniums* in bloom need plenty of water at the roots.

*Gloxinias* for early blooming may be started about the end of the month.

*Heliotropes* desire a warm, moist atmosphere, and occasional doses of liquid manure.

*Insects* must be kept off by the free use of the thumb-nail, by washing and sponging off on house plants, or

by regular fumigating, and frequent syringing in the greenhouse. Mulching plants with tobacco stems, or spreading the latter among the plant pots, will also prove a great help.

*Ivy* and other suspended plants should have their leaves washed occasionally with a soft cloth and warm water.

*Lantanas* to be given a light place, and a temperature of about 55°. Guard against red spider.

*Lawn Management.*—If the soil is not quite rich already, top-dressings of fine, old manure may now be given. Don't put fresh, rank-smelling stuff all over the premises, an offense to the eye as well as to the nostrils, and a nuisance generally. If you have no old manure, use the lawn fertilizers, or any of the high-grade complete manures of fertilizer manufacturers, at the rate of 400 or 600 pounds per acre. Hardy flowers on the lawn, although they can endure the winter without protection, will do all the better next year if the roots are covered with hay, leaves or other litter. Walks that are to be used during the winter should be kept clear of snow. If they are muddy, it will be a great improvement and a great convenience if a line of plank is laid in the center of each walk. Leaves may now be gathered and secured for future use at any time.

*Lobelias*, for strong plants in spring, to be started now from seeds or cuttings.

*Lycopodium* now to be divided if fine plants are wanted for next spring.

*Mahernias* in bloom to be given a sunny situation from now on.

*Maurandia.*—Treat as advised for alyssum.

*Mignonette* to be given a sunny situation and an occasional dose of liquid manure. Keep near the light, and stir the surface soil from time to time.

*Orchids* require close attention. Those inclining to grow should be given a warm, moist situation. Those at rest to be given a rather cool atmosphere, but not less than 50°.

*Palms*, if suitable in size, do well in a light window. Keep well watered, and the foliage clean.

*Pelargonium.*—Encourage free growth, but avoid over-watering. Pinch back the leading shoots.

*Pittosporum* to be kept cool and rather dry.

*Primulas* to be watered carefully, and aired freely.

*Propagation.*—Cuttings of geraniums, fuchsias, verbenas, and other plants of which stock may be short, should now be made and struck as fast as good wood is available for cuttings.

*Requisites.*—Trellises, stakes, vases, hanging-baskets, etc., should be brought under cover, repaired and painted as needed. If soil for potting is yet needed, procure it at once before the ground freezes up solid. Also make hot-bed sash and frames, mats, trellises, rustic work, and the like.

*Rhododendrons* to be given a dressing of manure. Winter protection is easily given by setting evergreen boughs, butt-end down, around the plants, and tying at top with stout string.

*Roses* in bloom to be syringed frequently.

*Shrubbery.*—Apply well-decayed manure to the beds. Avoid strawy manure, as this attracts mice. In renovating old shrubberies, cut out all dead wood, and trim the plants according to their individual requirements.

*Stocks* to be cleared of decaying foliage. Guard against greenfly. Renew frequently. Plants sown this month will bloom by next April.

*Thunbergias* in bloom should be given a temperature of about 55°. Syringe freely for red spider.

*Tuberose bulbs* should be stored in a warm place, secure from frost and mice.

*Verbenas* may now be propagated as fast as good cuttings can be had, for use next spring.

*Violets.*—Remove the runners, and all dead leaves.

*Watering and Washing.*—Aim to water just enough, less in cloudy than in bright weather, and preferably in the forenoon only. House plants should be occasionally taken off the stands, and given a thorough washing or drenching on a drenching-board, or while standing in a bath-tub.

## II. GARDENING FOR TABLE AND MARKET.

*Asparagus* for early forcing may now be brought in, planted in boxes, and then placed in any warm situation.

*Cabbage plants* in cold-frames need free airing in mild weather to keep them dormant. In severe weather cover the frames with mats or shutters. When the plants are frozen, a snow covering will do no harm; otherwise it should be removed after every snow-storm. Treat cauliflower plants the same way.

*Celery* stored in trenches for late winter or spring use should be given additional protection by putting on more leaves, marsh hay or other litter.

*Cuttings* of gooseberries, currants, etc., planted in autumn, to have protection by covering with evergreen boughs or other litter.

*Dandelions* for forcing to be planted in boxes, and placed in a sunny situation.

*Drainage* is absolutely necessary for best results in orchards, small-fruit patches and gardens. Where defective, it should now be provided for. Tile drainage is usually by far the best of all methods.

*Fences* are needed around young orchards. Without them they are in constant danger from browsing farm animals carelessly or intentionally left at large. A barbed wire on top can often mend a rather shaky fence so that it will be quite serviceable.

*Fertilizers* of all kinds needed for next year's operations to be procured in good season, and full supply. In many places you have an opportunity to buy good compost or fresh stable manure at less than one dollar a load. At this rate it is cheaper than any so-called "commercial" fertilizer in the market. Make your bargain at once and stand ready to profit by the first good sleighing, or by the first spell of good roads to haul it. Spread at once in orchard and small-fruit patches; or compost it for garden use.

*Grapes* need pruning at once. Unfasten the vines

from the trellis and lay them flat upon the ground, held down with a piece of board or a stone.

*Grapery.*—In the early houses maintain an average temperature of 65° during the night, and 70° or 75° during the day. Tie as needed. Protect the border by a thick covering of leaves or coarse litter. Vines in late houses to be pruned and laid down.

*General Directions.*—Read horticultural books and papers, and gather all information possible to enable you to do your work better and with less expense hereafter. Make your plans for next season's operations. Decide what trees, plants, seeds and requisites you will want. Then correspond with dealers, get their prices, and place your orders. All this should be done early, and not left until nearly the time when you wish to use the articles. Nurserymen and seedsmen often run short of just the most desirable varieties. If your son takes an interest in gardening or fruit-growing, encourage him by getting good books on these subjects for him. A soil-tiller cannot make a more useful present to his son or hired man than a half dozen—more or less—good horticultural books.

*Mice and Rabbits.*—Young trees should be protected in some way against the teeth of rodents. On clean grounds, with all weedy growth banished from near the trees, and free from rubbish heaps, the danger is not great. It will then be sufficient to tramp down the newly fallen snow around the trees. If left loose, mice often approach under this congenial shelter, and girdle many trees before the owner becomes aware of it. Rabbits where they abound should be trapped or hunted out with ferrets. The bodies of young trees may also be encased in tarred paper, or wire screen, and may then be considered safe. A mound of soil around the base of each tree also affords protection.

*Fruit* stored in cellars should be frequently inspected. Remove at once all specimens showing signs of decay. Watch both fruit and market, and sell your surplus whenever in best condition, or when the demand is good.

*Onions* to be protected from severe freezing, from warmth, and from dampness. Sets planted in the fall to be given a light mulch of leaves or coarse litter.

*Parsley* to be treated like dandelion.

*Raspberries and Blackberries* of tender varieties to be pruned and laid down. Cover the tip ends slightly with soil.

*Requisites.*—Look up, repair and repaint the sashes and frames needed for spring. Repair and store tools. Make arrangements for new implements, seeds, sashes, frames, and all other fixings. Gather leaves to mix with the manure for hot-beds.

*Potatoes* stored in pits out-doors may need additional covering as the winter advances.

*Root Crops*, if stored in pits, can get along with slightly less covering than potatoes. If you desire to have easy access to the pit during winter, a foot or more of dry litter, placed upon the south end of pit, will give it.

*Spinach* planted in open ground should be given a light mulch.

*Strawberry Forcing.*—It is time to begin. Place the plants at first in a temperature of 45° and gradually increase this until 60° has been reached. Increase the water supply gradually at the same time. Plants for late forcing should be carefully protected from severe freezing.

*Strawberry beds* to be given a light mulch just as soon as the ground freezes hard enough to hold team and wagon. We prefer marsh hay to anything else for mulching; but straw that is free from weed seeds, or fresh coarse manure, will answer. The plants suffer more from frequent thawing and freezing in the sunshine than in any other way. Put the mulch on so as to cover from sunshine, yet give some air, and allow the surface water to run off freely, before it has time to freeze around the plant. Evergreen boughs also make good covering material.

*Storing Cabbages.*—This crop can stand considerable freezing without injury; and we must be careful not to cover it too soon, or too warm. A good way is to lay a board or line of boards upon the ground in some well-drained spot, and set the cabbages up in a long row, heads downward and close together. Then put a board or line of boards against them from each side, and cover with marsh hay and soil, leaving the roots sticking out. The boards can also be left out. For immediate use in early winter, a few heads may be cleared from the coarse outside leaves, each head wrapped with several thicknesses of ordinary newspaper, and hung up in the cellar by the roots. We also are in the habit of storing a quantity on the barn floor in a heap. Here they will keep well until cold weather sets in in December, when a little covering of straw, hay, or cornstalks will protect them sufficiently from all harm until long into the winter. This method has the advantage of giving easy access to the heads at all times.

*Figs* in pots or tubs for early forcing may now be placed in the warmest part of the early grapery.

*Lettuce Forcing.*—Water sparingly during damp, dull weather. Air freely when weather is suitable. Decaying leaves should be frequently removed. The greenfly can be kept in check by occasional moderate fumigation, or by mulching with tobacco stems; and the lettuce-mildew by the fumes of boiling sulphur, as told in replies to queries.

*Root-grafting* may now be done in bad weather. Prof. Budd says that crown grafts make the best trees. Pack the stalks operated upon in sand in the cellar.

*Rubbish* should not be tolerated on the premises. Brush heaps, weed patches, and the like, are favorite haunts of rabbits, mice and other pests, and they also harbor insects. Get all such waste material together as soon as possible, and set fire to it.

*Scions* can be cut at any time now. Do not omit to label them properly. Pack in sand in the cellar.


# QUESTIONS ASKED AND ANSWERED.

☞ *It is the privilege of subscribers to ask any questions about gardening in any department. All will be answered by specialists.*

☞ *Correspondents are urged to anticipate the season. To ask on April 15 or 20 what peas had best be sown, could bring no answer before June, when the answer would be unseasonable. Questions received before the 5th of any month will probably be answered in next issue. Please do not expect answers by mail, except to very important questions. Inquiries appearing without name, belong to the name next following.*

☞ *Replies to inquiries are requested from our readers. In answering, give the number of question and your address—not for publication, unless desired. Write only on one side of the paper.*

## QUERIES.

2659. **Cranberry Growing.** Could we make it pay to plant cranberries on a piece of swamp land, now drained and in shape for flooding?—F. M., *Western New York.*

2660. **The Ventilated Barrel.** Some time ago a new ventilated barrel was mentioned and advertised. Is this coming into use, and giving satisfaction?—M. W. Y., *Detroit, Mich.*

2661. **Turnip Culture.** If turnips can be grown with profit for market, please give cultural directions. W. W. A., *Lancaster Co., Pa.*

2662. **Commercial Flower-Growing.** My experience is limited to window-gardening. Am moving to a prosperous town in Georgia, where there is no greenhouse. I think I would like the business. Would it pay me to put up a greenhouse, hire a good man, and engage in the raising and selling of flowers for profit?—MRS. K. H., *Ills.*

2663. **Onion-Growing on a Large Scale.** We have bought a tract of land, wish to put a good man on it, and try from three to five acres of onions, also to plant a few acres to fruit. Is this undertaking too much?—E. W. CH., *Toledo, O.*

2664. **Best Hedge Plant.** What plant will make here the most perfect hedge for ornament and protection. Would like some estimate of cost per rod and time required to attain growth for protection?—E. W. C., *Toledo, O.*

2665. **Manure-Water for House Plants.** How should it be made? How much water? How much manure? How often to be used, and how much to each tree or plant?

2666. **Strong Growth in Roses.** How can the growth of strong shoots from the roots be encouraged?

2667. **Manure for Annuals.** What is best to use for annual-flowering plants?—MRS. G. A. W., *Cal.*

2668. **Haverland Strawberry.** Would this do as well as the Crescent for setting potted plants in September. What variety would you use as a fertilizer to go with it?—E. B., *Ohio.*

2669. **Pears for Louisiana.** Please describe the following: Daimio, Mikado, Mme. Van Siebold, Hawaii, Garber and Smith's Hybrid. Are they adapted for the gulf coast in latitudes 31 and 32?—J. J. B., *La.*

2670. **Planting a Home Lot.** Village lot 4 rods wide, 10 rods deep. What things suitable for Rhode Island can we plant for ornament in front, and fruits and vegetables in the rear?

2671. **Peanuts in Southern Rhode Island.** Can they be grown in this part of the country of as good quality as those grown in Virginia?

2672. **Paradise Stock.** Of whom can it be procured?—N. L. C. M., *R. I.*

2673. **Prickly Lettuce.** Might not the fiber of this vigorous foreigner (*Lactuca scariola*) be utilized by suitable machinery and processes for the manufacture of ropes, or twine, or coarse wrapping-paper?—R. H., *Philadelphia, Pa.*

2674. **Fuchsia Fulgens.** A friend recommends this warmly for greenhouse culture. Please tell me all about it.—AMATEUR, *R. I.*

2675. **Rose Mildew.** I have seen hyposulphite of soda recommended. What proportions are to be used?—A. B., *Santa Fe, N. Mex.*

2676. **Root-Lice on Apple Trees.** What remedy can you recommend?—D. L. T., *Kansas.*

2677. **Peaches on Plums.** Can peaches be successfully top-grafted on any variety of plums?—C. G. A., *Maine.*

2678. **Preventive for Grape Mildew.** Which is more effective for mildew, the Bordeaux mixture or the ammoniacal copper carbonate solution? Our grape crop was a total failure this year, on account of mildew.—F. J., *Racine, Wis.*

2679. **Variegated Funkia.** What is the name of plant of which I forward leaf? Flowers pendulous and lavender-colored. For what purpose is it best suited?—E. W. C., *Chenango Co., N. Y.*

2680. **Sale for Water Cresses.** Our streams are full of the plant. Where can we sell it, and how is it prepared?—E. J. K., *Troy, Pa.*

2681. **Growing Onions from Sets.** Please give full directions. All my attempts heretofore have resulted in complete failure, the sets invariably running to seed.—M. H., *New Jersey.*

2682. **Planting Tree Seeds.** When is the best time to plant seeds of forest and orchard trees?

2683. **Seedling Peach Orchard.** What success can we expect from planting pits of choice varieties directly where we want the trees to fruit, and let them grow without budding?—M. W. F., *Southern Illinois.*

2684. **Winter Protection for Raspberries and Grape Vines.** Is it absolutely necessary in this section to protect our raspberry bushes and grape vines during winter by laying down?—F. M., *Livingston Co., N. Y.*

2685. **Opium Production.** From which species or variety of the poppy is opium produced, and in what manner? Is this industry likely to get a foothold in the United States?—WM. G. A., *Vermont.*

2686. **Origin of Greenhouse Structures.** When were the first greenhouses built?—E. W., *New Albany, Ind.*

2687. **Pruning the Marechal Niel Rose.** When and how should it be done?—C. F. D., *Norfolk, Va.*

2688. **Tufted Vetch.** I enclose part of plant found among our sweet peas. It grew very luxuriantly. Is it a bad weed?—Q. M. L., *New York.*

## REPLIES.

2654. Large Potato Yields. It is not a difficult task to grow 150 pounds of potatoes from one pound of seed, as plants can be propagated from sprouts and cuttings to an almost unlimited extent. Begin propagation early under glass. Cut the seed to single eye; plant shallow in sand in a moderate hot-bed or greenhouse, rather close together to save space; carefully break off the sprouts as soon as well rooted, and plant in small pots, thus giving the seed-pieces a chance to produce the largest possible number of stalks. Keep the pots in a moderately warm, sunny place, and as the stalks grow, cut them freely for slips to be rooted in the regular way in sand, and then potted, and if need be, again worked for propagation in the same manner. There is hardly a limit to the multiplication of plants by this method. The cuttings root as easily as geranium slips. At the proper time in spring, knock the plants out of the pots, and set them in good potato soil—of course after that has been carefully and skillfully prepared and enriched, in about the same fashion as you would tomatoes, with rows three feet apart, and the plants in the rows about two feet apart. Under otherwise good management, you can raise 150 pounds of potatoes from one pound of seed, and even much more, quite easily.—G. R.

2658. Fruit Jellies for Market. The attempt has repeatedly been made by individual growers to utilize surplus fruits for the manufacture of jellies in a commercial way, but thus far it has invariably resulted in failure to make the undertaking a success in a financial sense. The manufacturers of grocery-store jellies have learned to produce from apple skins and cores, and other cheap materials and coal-tar flavors, an article which closely resembles the genuine fruit jellies of the various kinds, and is found acceptable to popular taste and demand, and this at so low a cost that the fruit-grower's genuine fruit jellies have no chance of successful competition. At present the whole business of commercial jelly manufacture seems to be antagonistic to the interests of the fruit-grower, simply because it is in a large measure based upon adulteration, and upon the use of artificial rather than natural raw materials. Later on we will try and give an expose of the methods of jelly manufacturers, which usually are held as trade secrets.—G R.

2656. Hot-Bed Making. In the first place you should select a well protected situation for the bed, with a full exposure to the sun. Have a building, a tall board fence, or a close screen of tall evergreens, on the north side, and if possible on the west side also; or make the bed against a steep bank facing south or southeast. Our most satisfactory hot-bed last year was made in the barnyard, directly south of the stables. It was an ordinary frame placed upon an eighteen-inch layer of fresh horse manure, and was surrounded by manure on all sides. This was used for starting tomato, pepper and egg plants, and gave entire satisfaction. Ordinary hot-bed sash, three feet wide and six feet long, can now be bought reasonably cheap. Fit the frame to the sash, whatever size you may happen to have or be able to get, making the back part about four inches higher than the front. Have everything tight and snug. Usually an excavation is made to receive the layer of heating manure, so that not more than six inches of the frame in front, and ten inches at the back, are above the surface of the ground. The aim should be to secure a moderate but lasting heat in the manure. For this purpose select fresh manure from grain-fed, and if possible, hard-worked horses, leaving in it all the urine-soaked litter, but removing dry straw, all the better if forest leaves are used as bedding, or mixed with the manure afterwards. Throw all into a heap and let it come to a heat. Fork over repeatedly, at intervals of a few days, and you will have a most excellent material for the production of a steady moderate heat under the soil of the hot-bed. Pack it tight, especially in the center of the bed (where the manure is always most liable to settle and form a depression). Under average circumstances a layer of eighteen inches in thickness is all that is required; but in a very cold climate, or if the bed is started in mid-winter, or with manure not any too good, a thicker layer may be safer. Often twelve inches of manure will answer. Next adjust the frame, if this is not permanent, and put on the sashes. The manure will soon come to a lively heat. Wait until this subsides and you are ready for work. For starting plants of all kinds, we prefer the so-called "flats," of which one can get almost unlimited quantities at nominal cost by arranging with the nearest grocers to save the boxes in which they receive canned goods. These are of convenient size, and of just the right depth, four or five inches. They are filled with good loam; and after the seed is sown in them, and labels adjusted, they are placed upon the manure layer which has previously been covered with an inch of sand, or sifted coal-ashes. Now a word about the loam to be used. We should get this before the ground freezes up solid. If we put it off until the time we want to start the hot-bed, we may have a deal of trouble to find what we want. More than one gardener is compelled to let the best time for starting his plants pass over, and to be a week or two later than his competitor or neighbor, simply because everything is frozen up, and he cannot get the soil needed for his hot-beds. Our way is to gather up the loam from the previous season's hot-beds and cold-frames, a load or two of old decayed sods, or of black mucky soil from the bottom lands, some sand and fine old manure, and throw these together on the floor of a warm empty shed near the horse stable. Here it is kept surrounded by fermenting horse manure, litter, and dry forest leaves, and kept from freezing until spring. It is then in condition for use any time when wanted.

2660. The Ventilated Barrel. We saw a sample of this barrel exhibited at a recent meeting of the Ontario Fruit Growers' Association. L. Woolverton, secretary of the society, whom we asked in regard to the merits or demerits of the barrel, writes us as follows:

"I have used the new ventilated barrel this season for the first time, shipping Red Astrachan apples and Bartlett pears in it to Montreal, Toronto and Ottawa markets. It is a capital invention. Summer fruits, such as early apples and Bartlett pears, when packed close ripen too rapidly, and arrive at their destination soft and wasted; but when packed in the ventilated barrel, they

arrive in better condition. Frequently we have bored holes through the sides and ends of ordinary barrels for ventilating, but with far less success; for in the ventilated barrel there is a narrow space between each two staves for their whole length. This point of ventilation is, of course, the great one in favor of the barrel. Another is economy, as it can be sold at 25 cents each retail, and cheaper still by the car-load. It can also be shipped in knock-down shape to the grower, who, with a little apparatus, can easily set it up in his own barn, as wanted. I have a car-load of material, enough for fifteen hundred barrels, sent me by freight from the manufacturers, together with the apparatus for setting up the barrels, which is very simple. A man can easily put up eight or ten in an hour, and the material will cost but little more than 20 cents each. I have used about 150 of them and, so far as I know, they are received in the markets with as much favor as the ordinary barrel. It is sometimes objected that the inside hoop might cut the fruit, but as this is smoothly beveled, I do not see how it can. This barrel is well adapted to shipping vegetables, such as cabbages, cauliflowers, melons, etc., to distant markets. It can be made any size, and a very large one might be made to put up the more bulky vegetables, making it convenient for market gardeners. I am not so sure of its value for export purposes, for in this I have no experience. I intend trying this in a small way. I should suppose, however, that the winter apples would be better packed in close packages so that exterior influences, such as light, heat, frost, wet, might have as little effect on them as possible."

2663. **Onion-Growing on a Large Scale.** Evidently the inquirer has little or no experience in onion-growing, else he would not wish to begin with from three to five acres. There is much less risk in planting that area to fruits, especially if you have a good man, with some experience in fruit growing, to take charge of it. But no one but an expert in onion-growing should undertake to plant even three acres to onions. Probably you have the advantage of a near market; but prices are so uncertain, and the expenses involved in growing an onion crop so great, that it takes good management or phenomenally good luck to make it profitable. It is quite an easy thing to put $300 or more into an acre of onions; but a much harder one to get that amount out of it. Our advice is, to go slow. Plant on as small a scale as you please at first. Learn the most approved methods of growing the crop, especially at the least cost, and how to dispose of it to best advantage. Then go ahead.—G. R.

2668. **Haverland Strawberry.** We find the Haverland very satisfactory in many ways, and believe it will suit your purposes at least as well as the Crescent, and probably better. If you can succeed in raising a good crop of Crescents from potted plants set in the previous September, you should certainly do no worse with the Haverland. We have never had a good crop on fall-set plants, no matter how treated. There are a good many varieties suitable as a pollen-bearing companion to the Haverland. No need of planting a poor variety, such as for instance the James Vick, merely because it begins to bloom early and continues late, bearing pollen abundantly. We use the Long John and the Wilson, both reliable varieties here that will give us plenty of good fruit; but the Wilson alone, or any other perfect-flowering sort that blooms reasonably early, will answer the purpose.—G. R.

2671. **Peanuts in Southern Rhode Island.** The peanut is not reliable much north of Virginia. Yet while in New Jersey we have grown the Spanish variety on a small scale, and of better quality even than the ordinary Virginia peanut. This Spanish is a newer sort, much earlier than the other, of closer, compacter growth, and smaller, but remarkably well-filled pods. If you have a warm piece of sandy or calcareous loam, you might try this variety with the expectation that in a favorable season you can rise a crop that will at least satisfy the home grower.—G. R.

2682. **Planting Tree Seeds.** The sooner tree seeds are sown after they are ripe, the better. All seeds germinate most promptly before the shell, or outside covering, has had time to harden. Seeds that do not ripen before winter, or for other reasons cannot be planted at once, should be stored in such a way that they will have no chance to become thoroughly dry. We see no good reason why seeds of the peach, cherry, plum, hazelnut, walnut, chestnut, oak, hickory, pecan, magnolia, osage orange, yellow locust, etc., should not be planted in the autumn, unless, as in the case of nuts in some localities, there may be danger from the depredations of squirrels and other rodents. If the seeds named have once had a chance to dry out, they will be very slow to germinate. If compelled to postpone planting until spring, mix these seeds with dry sand, and store in a cool room. If kept too damp and warm, they are liable to sprout prematurely, or to be spoiled by rotting. Acorns may be spread on the ground outdoors, and covered with a thin layer of sand. Seeds that ripen early in summer, such as silver maple, poplar, elm, etc., should be planted at once, so that the young trees will be large enough to winter well. Mulberry and similar small seeds germinate very readily when gathered, dried, stored in bags, and planted in spring. Light, chaffy seeds, like those of the sugar maple, may be handled in the same manner. Sow all these in well-prepared, loamy soil, covering very lightly, and otherwise treat as you would fine garden seeds.—G. R.

2684. **Winter Protection for Raspberries and Grape Vines.** Some localities in the vicinity of Livingston County, N. Y., have a rather trying climate, and some of the tenderer sorts of raspberries and grapes are liable to suffer unless winter protection is given. Our hardier fruits, however, seldom suffer by the winters of western New York. A field of Kittatinny blackberries in an exposed situation of that section, suffered injury only once or twice in ten years. On the whole we do not think that winter protection here is *absolutely* indispensable, so long as we refrain from planting tender things. If we *must* have Brinckle's orange raspberry, for instance, and other fruits of that tender nature, we have no choice but to bend the canes down to the ground, and cover at least the tip end lightly with soil. This covering, however, is more for keeping the cane down to the ground, than for the protection it affords. But while it is true that most of our grape vines will stand our winters unprotected, we still believe that it will pay us

to unloosen them from the trellis (at the same time pruning them) before winter sets in, and lay them down flat upon the ground. This will be all the protection required even for the less hardy sorts; but even the hardy varieties, thus treated, will come out in all the better shape for fruiting next year.—G. R.

2683. Seedling Peach Orchard. The chances of getting good fruit trom seedling peaches, when the trees were grown from properly selected seed, are quite good. Judge Miller, of Missouri, for instance, is quite in favor of starting orchards in just the way proposed. "From the results on my grounds," he says in the *Horticultural Art Journal*, "I think it advisable for every one to plant the seeds of good peaches, with a fair prospect of obtaining valuable fruit. Even if some of them do not prove worth keeping, it takes but one year to convert them into a better kind by budding on the limbs. I have budded one limb near two inches in diameter, and the second year after gathered a peck of peaches from it. In budding such I take triplet buds on strong shoots, as they do better under the thick bark of such large branches. This year I am keeping the pits of quite a number of choice varieties to plant for an orchard without budding. That these trees will be a little hardier than budded trees I know from experience. If the pit is planted where the tree is to remain, its chances for a long life are increased.

2685. Opium Production. There is no prospect whatever that the production of opium can be made profitable, or is likely to become an established industry in the United States, although the plant that furnishes the opium grows readily in almost all parts of the country, and in some sections has really become a weed. This plant is the ordinary annual poppy (*Papaver somniferum*). To obtain the opium, a slight incision is made into the ripening seed-vessel, and the exuding juice, when partially dried, and then of a gummy consistency, is gathered by hand. The hand labor required in this operation, at prices paid for it in the United States, excludes all possibility of making this business profitable.

2688. Tufted Vetch. The plant, a part of which was received, is one of the vetches (viccia), probably *V. cracca*, the tufted or cow vetch, which is a perennial of European origin. We have no personal experience with it, but we do not believe that it is one of the really bad weeds.—G. R.

2636. Hardy Apples. E. Reynolds, of Wisconsin, names the following as the best apples for that country, where hardiness is so important a consideration: Duchess, Walbridge, Wealthy, Wolf River and Whitney's No. 20. These will supply farmers with apples during ten months of the year, which is, of course, the chief purpose for which apples should be grown in cold sections.

2661. Turnip Culture. Turnips, especially the early flat varieties, can be produced with little expense; and when there is a demand, at even 25 cents a bushel a good profit can be made from them. The rutabagas or swedes require a longer time for growth, and the land in better shape generally, but they are in greater demand in the markets, and usually bring a higher price than the flat turnips—often 50 cents a bushel and more. The advantage of turnips is that they can be grown as a second crop, and on land that might otherwise lie idle for the rest of the season. You can plant either the flat varieties or the swedes after early potatoes, or early peas, or early onions, etc., have been harvested, or on the old strawberry bed after the fruiting season. Plow the land thoroughly, apply a few hundred pounds of bone dust or other phosphate to the acre, harrow thoroughly, and get the surface in perfect shape for sowing seed. If to be sown by hand, mark off light furrows, with an ordinary hand marker, about twenty inches apart, and drop seed very thinly. With a little experience, this is not a difficult task. For operations beyond the limits of a small garden, however, we prefer the "Planet Jr." garden drill; sowing less than a pound of seed to the acre. Cultivate as you would any other closely planted garden crop, thinning the plants to six or eight inches in the rows, and keeping the ground well stirred with the wheel hoe. Harvest before severe freezing. We often grow a fair crop of flat turnips by scattering seed over the cornfield immediately after the last working. The plants grow along under the protection of the standing corn, and form bulbs after the corn is cut. Even if the bulbs do not grow to salable size, this secondary crop will come handy. It can also be pastured by sheep, hogs and cattle late in the fall.

2670. Planting a Home Lot. We would recommend devoting the front or pleasure end of your quarter-acre home plat to grass and ornamental trees, shrubs, vines and plants. The one for grass should be reduced to a smooth grade before seeding, in order that a lawn-mower may be brought into use for keeping the surface close and velvety. As has been shown by the numerous plans given in the "Taste and Tact" series appearing in these columns, we favor, almost without exception, arranging the plants, trees, shrubs, etc., toward the margin of the place, in cultivated borders. In these the tallest growers should be towards the rear of the cultivated parts, keeping a strip along next to the grass for low growing flowers. A shade tree here and there on the grass, away from the border, would be a suitable feature. As for ornamental vines, there are a number of ways of accommodating them. They may be planted along the veranda at the posts, or by tall stakes in the border, one to each stake; or an arbor or well-house may be built to be covered with vines, or a screen or a fence be arranged to have hardy vines to run over them, or rocks, stumps, posts and outbuildings be prettily festooned with them. As for kinds of trees and shrubs suitable for your latitude, it would be best for you to make a study of what kinds now succeed thereabouts, and confine yourself largely to such. The fruit and vegetable plat had best be arranged with the larger kinds of trees in rows along the north end, grade down to the bush fruits and plants, strawberries last. By this means, no kind will be shaded by others. The same rule (everything in rows to run the same way) should be carried out in the fruit and vegetable garden as well. Much information in a small compass, on distances apart for planting and other matters in this line, is given in the small illustrated treatise, "How to Plant a Place," issued by The Rural Publishing Company, price 10 cents post-paid.

2666. Strong Growth in Roses. In order to induce

strong growth in your plants from the root up, see that soil is well-enriched and well-drained, consisting, if possible, in large part of decayed turf. Then prune judiciously.

2620. Raising Lily Bulbs. These are increased by planting the scales in boxes or in open ground in the spring. Any rich mellow soil is suitable. Water freely when necessary. Those having facilities for forcing will find the process greatly hastened.—Mrs. E. L. P., *Pa.*

2622. Winter Treatment of Oleanders. Oleanders do best if kept in the dark a portion of the year, and this is the best time. They should be cut back after flowering, but at no other time, as the next crop of blossoms is produced on growth of the preceding year. Plants should not be allowed to grow ill-shaped. Two or three months is the length of time given my oleanders for rest.—Mrs. E. L. P., *Pa.*

2674. Fuchsia fulgens. This, introduced from Mexico about 1830, is a deciduous greenhouse plant with tuberous roots, and is of shrubby habit, attaining a height of from two to four feet. The flowers are produced in greatest profusion during the summer months. The tube and sepals are of a bright rose, and the corolla of a brilliant carmine. It has been so long neglected that most flower lovers are not aware of its existence, and probably few of our readers have ever heard of a fuchsia with leaves from four to six inches in length, flowers from four to five inches long, and tuberous roots like a dahlia. Even small plants bloom freely, but the finest results are obtained from large well-rooted specimens. To grow this fuchsia to perfection, it should be given a compost composed of two-thirds turfy loam, one-third well-rotted stable manure, with two pounds of bone dust added to each bushel of compost. Mix well, use the compost rough, and pot firmly. In potting, use porous or soft-baked pots, of proportionate size, and see that they are well drained. This fuchsia does best when grown rather fast, and in a temperature of from fifty to sixty degrees, but it cannot endure full exposure to hot sunshine, dry soil, or dry air. Having tuberous roots, it can be easily kept over winter by storing the pots under the bench in the greenhouse, or in a cellar where they will not freeze, until the first of March. Then repot in rather small pots, and place in a warm and moist situation until growth commences, after which a temperature of from 50 to 60 degrees will answer very well. When first potted they should be thoroughly watered, and afterwards sparingly until growth begins. When the pots become well filled with roots, the plants should be shifted into larger pots, and this repotting should be continued until they reach the desired size, when liquid manure should be given once or twice a week during the plant's season of growth. Syringe gently every other evening while in a state of growth. Do not attempt to train this fuchsia into any desired form, but allow it to follow its natural manner of growth. It should be cut into shape when started into growth in March, and from the beginning the plants need ample space for proper development. The plants can be grown from cuttings, and, if liberally treated, nice specimens will soon be obtained. This fuchsia can be grown and flowered in the open air with very fair results, by planting them out in a deep, well-enriched border about the first of May. The plants must be given a partially shaded situation, and never be permitted to become absolutely dry at the roots. They should also be syringed or sprinkled gently at least twice a week. Take up the plants on the approach of cold weather, place in as small pots as possible, and store as advised for another season's use.—Chas. E. Parnell.

2678. Preventive for Grape Mildew. The copper remedies are used only for the downy mildew (*Peronospora viticola*) which appears in small frost-like patches on the under surface of the leaves, finally causing yellowish discolorations on the upper surface and rot of the fruit. The *powdery* mildew, appearing early in the season as delicate dust-like patches or covering on the leaves, mostly on the upper surface, and on shoots and fruit, is usually fought with dry sulphur, dusted on the vines two or three times during the season. For the downy mildew, and for similar plant diseases generally, the Bordeaux mixture is undoubtedly the most effective, as it adheres with great tenacity to the leaves and other parts of the plants, and is not easily washed off even by heavy rains. On the other hand, it is much more expensive, and more inconvenient to prepare and to apply, than the ammoniacal carbonate of copper solution, besides being liable to discolor the fruit when late applications are made ; so that, on the whole, we believe it would be no loss to the fruit-grower if the use of Bordeaux mixture were to be abandoned entirely. With timely applications, repeated frequently during the early part of the season, the grape-grower will find the ammoniacal solution of carbonate of copper fully sufficient for the control of the downy mildew and black rot, and this with far less expense, and far greater convenience than by bothering with the whitewashy Bordeaux mixture.—G. R.

2679. Variegated Funkia. The leaf forwarded belongs to a variegated funkia, but which particular species we are unable to say. These hardy herbaceous plants are from Japan, remarkable for their fine foliage and the delicious fragrance of the flowers of some of the species. They make showy and highly attractive plants for the border.

2680. Sale for Water-Cresses. There is demand for this product in all larger towns, and where there is not, it would not be difficult to create a demand by exposing for sale neat little baskets filled with the pungent herb. It is esteemed as one of our salad materials (like ordinary upland cress), and for garnishing, like parsley.

2681. Growing Onions from Sets. If your aim is to raise dry bulbs, you can do so in various ways ; (1) by sowing seed early in spring directly into the open ground ; (2) by sowing seed in hot-bed in February, and transplanting to open ground just as soon as soil and season will permit ; (3) by planting potato onions, or other so-called "multipliers." Success in the production of dry bulbs from sets can only be expected when the sets planted are very small. The ordinary sets are too large for this purpose, and are used almost exclusively for the production of the green, so-called "bunch" onions.—G. R.

# CURRENT GARDEN LORE

GATHERED WORLD-WIDE.

**Why Fruit Prices are Low.**—In spite of all the fruit grown in this country, hundreds of good-sized country villages are without any regular supply in their season. Every neighborhood has some fruit, but village grocers lack the energy to make arrangements for a regular supply when needed. The reason alleged is, that the demand for fruit is not sufficient to warrant them a regular profit on their purchases. Rural consumers will usually buy only when prices are low.—*Colman's Rural World.*

**Artificial Bitter Almonds** are being manufactured in considerable quantities. They are composed chiefly of grape sugar, with an extremely small quantity of nitrobenzole, which gives them the flavor of oil of bitter almonds. They are pressed in a mould, which causes their external appearance to resemble natural almonds so well that when a number of the false seeds are mixed with the true ones, the deception is exceedingly difficult to detect by mere inspection. Owing to the low price of the false seeds, the adulteration is, of course, highly profitable.—*Lancet.*

**Spring Pruning of Grape Vines.**—P. C. Reynolds, in the *New York Tribune*, says that two grape vines pruned in the spring, after the buds had pushed an inch or more, bore more grapes than the same varieties pruned the previous fall. The last year's canes were cut back to two or three buds, leaving as the leading buds those that had made the strongest growth. The canes bled very little, much less than when pruned in March. They made as rank a growth of wood as usual.

**Paying for Trees with a Crop.**—A Missouri man has recently arranged to have an orchard of 1,000 trees set on rather queer terms. A nursery firm will furnish the trees and take their choice of any one crop within 15 years after the planting of the orchard, the owner of the land to plant and care for the trees.—*Michigan Farmer.*

**Silver Firs.**—There is a striking picturesqueness and grandeur about a group of silver firs, now known as Abies proper, which the landscape architect gladly appropriates for producing conspicuous effects in his plans. The main distinguishing characteristic in this group of conifers is clusters of cones near the top which always stand erect, and fall to pieces at maturity. The whole family are addicted to forming two or more leading shoots when young, and if not attended to promptly, the trees will be irreparably injured. The following suggestive list embraces the most reliable species for the Middle States. Everything considered, I head the list with the beautiful Nordmann's fir from the Crimea. The abundance of rich, deep, glossy-green foliage, covering a faultless shape, rapidity of growth, entire hardiness, and general adaptability to most soils, are certainly valuable qualities. The Cephalonian silver fir in time forms a superb specimen. The tint of its foliage is much lighter than the preceding, and makes a beautiful contrast when grouped together. It also grows rapidly after becoming established. Our own species from the Rocky Mountains of Colorado, *Abies concolor*, is now becoming too well known to need eulogizing here. It is, however, so beautiful, hardy and thoroughly reliable, that no mistake will be made in including it in the choicest collection of conifers. There is a wide diversity in tints, the silvery whiteness of some being exceptionably charming. The Noble silver fir (*Abies nobilis*), after a careful test of more than thirty years, I confidently recommend for general planting. Its growth is somewhat slow, but it is always beautiful from the start. It is of a peculiar bluish green tint, dense and compact, with an erect and spire-like form. The Siberian fir (*Abies Siberica*, formerly known as *A. pichta*) is a compact, medium-sized evergreen, with regular conical outline and deep green somber-like foliage. It comes from Siberia. It grows slowly, and is especially adapted for small places. Notwithstanding the common European silver fir is unreliable in this country, two or three distinct forms of it are worthy of cultivation. Of these, var. pyramidalis is remarkably stiff, upright and dense in structure, with a deep glossy color, and retains its well-marked characters during the coldest winters. A dwarf variety is notable for exceedingly compact, rounded shape and beautiful bright green foliage. If slightly sheltered, it holds its color all winter long. The drooping form, known as pendula, makes a very picturesque object when well grown and carefully trained; neglected and in unsuitable soil, it is the very reverse. The silver firs all prefer a deep loamy soil, and never attain their perfect development in stiff clay.—*Josiah Hoopes, in New York Tribune*

**A new Dwarf Pea** of the most promising character has been received from Messrs. Charles Sharp & Co., of Seaford. It appeared in a patch of Veitch's Perfection.

The variety attains a height of two feet, is stout and free-branching in growth, and immensely productive—the haulm being literally covered with the pods. These are about three and a half inches in length, slightly curved, and tightly packed with large peas, the average number in each pod being eight. Both pods and peas are of a dark green hue, and the latter are of high quality and good appearance when upon the table. It should prove of much value both in market and private gardens.— *Gardeners' Magazine.*

In a Paris Park.

**In a Paris Park.**—One example which the people of Paris set to the rest of the world is the habit of enjoying everything together. Rich or poor, you see the entire family in company. On Sundays and holidays they go into the parks, the woods, the streets, out upon the gay boulevards or the quiet country places, in the myriad small steamboats that glide like water-flies up and down the Seine, to the forests of Fontainebleu or the gardens of the Luxembourg or Tuileries, but all together. The big brothers and sisters, the little brothers and sisters, the father and mother, the baby, even the old, old people, smile and chat and sit in the grass, and eat their homely lunch in such happy and hearty fashion that it is a joy to watch them. Perhaps of all the reasons which could be gathered together from this to Christmas, there is none stronger than this happy, healthy union of family interests and amusements, to prove that Paris may well be called the Paradise of Children.—*Mary Elizabeth Blake, in Youth's Companion.*

**Suspended Blooms.**—I made a trellis with a bracket on each post and two wires on top, and seven feet high, and planted the vines against the trellis; and when they got to the top they drooped over from the wires strung across the brackets, and you ought to see them! *Cobœa scandens*, maurandias, *Clematis Jackmanni*, *C. coccinea*, *Solanum Jasminoides*, etc., have more than double the amount of bloom that other vines of the same sorts, and trained straight up as far as they will climb, have. It is about on the same principle as taking a wistaria vine and training it to a pole, allowing the side branches to hang down again; these suspending branches will bloom far more fully than those kept straight up.—*American Florist.*

**Chrysanthemums in September.**—It is pretty well known amongst a section of cultivators that the flowering of late varieties as early as September is simply the result of a certain mode of treatment. Beginners, especially amateurs, who take for granted that the chrysanthemum will flower early in September under conditions similar to those accorded to the November flowering sorts, are liable to be disappointed should they undertake their culture from that point of view. The cutting-back system is adopted early in summer, and the first bud that appears is encouraged to develop by the disbudding or pinching out of the side shoots. Of course, there are kinds that would turn out very poor, even if they responded to this treatment at all; but by a judicious selection of the most suitable, a considerable number might be had in bloom by the second week in September. A fact of more importance is, that a large importation of new sorts, chiefly Japanese, from the continent, as well as English-raised seedlings, now finding their way into the hands of leading growers, indicate what may be done in the near future, as early as next season if chrysanthemum societies feel so inclined; namely, to hold exhibitions about the middle or end of September, so as to encourage the cultivation of early-flowering Japanese varieties of the various types. It is too early as yet to predict to what perfection and size

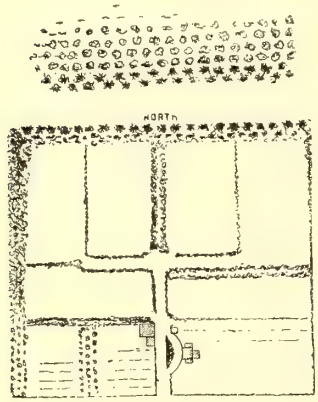
In a Paris Park.

the early-flowering kinds may be brought; but one thing is certain, that large numbers of the flower-loving public consider that the blooms as they have been already shown, are generally large enough for ordinary decorative purposes. Prizes offered at exhibitions would soon show what these new Japanese varieties were capable of doing in the hands of able cultivators. A new

set of growers would also be induced to swell the competitive lists, if they were taught by exhibitions, conferences or otherwise, that collections of Japanese chrysanthemums might be flowered successfully without the aid of glass structures. There are some amateurs who would be highly pleased to learn that they could render the front of their villas and windows gay by easily-grown chrysanthemums during the months of September and October.—*Gardening World.*

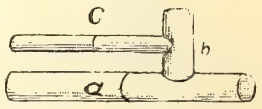
**Remedy for Wire-Worms.**—Add three or four pounds of unslaked lime to every bushel of soil. This will make the wire-worms so sick that they will give the seedling carnations a wide berth in the future; besides, the health and color of the plants will be so much improved that we will think they belong to a new race of pinks. The best way to use the lime is to spread the soil in a flat heap ten or twelve inches thick, then place the desired amount of lime in lumps on the top; when the latter has become slaked and pulverized, the whole should be turned over two or three times and thoroughly mixed. It is then ready for use.—*American Florist.*

**Timber Belts for Protection.**—Timber belts traversing portions of farms exposed to the sweep of storms become beneficial in two ways—first, by the growth of the timber they afford; and secondly, by the protection of the crops. Where the land is valuable and the timber is less in demand, the belts may be only a rod or two in breadth. Evergreens, always clothed with verdure, will arrest the wind in winter as efficiently when only a rod in width as a screen of deciduous trees four or five rods wide. As a general rule, the belts should be wide enough to permit one-half to be cut away at a time, by which treatment the land will always be protected by the half that remains. As soon as the first half is removed, the sprouts or suckers will spring up and start a new screen, when the other half is taken off. Each half may be planted in different years; or it may all be planted at once, and one half allowed to grow longer than the other. Or, one-half may be of evergreen trees, as white pine or Norway spruce, and the other half of such deciduous trees as maple, black birch or chestnut. This is better than mixing them, as they would interfere with each other's growth. A portion of such a screen is represented at the top of our illustration. Under it is shown a level farm of moderate size, on which the prevailing winds are from the south and from the northwest. The screens are planted so as to protect the fields. The orchard, at the southwest corner, is represented by the hexagonal planting of the trees, placed so as to afford shelter to the garden. By selecting thrifty growers, such as Norway spruce and Scotch larch, a growth 25 feet high will be reached in about 10 years if they are properly cultivated, and 40 feet and more in 25 years, at which age it will be profitable to cut them down for wood or timber. In regions subject to cyclones, timber screens of considerable breadth will prove of great importance. A dense growth of large trees where formidable cyclones have occurred has often greatly checked their course and protected buildings in their track.—*Country Gentleman.*



TIMBER FOR PROTECTION.

**Tile Draining.**—A good main or outlet is essential. I use either five or six-inch, according to the amount of water to be carried. Lay the main with the natural flow, if practicable, and a foot deeper than the laterals, so as to make the connection on top of the main, giving a free flow. Make the connections perfect, so there will be no earth working through. The accompanying cut shows the arrangement: *a* is the main, *b* the connecting arm, and *c* the lateral. A flat stone will close the top of the arm all right. I place laterals about two feet deep, more or less, according to soil, etc., and place them three to seven rods apart, and, if possible, across the natural flow, thereby cutting off surface-water more quickly.—*Ohio Farmer.*



OUTLET FOR TILE DRAIN.

**Public Squares in Large Cities.**—The people must have breathing spaces, and nothing but a public square or park can fully meet the requirement. These may not be necessary in small cities or towns, but no intelligent person would consider them other than desirable even in our simple rural villages. But to possess a public square is not all that a city is under obligations to do in this direction. It must be made an attractive, and, in certain instances, an instructive place. If a city is fortunate enough to possess a sufficient space in one body, and that at some convenient point, it can be made something more than a pleasant place to while away the hours of a Sunday afternoon or a holiday, or to hold a Sunday-school or mechanics' picnic. It should furnish to the home-maker material for study in landscape effects and the ornamenting of home grounds. It should be an ever-enlarging school for the amateur ornamental plant culturist. It should afford means for the general study of botany and horticulture by those great classes of city residents—the day-laborers, clerks, shop-keepers and school-children. To this end, trees, shrubs and herbs should be labeled with both their scientific and common names, and the plants of each order grouped together as nearly as would be permissible in conforming with the principles of landscape art. This does not mean that all the plantings should be so arranged, but so much of them as would furnish ample material for the systematic study of plants in their relations to each other. Not only would these breathing places then be places of recreation, but also places of creation—creating

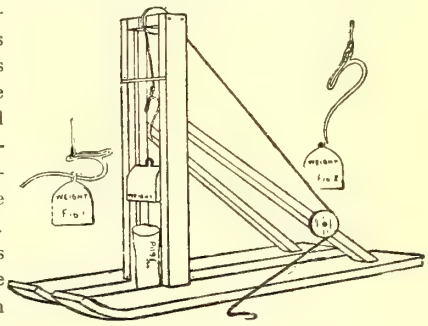
a knowledge of plant life, plant classification, plant culture, and the principles and practices governing their use in landscape work.—*Fruits and Flowers.*

**Borer Wash.**—J. S. Woodward protests against the mounding of wood-ashes, whether leached or unleached, around peach or other trees, as a preventive of attacks by the borer, but recommends a suds made of dirty soap and sweet skim-milk, into which has been mixed enough common water-lime to make a thick whitewash, and using a stiff brush or an old broom for applying it to the trunks of the trees, from the ground or a little below it, to a height of a foot or a little more. No insect can penetrate this, and the coat is usually good for a year.

**Scene in a Garden in India.**—The engraving shows a view in a garden of one of the great native princes of India—the Gaekwar of Baroda. The absence of the characteristic luxuriant growth of a tropical garden, the palms, cycads, bamboos and other noble foliage plants, is due to the fact that the garden is only of quite recent formation, laid out by Mr. Goldring, of Kew, who writes: "The hill and the water are quite of artificial formation. Under the hill is a rocky grotto, with miniature waterfalls, ferns, palms, etc., growing in a natural way, and this place is cool even on the hottest days. The artificial rocks are made to resemble red sandstone, a tone that harmonizes well with greenery. Rocks are constructed in groups round the lake, in order to show off to the best advantage the many beautiful climbing plants, which are one of the chief features in Baroda gardens. The bridge is partially festooned with the lovely *Ipomœa vitifolia*, with vine-like leaves, bronze-purple when young, and pure canary-yellow flowers the size of those of *I. Horsfalliæ*. The bushes in the foreground are *Ipomœa carnea*, a shrubby plant with cordate leaves and large rose pink flowers, and only climbs when it has the support of a tree or bush."—*Gardeners' Chronicle.*

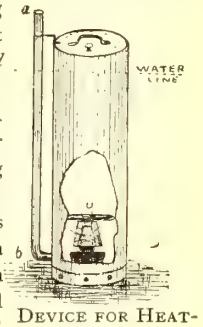
SCENE IN A GARDEN IN INDIA.

**A Post-Driver.**—The device here illustrated can be made entirely at home, excepting the weight and hook. A block of iron weighing 40 or 50 pounds is required. This you can have cast. Its essential features are a ring to hoist it by, and grooves in the sides in which to slide the tongues attached to the uprights. To have the dump self-acting, the hook must be made of the precise pattern shown. Any blacksmith can reproduce it. The hook is pulled down to the weight resting on top of the post, and slipped into its ring. As the weight is hoisted, the hook-ring will be seen to remain at the left-hand end of the slot, as shown. When it has reached the height at which it is desired to drop the weight the long tongue of the hook trips against a rod or slat extended across the frame for the purpose, and is pulled down. This act lets the weight slide to the left, and the hook-ring to the right in the slot (see right of picture). The weight is thus freed and falls heavily on the post. Thirteen-foot planks are firmly braced on the front ends of stone-boat planks, held together by irons and bolts eight feet from the ground so they will not interfere with posts being driven. When being drawn from one field or farm to another, the boat planks are connected in front and behind by hooks made of heavy wire. This prevents their spreading. Two pulleys are made of double thicknesses of inch board. The grain of these boards is placed at right angles the one to the other, to prevent splitting. One is hung at the top of the upright, to receive the rope direct from the weight hook, and the other at the rear end of the boat planks on a brace. A horse draws the machine along astride the fence-row, and the posts are held in place by the uprights while being driven. Any boy can raise the weight by pulling on the rope.—*Home and Farm.*



A POST-DRIVER.

**Device for Heating Water.**—A cheap way to warm a tank of water is shown in illustration. Assuming that the water-tank is 36 inches deep, get a tin pail as deep and 10 inches in diameter, made with a cover, in which an inch hole is put. Have an inch tube, *b*, two inches long, soldered on near the bottom and punched through, and to this tube attach an inch hose, *a*, or pipe, making a water-tight joint at *b*.



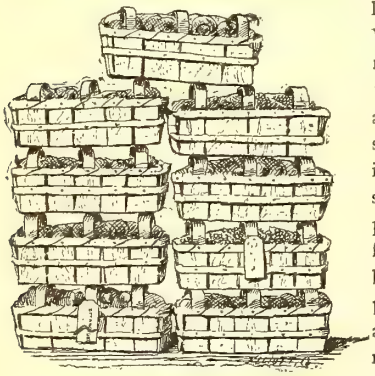

DEVICE FOR HEATING WATER.

Sink this tin pail in the tank, and by hooks or otherwise fasten it to the bottom so that it remains fixed. Have the hose, *a*, fastened to the side, so as to be a little above the top of the pail. Fill the tank with water to the dotted line, and arrange so that it cannot fill more and submerge the pail. Now put a 50-cent oil stove, *U*, into

PLANT OF KNIPHOFIA (TRITONIA) NORTHIÆ.

the pail, with oil enough to run it one hour, and put it (lighted) into the bottom of the pail. Put on the pail cover, and the water in the tank will soon be warm enough. It is best to have a cover for the tank that can be shut down and hold in the heat that escapes from the pail. The tube, *a*, supplies the air to keep the fire going. The fire, of course, goes out when the oil fails, and there can be no possible danger. A pint of oil, costing less than one cent, will warm a tank of water. The cost of this apparatus, all told, is: Pail, $1; stove, 50 cts.; hose, 20 cts.; the rest—gumption.—*Country Gentleman.*

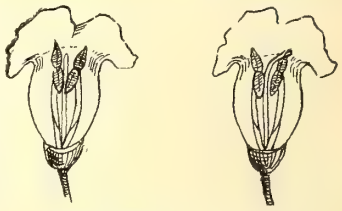
**The Tribow Fruit-Basket,** first illustrated and described in THE AMERICAN GARDEN, is becoming popular with growers at Winona. Tribow means simply "three handles," and in this consists its peculiarity. The handles seem to be a complete protection for the fruit. The baskets may be piled upon one another as high as may be necessary, without injury to the fruit; and further, the handles will so separate layers of baskets from one another as to afford a free circulation of air.—*Canadian Horticulturist.*



THE TRIBOW FRUIT-BASKET.

**Kniphofia Northiæ.**—The accompanying illustration of the entire plant, as now growing in the open air at Belgrove, gives a good idea of the fine appearance of its handsome foliage. It is, however, only valuable, from a horticultural point of view, for its foliage; its flowers are unfortunately of no beauty whatever, having, when produced under glass as in the succulent-house at Kew, when more or less starved in a pot, a pale green tube with white tips; and when bloomed in the open air from a fully nourished plant, flowers of a dull orange color with lighter tips.—*Gardeners' Chronicle.*

**Natural Devices for Cross-Fertilization.**—Examine a bunch of flowers from the Indian-bean tree (*Catalpa bignonioides*). The flower is somewhat two-lipped, with five irregular lobes to the corolla, and a groove in the under lip leading into the tube. The stamens are two, and open—as it would seem—inwardly, but they really open outwards (*extrorse*), because the pistil is in back of them. In a young flower the style is pressed against the upper lip of the corolla by the two stamens, which, as has already been stated, shed their pollen from the pistil, and so cannot possibly fertilize it. See left-hand figure. Later, when the pollen has been shed, the stamens relax, and the style forces its way through them and bends downwardly into the tube of the corolla, at the same time ripening the two stigmatic surfaces, which spread apart. See right-hand figure. It can now be seen that an insect on entering a flower in the first stage would get its back dusted with pollen, and on coming in contact with the ripe and declining style of a riper flower, it would invariably fertilize the same. There are a few points which might prove that this is not the original state of the flower, and that formerly it was regular, and fertilized itself. The three staminoidea at the base of the corolla account for the three missing stamens, and the reason they have atrophied is, there was no use for them. The torsion in the filaments of the two remaining stamens, which can plainly be seen, has taken place from within outwards, comprising a turn of 180 degrees. Without these changes we would have a flower with five stamens opening toward the pistil, making it possible to fertilize itself. So we see that the necessity for cross-fertilization among plants is so great that they will develop for themselves devices which almost seem to be the result of a reasoning process.—*Popular Science News.*



DEVELOPMENT IN CATALPA FLOWERS.

**E. P. Roe Strawberry.**—A new strawberry is being introduced from New York state bearing the honored name of E. P. Roe. Mr. Roe was extremely diffident about giving his name to any of his seedlings or introductions, and we may be excused for wishing that any fruit named for him, expecially the strawberry, his favorite, shall be, at least, not 2d rate.—*Orchard and Garden.*