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LOMBARD PLUM.

PAINTED FOR THE CANADIAN HORTICULTURIST.

THE
Canadian Horticulturist.

VOL. VII.]

AUGUST, 1884.

[No. 8.]

THE LOMBARD PLUM.

This old variety continues to be one of our most valuable sorts, especially for those who grow plums for market. It is said to have been raised from seed by a Judge Platt, of Whitesboro, New York, from whom a Mr. Lombard, of Springfield, Massachusetts, received it, and brought it to the attention of fruit-growers in that State. Out of compliment to him for bringing it into notice, the Massachusetts Horticultural Society named it the Lombard, by which name it is now generally known, although it was, even before that time, cultivated by fruit-raisers on the Hudson River, and called there Bleecker's Scarlet.

The trees of this variety are very healthy, vigorous and hardy in those regions adapted to the cultivation of this class of plums, and extremely productive. The fruit may be said to be of medium size and of a delicate violet red colour, covered with a thin bloom. The flesh is of a deep yellow, not rich, but juicy, and of a pleasant flavour. It ripens here in the beginning of September. Large quantities have been raised at Owen Sound and shipped from thence to the city markets.

The cultivation of the plum for market by our fruit-growers has been attended with serious difficulties, which have discouraged most persons from making the attempt. The curculio or plum weevil, a little insect with which most of our readers are already too familiar, has been so destructive to the fruit, which it punctures and then deposits its eggs in these punctures so that the young larvæ may feed upon the growing plums, that the crops have been ruined by them wherever they are numerous. Fortunately the vicinity of Owen Sound has hitherto been exempt from this troublesome insect, so that plum-growers there have not had to contend with this enemy. In other places they have been obliged to resort to some method of getting rid of these insects. The most effectual is that of spreading a sheet under the tree, giving it a sudden jar, which causes the insects to fold their legs close to their bodies and drop to the ground, and then gathering them from the sheet upon which they have fallen and destroying them. In addition to this, the plums that fall prematurely are gathered and thrown into the fire, or scalded, so as

to kill the larvæ that are in them before they escape from the plums and burrow in the ground. The cost of the labour involved in thus catching and killing the curculio is but a small matter in comparison with the value of a crop of plums.

The Black-Knot has been another source of discouragement. These excrescences are believed to be caused by the attacks of a fungus. In some years they have been very prevalent, and so overspread the tree as ultimately to destroy it altogether. The only remedy that has yet been tried is that of cutting off the affected branches and promptly burning them, so as to destroy the spores of the fungus and prevent them from spreading. Sometimes the excrescences become so numerous upon the tree that nothing remains but to dig it up altogether and burn all the affected parts.

Yet with all these evils to contend with, the watchful and painstaking cultivator has found a plum orchard a remunerative industry, perhaps, in some measure, because careless cultivators abandon the enterprise.

OBITUARY.

The venerable President of the American Pomological Society will receive the heartfelt sympathy of every pomologist in this and other lands, in the very sore bereavement that has befallen him. His son, Marshall P. Wilder, jun., a young man possessing noble qualities of mind and heart, united to fine executive abilities, died at his father's residence, Dorchester, Massachusetts, on the seventh of June last.

While this blow falls with crushing weight upon his family and near friends, the loss is one in which all lovers of horticulture will participate, for in him were centred the expectations of all who hope for a continuation of the horticultural experiments which have made the orchards and grounds of the parental homestead famous throughout the world.

THE GREAT WORLD'S EXPOSITION AT NEW ORLEANS.

It is already announced that there will be a cheap excursion from Ontario to this great exhibition some time in the early part of next winter, with privilege of remaining as long as the exhibition lasts. Those wishing to go can obtain full information from Mr. H. J. Hill, Toronto.

QUESTION DRAWER.

ROSE SLUG.

There is some slug destroys my rose-bushes yearly by destroying the leaves, which spoils the bloom for the season. Please send me a remedy.

Which is the best way of making a grape trellis so as to lay it down in winter and not injure the vines?

JOHN LAING.

REPLY.

The rose-slug can be kept in complete subjection by the application of hellebore in the same manner as it is applied to currant bushes to kill the currant saw-fly. An ounce of powdered white hellebore mixed in a pailful of water and sprinkled freely on the rose-leaves, will soon rid the rose-bushes of this pest.

In the May number of the *Canadian Horticulturist* for this year, on page 107, Mr. Allan McIntosh gives his plan of making a grape trellis so that the vines can be laid down at the approach of

winter. We should be pleased to receive any information on this point from others who have had experience in the laying down of grape vines and protecting them in winter.

CAN VINEGAR BE MADE FROM RHUBARB?

DEAR SIR,—Do you know of any process by which the juice of the rhubarb can be converted into vinegar? By replying through the *Horticulturist* or otherwise, you will much oblige.

Yours very truly,

A. H. WISMER.

Box 55, Port Elgin, Ont.

DISEASED PEAR TREES.

DEAR SIR,—I am somewhat alarmed on account of so many of my pear trees turning yellow; some appear dying and I think will die. Some trees have partly yellow leaves and partly green; some limbs quite dead, and on three or four large trees that have borne for years the leaves and pears are about dead, and the whole trunk of two trees is dead from top to bottom. I could pull the limbs off quite easy; they broke short off which revealed the rotten trunk. This is rather alarming if at all general. If I am alone the sufferer, not so bad; better for one to suffer than many. But what is the cause? My soil is made out of decayed cedars; if they decay a sort of bog turf would burn in dry weather; have seen it burn under ground for weeks; not since well cultivated. I find every one or more high cedars that damages the garden every time they are got out, and it is desirable to get them out, as trees seem to die where the roots touch them after first turning yellow. Though these have borne fruit of all descriptions, including apricots and nectarines; the latter but twice to ripen—they rot on the trees. If you can throw any

light on this apparent blight by controversy, or of your own knowledge, it would do much good.

Yours truly,

C. JARVIS.

BLACK ANTS.

TO THE EDITOR OF THE CANADIAN HORTICULTURIST.

SIR,—We are badly pestered by the black ants about the house this summer. Can you kindly advise me how to get rid of them. I sometimes see them running over the trunks and limbs of the apple trees, but I am not certain that they do any harm. I once noticed a large black ant in the very heart of an apple blossom, but I cannot say it was doing more harm than a bee would have done. In Italy they encourage the presence of the large black ants in their orchards; they are said to destroy the eggs and larvæ of insects deposited in the crevices of the bark. The ant hills are great eye-sores in gardens or lawns, but they may be got rid of by covering the top of the hill with hardwood ashes.

I remain, Sir, sincerely yours,

CHARLES JULYAN.

Sarawak, Co. Grey, 17th June, 1884.

STRAWBERRY SUN-SCALD.

We have received the following inquiries concerning this affliction:—

DEAR SIR,—I am studying the fungoid diseases of the strawberry, and would be much obliged to you for answering the following questions:

1st. Does the "rust," "blight," or so-called "sun-scald" cause any serious damage to the strawberry crop of your section? If so, what is the estimated per cent. of loss for the years 1882 and 1883?

2nd. Do you recognize more than one form of "rust"? If so, describe briefly the appearance, season of attack and damage done by each.

3rd. Do you ever find the roots and crowns, especially in old fields, covered by a white mould?

4th. What effect do differences of soil and cultivation have on the "rust"? Are mulched or unmulched fields most liable to injury?

5th. Which varieties are most and which least affected?

6th. Is this disease increasing?

7th. What remedies have you tried, if any, and with what result?

Yours very truly,

F. S. EARLE.

Anna, Ills., April, 1884.

If any of our readers are so unfortunate as to have sufficient experience of this trouble to be able to answer any of these inquiries, we shall take a pleasure in publishing them in the *Canadian Horticulturist*.

CORRESPONDENCE.

FRUIT GROWING IN MANITOBA.

SIR,—I see that grave doubts are entertained as to our Great North-West ever becoming a fruit producing country, and that in consequence many are very reluctant to leave the fine fruit growing regions of Ontario for a land on which they may never have the pleasure of raising the very hardiest of apples. I must confess the picture has a sorrowful appearance. I beg to state that I have had some experience in that very interesting country and submit a few facts for your consideration: Two or three years ago, *en route* for Battleford, by the way of Winnipeg, Lake Winnipeg, and the great Saskatchewan River, I had to stay a few days in Winnipeg waiting for the steamer, and while there I wandered about the city in different directions; one of my rambles was up East Ballandine street, in which is the residence of Mr. Ballandine, and in his garden are a few apple trees, perhaps about six feet in height, and say two inches and a half through the stem, with just enough live wood in

them to let you see that they are alive, their appearance would indicate that most of the wood that was made in the summer was killed in the winter, as the trees were full of dry limbs and presented a wretched condition, but when you take into consideration the low black soil in which they were planted, you would almost wonder if they would thrive even in Ontario.

Having been some time employed as Farm Instructor on two different Indian reserves, in the vicinity of Battleford, and lastly as Farm Instructor to the Industrial School of that place, I have had the opportunity of seeing young seedling apple trees growing in a very thriving condition, two years old, and I think in one case three years old, I did not see a dead branch on any of them, and they appeared as vigorous as any I have seen in Ontario. The lands in that part of the country are high and rolling, and although farther north and west than Winnipeg, the winters are not as cold, and then not having much fall rains the wood gets thoroughly ripe before the winter sets in, so that taking all things into consideration I should say that country is about on a par with the early days of Ontario, when the early settlers brought their apple seeds from the States and had fine fruit, as it was many a long year before a grafted tree was ever seen in the country.

Last year we had a slight frost on the 21st of August, which was very uncommon, but unprecedented frost prevailed all over Ontario at the same time. The year before we had no frost until the morning of the 8th of September, and very slight at that, and then again on the 29th a little heavier, but not the slightest summer frost in June, July and August.

Small fruits, such as the wild black currant and the wild red currant, and raspberries and strawberries are of large

size. Mr. Scott, of Battleford, said he weighed his fruit, currants, which amounted to sixty pounds. I often saw them when growing, together with rhubarb and most all kinds of garden vegetables, with a great variety of flowers. He asked me what I thought of his garden, or did I expect to see such in the North-West. I told him I was most agreeably surprised and wished some more of the Ontario people could see it.

Wishing the *Horticulturist* every success, as it richly deserves,

I am, dear Sir, your well-wisher,

TIMOTHY CHAMBERS.

Presque Isle, July, 1884.

BLACK BIRDS.

Aye, black-birds, Mr. Editor! Don't talk to me about sparrows, their depredations are but as a drop in the bucket compared with these villains. Their conscience, if they have any, is as black as their backs. I had half an acre of these best of all peas, Bliss' American Wonder; it would have done your eyes good to see, and your teeth water to taste them. They were all sold on the ground, but I was sold too. "Many a slip between the cup and the lip." In about three days these vagabonds left me nothing but the shells. They came not by the score, like the pair wee sparrows, but by the thousand. Ask that worthy President of ours, who knows the name of everything living, what their proper name is; but they don't deserve a name unless its one worse than I can invent. Ask our good friend Goldie, if with all his liking to the feathered tribe; and it would do you good to see his beautiful collection; I had that pleasure, but I saw no black-birds there; long may he be spared from them; ask him if he has a word to say in their favour. Why don't you shoot them, perhaps you say. All the

powder and shot in our township would'n't do that. I bought me a bran new gun and fired away at them till I was tired; they only chirped at me in disdain. Ask the President again, will Paris Green, Hellebore, London purple, or any of the life extinguishers he knows of exterminate them, and how shall we apply them. I fancy his reply—just what our nurses used to tell us; put ice on their tails. Now some of your readers will say I have given you just such a bird story, as our friend (I forget his name), did at our last meeting, on pruning; but I feel that mine is not exaggerated. I think he will admit his was a little. Just such another chapter I could give you on weeds. The weather for the last few weeks has been far more favourable to their growth than to our tempers. Be at our President again, ask him if he knows the name of one in a hundred that yields to our hoe; I'll be bound he does; I don't. Of course berries of all kinds share the same fate as our peas. Verily the lines have not fallen to us in pleasant places.

JOHN CROIL.

Aultsville, July, 1884.

DUCHESS D'ANGOULEME.

I am sure I feel exceedingly gratified and honoured by such a full insertion of my letter to you describing the state of my orchard, both new and old.

Regarding the question you kindly ask me concerning my Duchess d'Angouleme pear trees, I may say that my impression is that the trees are growing so fast that they cannot form blossom buds; this I think is borne out by the appearance of the trees at the commencement of spring, when they seemed as though they were thickly studded with spines and thorns, which as spring advanced developed into leaf buds. The drought of June has seriously

affected some of my pears and plums, but my apples are flourishing well. One Flemish Beauty pear tree close to the Duchess d'Angouleme tree is laden with fruit. My apple crop will be very light, but cherries and plums, for the number of bearing trees, will be very plentiful. Potatoes are doing well here and have escaped the bug fairly well so far. The root crops, carrots and onions in particular, are very poor. What corn I have seen planted here looks very flourishing. Thanking you for bringing our section of the country into prominence by the insertion of my letter, as it is at present not much known from being so recently opened up, believe me,

I remain yours sincerely,

E. A. CARVER.

Colpo's Bay.

REPORT FROM THE COLD NORTH.

MR. EDITOR,—Another year having completed its course, I herewith hand in my report of last winter's inroads on my already too limited list of "Hardy Fruit Trees." The past season was quite as severe as any we are likely to have, and proved to be a real test-winter for our locality.

Notwithstanding the intensity of the cold, the mercury freezing in the bulb of the thermometer, the Wealthy, Duchess of Oldenburg, Yellow Transparent, Tetofsky, Scott's Winter, Peach of Montreal, and Alexander, with me all came through without the loss of a single bud. I hardly know what to say of Magog Red Streak, as it was somewhat affected, but still it is fruiting and I have good hopes that it may yet come out all right.

I fear, however, that we shall be obliged to strike the McIntosh Red from the list that will endure a temperature of 40° below zero, as last season proved them to be among the list of almost-hardy-enough varieties. It is

only fair to state that none of these in my orchard are dead, but with one single exception all are more or less injured. Perhaps we should give it another trial before we discard it altogether. The following, however, went completely, viz., Mann, Stump, Snow, Hastings and Haas. I might mention that at the meeting of our Local Association, held last week, very favourable reports were given in of the Pewaukee and Walbridge.

PLUMS

In these the inroads have been numerous indeed.

First of all that "tree of trees," the one upon which we in the north had been induced to count so much, viz., the Moore's Arctic, have every one died to the ground. My Green Gages have also all gone to accompany them, as well as my most promising Lombards, and my healthy and vigorous Coe's Golden Drop.

Prince Englebert tried hard to weather the storms, but it eventually failed and had to be rooted out. My White, as well as my Red Magnum-bonums, sharing the same fate.

Of all my stock one alone is left unto me, and that one, though not in by any means too promising a condition, is Glass' Seedling.

Now, if any of your readers have a blue, white or yellow plum that will withstand a temperature of 40° below zero, I for one would be pleased to have them state the fact in the *Horticulturist* that I may go and purchase one likewise.

The Russian Mulberries, I fear, are also too tender, as the two I have and the one owned by another gentleman here have all been killed back more or less every year for three years. I now well nigh despair of ever tasting any of this fruit of my own growing, although they may finally get acclimatized and do better than they have hitherto done.

Late frosts have done considerable damage to all my fruit trees, and what at one time promised to be a good fruit year has been sadly injured.

Yours, etc.,

A. A. WRIGHT.

Renfrew, Ont.

IRRIGATION.

A paper on the subject of irrigation was read by Col. Henry W. Wilson, before the Massachusetts Horticultural Society, which was received with marked interest and attention. The writer concluded his very exhaustive essay with the following summary:—

It is very evident from common experience that injurious droughts are increasing in frequency, and the careful consideration of the subject will develop the following simple but significant truths:

That whatever the cause of this deficiency of moisture, the simplest and cheapest remedy at the hands of the agriculturist is irrigation. That whenever a supply of water can be obtained, the cost of pumping it will not exceed three cents per thousand gallons for an amount of ten thousand gallons per day pumped to a height of fifty feet above the surface of the water, which cost will include the necessary repairs and depreciation and interest on the cost of the necessary fixtures and reservoir.

That should a brook or spring not be available, there are but few places where an adequate supply may not be obtained by sinking wells.

That the cost and arrangement of the work will vary so much with the different locations and circumstances that no schedule of cost can be given, but the cases will be rare where \$750 to \$1,000, discreetly expended, will not furnish ample water for the irrigation of fifteen acres of tillage land.

That the preservation of a single

crop, in a year of unusual drought, would reimburse the whole expense.

That the positive assurance of immunity from the effects of drought should induce all cultivators to secure at once the means of irrigating their land if possible.

That besides the security afforded in the case of an excessive drought, it will be found that water can be used very profitably in almost any season with a great variety of crops. And lastly—

The great wonder is that our farmers and horticulturists have disregarded the matter for so long a time.

EXPERIMENTS WITH CELERY.

N. V. AGRICULTURAL EXPERIMENT STATION.

One of the most popular, perhaps, with the exception of lettuce, the most popular of salad plants, is celery. It is not many years ago when celery-growing was one of the mysteries of gardening, so far as current opinion went, and the carefully-grown plantings were transferred to deep trenches at the bottom of which much manure had been spaded, while a laborious process of earthing up was successively pursued. Market gardeners, however, who are usually the first to introduce new processes of growing, on account of the competition they have to meet, found that the celery grown upon the surface and earthed up once for all at the latter part of the season, furnished profitable results, and this latter method seems now mainly the one pursued for commercial purposes. In the private garden, however, the trenching is in many cases continued, and it, therefore, seemed to us desirable to know the comparative merits of these two methods, for if surface planting is equal in its product to the trench planting, it is far to be preferred on account of the less labor involved.

Our list of varieties included twenty named samples: 100 seeds of each were planted in boxes, April 11th and 12th, and placed in a cold frame, where they were covered during severe weather. On July 5th thirty of these plants were set in a trench, one foot deep, well manured at the bottom with thoroughly-rotted horse-manure, and thirty plants were planted adjacent upon the level without special manuring.

The first data noted was that the varieties of celery required from twenty-six to twenty-eight days to vegetate their seeds, and 100 seeds produced upon the average fifty-seven plants, the variation between varieties being 16 per cent. of vegetation for Seymour's Solid Red, and 81 per cent. for Giant White Solid. Averaging our results obtained in seventeen samples in which the varieties from the two rows are separately noted, we find that, omitting fractions, plants grown under level culture averaged 177 pounds per hundred plants, while those under trench culture averaged 178 pounds per hundred plants. The length of the bleached stems was rather greater and the suckers were more numerous upon the plants grown in the trenches, but on the other hand, the bases of the stems were more often split and deformed than occurred in the plants grown upon the level. It appears, therefore, from this trial that the trench culture yielded no advantage for the increased labor involved.

E. LEWIS STURTEVANT, *Director.*

THE YOUNG NATURALIST, devoted to natural history and the interests of collectors, is published monthly at Galesburgh, Illinois, at fifty cents a year. We believe it is the only publication of the kind and will be appreciated by collectors in natural history.

STEVENS' RARERIPE PEACH.

Mr. S. Willard, of Geneva, N. Y., states that this valuable peach was called to his attention by a letter written by the venerable Chas. Downing, in which he spoke of it in the very highest terms as a profitable market variety, saying that "the peach growers a few miles north of here received the most money last season (1881) from Stevens' Late Rareripe. Mr. Allen Rhodes sold of this last kind one basket for \$8, two baskets at \$7 50 each, eleven baskets at \$7 each. Each basket contained fourteen quarts. This Stevens' Rareripe is a new name to me, but Mr. Rhodes says he has grown it ten years."

The tree is a very vigorous grower, comes into bearing the second season after transplanting and yields immense crops. It has proved its ability to resist severe cold and fruit freely "off years" when most other varieties yield no fruit.

The fruit in appearance somewhat resembles an enlarged and remarkably high colored Old Mixon Free, far surpassing in beauty any painted picture. In flavor as well as in appearance it is superb. It begins to ripen with the last of the Late Crawfords, and continues from three to four weeks. Free-stone, white fleshed, juicy and high flavored.

L. I. Hasbrouck, of Ulster county, N. Y., says: "My neighbor, Mr. Allen Rhodes, has some trees of the Stevens' Rareripe Peach. In 1881 they sold as high as \$8 a basket in West Washington Market, New York. The baskets were small. They are the finest peaches I ever saw and will sell at good paying prices even if there should be a glut in the market."

James DeGraff, of Ulster county, says: "I am growing the Stevens' Rareripe and think more of it than any other peach. I sold some at \$6 a

basket when other peaches were selling at \$3 a basket."

Allen Rhodes, of Ulster county, says: "I have about fifty varieties of peaches. Stevens' Rareripe I have grown for eleven years. It resembles Old Mixon Free nearer than any other peach, a little darker blush. The true report of my success with ninety-five trees is this. 143 baskets containing fourteen quarts each, were sold by G. Furman & Co., West Washington Market, for \$721. The tree is a very vigorous grower, bearing at two years old, ripens with the last of Late Crawford and continues some weeks."

DESTRUCTION BY LATE FROSTS.

Late frost is a constant menace to the cultivator. He has transplanted his tender plants from the hot-beds; his peach trees have their buds just ready to open; his grape-vines are pushing their tender shoots, and in one hour the prospects of a season may be ruined. While late frosts do not bring destruction every year, they come so frequently that it would seem to be worth-while to take all possible precautions to prevent injury by them. When the night is cloudy frost is not feared. The curtain of clouds prevents the heat passing off into space. In a small garden it is not difficult to protect the tomatoes and other tender plants. Newspapers are always at hand, and are quite as effective as blankets. The farmer will say that it is impossible to protect his plants by the acre. We are not so sure of that. In some of the French vineyards vines are protected by the acre, but they are planted and the trellises are built with a view to this. If the means are properly considered and the appliances kept in readiness, it would not be impossible to protect melons and tomatoes by the acre. For the orchard and vineyard smoke is the most available

protection. It has long been used with success in the vineyards of Germany and should be tested in this country. When a frost is apprehended let materials be provided, and a watch set, whose duty should be to call sufficient help to promptly start the smoke. A ready method of raising a smoke is to throw damp straw upon a fire. Probably experiments will show that tar, petroleum, or some other such material will afford a more efficient method of making a smoke than straw.—DR. THURBER, in *American Agriculturist*.

CATALPA SPECIOSA.

It is the intention of the Directors of the Fruit Growers' Association of Ontario, to give to any of its members an opportunity to plant a small tree of this hardy variety of the Catalpa who may wish to give it a trial, by placing it among the articles to be sent out in the spring of 1885. We, therefore, commend to their attention the following article from the *Prairie Farmer*.

Much has already been said relative to the Catalpa Speciosa, but as it is no longer an experimental tree for forest planting, its merits can not be too well known. Its valuable lasting qualities are not only being recognized by our farmers for fence posts, but many of our railroad corporations have been convinced of its great value as a railroad tie, and are planting it largely for that purpose.

The fact that most of the information we have was gathered and disseminated by the late E. E. Barney, an extensive railroad car builder of Dayton, Ohio, assisted by Robert Douglass, John C. Teas, and the late lamented Dr. John A. Warder are strong proofs of its great value.

Much of the information gathered

by these able men has already been published, but as forest tree planting is becoming almost as much of an object as stock raising these facts can not be too often presented. In one of Mr. Barney's publications we learn that Gen. Wm. Henry Harrison knew the valuable qualities of the catalpa, and forcibly called attention to its importance and urged its extensive planting for timber in an able address at an agricultural fair near Cincinnati, more than fifty years ago. Speaking of its lasting qualities he told of a catalpa foot log over a small stream in the Wabash country that had been in use more than one hundred years; he chopped into it and found it to be sound. He spoke also of the old French fort built at Vincennes, Ind., in 1702, being largely of catalpa, and in 1808 (more than one hundred years afterward) while he was Governor of the Northwestern Territory, and located at the same place (Vincennes) he found much of the timber in this fort sound enough to use for other purposes. Perhaps it was this circumstance that first called his attention to its lasting qualities, for in fencing the ground about his mansion at that time (1803) he used principally catalpa posts.

This fact was called to the attention of D. C. Burson, of Topeka, Kansas, by Dr. Jno. A. Warder a few months before his death, and as Mr. Burson wished to gather all the positive proof he could of its lasting qualities, he went to Vincennes in the summer of 1883, and called upon Mr. Pidgeon, who has been living in the Harrison mansion for some twenty-five years, and also upon Mr. E. Tink, who owns a portion of the Harrison estate. This gentleman showed him some of these old Harrison posts, and very kindly gave him permission to remove one from the fence; also a portion of a picket post which was used by the General as a stockade

against the Indians before his treaty with Tecumseh.

Another additional value in connection with the lasting qualities of this tree is that it is a fast grower, making on an average three-quarters to one inch in diameter per year; consequently it will take but five or six years to make a good fence post, or but eight or ten years to make a good railroad tie.

Besides what is said of its value as a timber tree in the foregoing article, it may also be added that it is a very handsome ornamental tree, bearing large panicles of showy flowers, succeeded by long, pendant seed pods that give to the tree a singular and at the same time attractive appearance.

EARLY PEAS.

N. Y. AGRICULTURAL EXPERIMENT STATION.

The obtaining of an early crop of peas is not only a satisfaction, but often a profit, and it is hence desirable to examine into various methods whereby earliness can be increased. Two systems of management are at once suggested, the one the treatment of the seed, the other the selection of the seed.

On March 21 a few American Wonder peas were placed to sprout in a box of moist sand in the greenhouse. Germination soon occurred, and it was soon evident that we had commenced operations too early for transferring the seed to the soil, hence when the radicle was about an inch long, the box containing the seed was removed to the cellar in order to check further development. On April 14, a row was planted in the garden of these peas, selecting the most advanced, and at the same time a second row was planted with unsprouted seed for comparison, the seed of each row taken from the same package. The sprouted seed vegetated April 25, the unsprouted seed April

28. The first bloom appeared on the first row on May 26, and on the second row May 31. On June 10, twenty-five pods were of edible size on the plants from the sprouted peas, and it was not until June 18 that an equal number were of edible size on the plants from the unsprouted seed. This process of planting, hence, appears to have given us a gain of eight days in the maturing of the crop, and when it is considered how little trouble this sprouting necessitates, it seems proper to recommend this system to the amateur, and to call the attention of the market grower to the possibility that the extra labour required may be off-set by the resulting earliness.

In seeking earliness through the selecting of early varieties, the question at once meets us as to which is the earliest variety. As the earliness is affected by the date of planting, or in other words the temperature or climate, an answer to this question does not at once occur. Thus in 1882 the Earliest of All was fit for the table in fifty-four days from the early planting; in 1883 required sixty-one days for the early planted and forty-five days for the later planted; in 1884 required fifty-four days for the early planted.

In our 1884 trials, the peas were planted on April 28, and Cleveland's Rural New Yorker had its first edible pod in fifty-one days; Daniel O'Rourke in 52 days; Dexter, Ferry's Extra Early Market in fifty days; Earliest of All, American Wonder, Caractacus, Carter's First Crop, Express, Prince Albert, and a seedling from Messrs. Bliss, No. 72, in fifty-four days.

By referring to the following table of order of ripening, it will be seen that the order of succession is not uniformly the same with different plantings, or in different seasons, and we may conclude that among these first earliest, where such little difference in

earliness is found, that variety which is the better to grow must be decided upon other considerations, such as size of pea, prolificacy, habit of cropping, &c.

| VARIETY. | 1884. Planted April 28. | | 1883. Planted May 12. | | 1882. Planted April 21. | |
|---------------------|-------------------------------|------|-----------------------------|------|-------------------------------|------|
| | Edible | days | Edible | days | Edible | days |
| Earliest of All | June 21 | 54 | June 26 | 45 | June 21 | 61 |
| Kentish Invicta | " 20 | 53 | " 3 | 52 | " 22 | 62 |
| Ferry's Extra Early | " 20 | 53 | " 1 | 50 | " 22 | 62 |
| Carter's First Crop | " 21 | 54 | June 30 | 49 | " 23 | 63 |
| Daniel O'Rourke | " 19 | 52 | " 30 | 49 | " 23 | 63 |
| Early Alpha | " 21 | 54 | July 7 | 56 | " 23 | 63 |
| American Wonder | " 21 | 54 | " 1 | 50 | " 24 | 64 |
| Blue Peter | " 23 | 56 | " 1 | 50 | " 24 | 64 |
| Carter's Pre. Gen. | " 23 | 56 | " 3 | 54 | " 24 | 64 |

An examination of this table makes it quite evident that more than one year's record is necessary to establish a variety as the earliest of peas.

E. LEWIS STURTEVANT, *Director.*

SEEDLING PEACH TREES.

"The idea often prevails that a seedling tree is healthier than a budded one. If we were assured that seedling trees would invariably come true, never have the yellows, never overbear and become exhausted, never be attacked by the peach borer or any other enemy, and would bring as high prices in market, why then of course we would all raise seedling varieties and no other; but this is not the case in any one of the above suppositions. Many years ago I planted

a seedling orchard, seed being obtained from what I supposed to be excellent sources, and of very choice seedlings. I planted the seed just where each tree was to grow, so no transplanting was necessary. I fancied I was doing just the best thing possible, but on one side I put one row of budded Mountain Rose peach trees which were transplanted, and, strange to say, that transplanted row outlasted all the others, and yielded four times the profit of the seedling trees.—P. M. AUGUR, *Connecticut State Pomologist, in N. Y. Tribune.*

RASPBERRY GROWING FOR MARKET.

At the last meeting of the Mississippi Valley Horticultural Society, held in Kansas City, Mr. N. Ohmer, of Dayton, Ohio, read an interesting paper on this subject, from which we extract the following, as being of interest to our readers:—

Raspberries are attracting more attention at this particular time than ever before. I have grown the raspberry for market now twenty-six years, but never to the same extent as at present. I now plant largely of them because I find their culture profitable.

THE CONDITION OF SUCCESS.

To grow raspberries successfully, you must select good soil, well underdrained; let it be clay loam or sandy loam, but prefer upland clay loam. I have known them to do admirably in almost any soil, provided it is rich and not wet. Plough as you would for any other crop, the deeper the better if your soil admits of it. Harrow well; plough out furrows six or seven feet apart, and plant in said rows three feet apart—a partial shade I find to advantage. My patches that do best are in an old orchard.

BLACK RASPBERRIES

are usually planted shallow, an inch or two deep. If it is your intention to

tie up you canes, that is deep enough; but if you wish them self-supporting you must plant them so that by after culture they will be at least three to four inches deep, otherwise they will not be self-supporting. By so planting and pinching back, as hereafter described, I never have trouble about my canes blowing, or falling down by the weight of fruit.

The first year's growth I pinch back when eight to ten inches long. The second year, and every year thereafter, I pinch back the tips of the growing shoots when from twenty inches to two feet high. They then cease to grow in height, but throw out laterals in all directions, balancing and supporting the main stem effectually. The following spring, early in the season, I cut back all laterals with hand pruning shears, leaving them from one foot to two feet long, according to the number and strength of canes in the hill. This operation is quickly done and inexpensive. After pruning, I gather and carry out and burn all the *debris* between the rows. I then cultivate, first with a double shovel or barshear plough, then in time with a cultivator, as often as it is necessary to keep them clean, free from grass and weeds, up to August, after which I let them rest. It is not a good plan to cultivate too late in the season; you thereby cause them to grow too late to mature the wood sufficiently to withstand the cold of winter. I plow and cultivate them three to four inches deep. You need have no fear of injuring the roots by so cultivating.

RED RASPBERRIES.

I plant the same distance as black, three by six feet. This takes 2,420 plants to the acre. I do not cut back the canes of red varieties (as I do the black) until the following spring, except strong growing varieties like the Turner, Shaffer's Colossal and others of like character. These I cut back

during the season of growth, when about three feet high; otherwise they may grow to seven or eight feet, as I have seen them grow, necessitating the cutting away of too much wood in the spring. Treat suckers between the rows as you would weeds, unless you want plants; cut them out when young and tender. Sprouts, or suckers, are a great annoyance in growing red raspberries. If taken in time, they need scarcely any care. Red raspberries, to do their best, must be kept in hills, same as black. This can be done by cutting away with a sharp hoe all sprouts, when young, between the hills in the rows, allowing from four to eight canes in the hill. Many growers allow them to grow all along the rows, although not too thickly.

OLD CANES.

There is a difference of opinion among raspberry growers as to the best time to cut away the old or bearing canes. I have tried both methods, namely: letting the old canes remain all winter and cutting them in spring, or cutting them as soon as I can find time after fruiting, carrying out and burning them. I am satisfied that by adopting the latter method, I destroy many noxious insects, worms in various stages of life, that would live over winter were I to practice the other system. It is argued that the leaf of the old cane has much to do in the growth of the canes that are to bear fruit the following season. I take no stock in that opinion. If your plants are in good condition there will be leaf enough on the young canes to mature them without the assistance of the leaf of the old canes that have already performed their functions by maturing the crop of berries just gathered. Then, again, the old canes are certainly not ornamental. Having an eye for the beautiful as well as the useful, I get rid of them as soon

as I can after the fruit has been gathered.

TYING UP CANES.

For a long time I advocated and practiced the tying up of canes, first to stakes, then to an iron wire stretched along the rows fastened to posts every 25 to 30 feet. Either of the systems I found expensive, and slow work. It did well enough when I had but an acre or two, and did not know any better. But when I had many acres I found it was not the thing to do, especially so when I learned that stakes and wire were of no use, I might say entirely unnecessary. I cannot help but sympathize with those who are so far behind the times as to follow that system now. By adopting the pinching back process at the proper time, I save the expense of stakes, or posts and wire, and the time necessary to tie the canes to them, and raise as many bushels of as nice berries per acre, as I did when I followed the old system.

GATHERING BERRIES.

I have often been asked how I manage the many hands necessary to pick my berries to have the job well done, and to have them continue to the end. First, I live near a large city—Dayton, Ohio—(too near to save a large part of my apples and pears) and can get all the pickers I need, and my system is as follows: I use a stand with a handle, holding four quart baskets to pick into. Each picker is given a stand and a basket holder, which holds one quart basket. This holder is tied around the waist, enabling the women, girls and boys to use both hands in picking. Thus equipped, they are put two to a row, one on each side. I have a trusty man to be with them continually; his business is, first to see that they pick none but ripe fruit; second, that they pick all that are ripe; third, that they do not damage the berries or canes;

fourth, that they do not skip rows or parts of them; fifth, that there is no wrestling in the patch. When the stand has four full quarts, they are brought out to where the packing is done, in the shade of one or more trees; then give them a check for the full stand, and an empty stand filled with baskets to fill again, and so on till the day is over. I have large printed checks, which I give in exchange for smaller checks if desired.

I pay no one money on account, or in full, until the last picking is over, except in case of sickness or other good cause. By adopting this method my hands continue their work until the last picking is over. When pay day comes all are informed of it, all come, and when we are through with the last picking, all hands collect in the shade and are paid off in full, after which I give them a treat of cider, lemonade and cakes, all have a good time, and go away happier than many worth their millions.

DANDELION CULTURE.

It is but a few years since the cultivation of this vegetable was undertaken but it is making friends so rapidly that although the amount grown annually is already very large, the supply is not equal to the demand. It is used principally as a salad, and as such it occupies a place of its own, being different in taste from anything else.

The main point in its successful cultivation is to have it in market early in the season. To meet this early demand, it is grown on benches in the greenhouse, using all available means to bring it to a marketable state as early in January as possible. From this time till the first of May, when outdoor grown plants and other greens become marketable, there is a steady demand for forced Dandelion.

The seed of the Broad-leaved or Improved Dandelion, which is the variety principally grown, is planted in rich soil in rows one foot apart as early in the spring as the ground will permit. The plants, as soon as large enough, are hoed and tended—not thinned—and kept free of weeds all the season. About the first of September the tops are hoed off lightly, after which the roots throw up a few green leaves sufficient to mark the rows. Just before the ground freezes the roots are plowed out, taken up and brought to a pit or "winter house," where they are stored by setting them thickly in the ground as they grow in the field. The temperature here rarely above 60°, and sometimes the ground freezes around the roots; there is sufficient light to green the tops a little.

From here they are transferred to the benches of the greenhouse, in quantities as required. I set out some every week, so as to keep the supply constant and uniform. After planting in the benches they grow rapidly, and are ready to harvest in four weeks from the setting. They are placed in rows five inches apart, and about as thick as they will stand in the row. The soil is mixed with plenty of fine horse manure, and a liberal dressing of wood ashes in addition.

When ready for use, the plants are in full bud, with leaves six or seven inches long. They are prepared for market by pulling up the roots, cutting them off, and picking off all dead leaves; tying them in bunches weighing eight ounces; and finally washing them. By this plan they are handled without loss or shrinkage.

The usual price is one dollar per dozen bunches; and as I have never been able to raise enough, I am contemplating the building of a separate house for raising Dandelions on a larger scale. A space 3 × 6 feet will yield

one dollar and a half every month for four months, varying somewhat according to the size of the roots, for the larger these are the heavier will be the tops. The same roots cannot be used a second time; a new stock has therefore to be raised from seed every year.—W. H. BULL, in *Am. Garden*.

INSECTS WHICH INFEST THE ROSE.

The insects infesting the rose are quite numerous; the habits, &c., of some are still comparatively little known, and thus far it has been very difficult to arrest their ravages or sensibly diminish their numbers by artificial means. European entomologists number and describe at least forty species, many of which have not yet found their way to us, but we have enough to keep us at work in order that we may succeed in rose culture. Harris, on "Insects Injurious to Vegetation," is the only American authority on these insects. I refer the reader to that work for descriptions of several species which have been studied up. There is one I wish to call attention to, which I have failed to see described, and that is a small white fly which skeletonizes the foliage of out of door roses beginning with the leafing out of the rose. It is quite a small insect, looking like a white dust rising from the bush when shaken. By midsummer the leaves are fairly skeletonized and are brown looking. I have succeeded in keeping them off the bushes by syringing with a decoction of white hellebore in water, about a tablespoonful in a pail of water. I wet it at first with quite warm water, then dilute and apply with a syringe, when the leaf buds begin to swell, and repeat after about two or three weeks.

The rose-chaffer I find a most persistent enemy of the rose, as well as of the grapevine and several other plants. I find no better way than hand picking

to diminish their numbers. I notice that the Massachusetts Horticultural Society endorses the use of Paris green to destroy them on grapevines. I have not tested that as a remedy, but think it might be practicable where one wishes to run the risk. Harris' description of this insect in its various stages is quite interesting, and will well repay a perusal by any one interested in natural history. Rose slugs also defoliate the rose bush, but hellebore will destroy them, if judiciously applied. The scale can be removed by hand, or by washing with strong soap suds.—W. H. White, in *Country Gentleman*.

GLOIRE DE DIJON ROSE.

Of all the roses in cultivation, this, in my opinion, is the most useful. It is the last rose of summer and the first of spring. Indeed, with two or three plants in a cool greenhouse, and the same number on any wall out of doors, a constant supply of blooms may be had from February until November. In constitution it is most robust, as there is no situation in which it will not succeed, and I cannot remember a Gloire de Dijon dying of either disease or old age; one of our plants here I know will soon be out of its teens, and still it grows as robustly and blooms as freely and profusely as the youngest of them. During the last three weeks we have cut at least two hundred blooms from this plant which occupies a restricted place in a cool conservatory. Another one which was planted in a miniature form at the end of an unheated peach house three years ago, has this spring produced five hundred buds and blooms; and this is only one crop, as successional ones will follow until the end of the season. If this rose has a fault at all, it is in being over-flori-

ferous. In many instances it is allowed to injure itself through bearing too many flowers; if left to itself there will be a bloom from every eye, and there is hardly any way of preventing this, except cutting off the bloom. The shoots should be cut well into the main stems, and this will induce fresh shoots to push forth, and it is these which, before long, bloom again. At the same time, next year's crops must be seen to, and we find that the best way to provide for these is not to depend wholly on spur pruning, but to lay in a number of young shoots, which always spring from the base of healthy plants, and in the winter time some of the oldest of the branches may be cut away to make room for these. Sometimes these young shoots may be 10 feet or 12 feet in length, but this is none too long, as in spring they will break regularly, and produce a host of massive gorgeous blooms. Out of doors the only profitable way of growing this rose is against a wall where it will have plenty of head room. In dwarf or standard form in a bed it is lost. As a natural rambling bush it would be better, but against the walls of mansions, villas, cottages, churches, it is at home. A well-drained bed, with plenty of rich soil and a never-failing supply of moisture, are its only wants throughout the season; and should green fly appear at any time, liberal syringing will at all times dispel it.—J. MUIR, in *The Garden*.

NOTE BY THE EDITOR.—Our readers must not forget that the climate of England is much milder than that of Canada. This beautiful rose will not endure our winters without protection, or it may be carefully taken up and heeled in where it will not be exposed to much frost, and planted out again in the spring.

FRUIT GROWERS' REPORT FOR 1883.

The *Rural New Yorker* in noticing this report of our association speaks in very commendatory terms of the course pursued by the Directors in having a full report of the discussions taken down by a short-hand writer. The *Rural New Yorker* says:—

It is a well-printed book of 415 pages, containing the proceedings of the annual, winter, and the summer meetings of the Fruit Growers' Society, giving, in full, not only the papers read at those meetings, but what, to us, is of a great deal more practical value, a full *verbatim* report of the discussions. Many a man attending those meetings, who could not under any circumstances be induced to write an essay, has some little bit of practical experience, which can be caught by a reporter, that is worth more to persons who wish to learn than some long-winded essays, and we think our Canadian friends very wise in having these discussions so carefully reported. No more earnest or wide-awake body of fruit-growers can be found than those in Ontario, and no country does more for its agricultural class than that Province, as it prints these volumes, and gives the society a large sum with which to pay its expenses. This volume also contains a full report of the visit of Mr. Chas. Gibb to Russia, and of his researches among the Russian apples, together with illustrations and descriptions of the most promising for introduction into the colder portions of Canada. Eighty-three pages are devoted to the entomological report, containing illustrations and descriptions of insects injurious to the various economic crops of the country, and the best known methods of controlling them. This complete work is among the things furnished to every member of the association, whether he be a resident of Canada or not.

GROWING NUT-BEARING TREES.

I have found the safest plan for procuring nut-bearing trees is to grow them myself in my own garden. They are as easy to grow as any fruit tree, and will require but little care. They will sometimes succeed if transplanted from the forest, but there is no certainty about it, and I would not recommend the plan. If the trees are purchased from a nurseryman, they should never be more than two years old, and if boxed and shipped long distances, they should be but one year old from the nuts. In saving the nuts to plant, they should never be allowed to dry in the least. The fresher they are from the tree the more certain they are to grow. To keep them fresh, place them in damp sand or moss as soon as gathered; this applies especially to hickorynuts and chestnuts. Black walnuts and butternuts will remain fresh for some weeks on account of their thick outer shuck. But none of them will grow if allowed to become dry. If the ground can be got ready for planting in autumn, it is well to put them in the rows in the vegetable garden where they are to grow for the first two years. All of the four kinds mentioned should be planted in rows three and a half or four feet apart, and five or six or eight inches apart in the rows, and all about three inches in depth. If the ground can not be got ready in autumn, place the nuts in a shallow box of sand, and bury them in the garden.

The bottom of the box must be loose enough so the water can run out. I lost a barrel of walnuts once that I had saved for seed, from the barrel holding water, and the nuts becoming water-soaked.

Many recommend planting the nuts where they are to grow permanently. But I think we are too apt to neglect them, and I would not recommend such a course except for a plantation that is

to be left permanently for timber. Then they may be planted the same as corn and cultivated in the same manner until they shade the ground, and are able to hold their own in spite of the grass that may come in.

Whether planted in autumn or in spring in the garden they should be cultivated as soon as the young trees make their appearance. They should be kept perfectly clean the first summer and also the second summer. Some of the nuts may not come up until the second spring. When they are two years old they are ready to transplant. It is best to wait until early in spring, however, to do this work. The ground should be thoroughly ploughed and leveled. A crop of potatoes upon sod ground is a good preparation. Select the largest, straightest trees in the rows for your own use. If any of the trees have grown puny and crooked from the first, throw them away. They will never overtake their more thrifty neighbors.

The trees will begin bearing in from six to eight years from the time they are transplanted, and will increase in height at the rate of one and a half to two feet each year, for the first twenty years at least. The walnut and chestnut will grow the most rapidly, the butternut next and the hickory slowest of all. They will need no pruning except to form the heads from four to six feet from the ground, and to cut out any limbs that may become crossed or broken.

I know of no more enjoyable thing about a farmer's house than a small orchard of nut-bearing trees. An acre or two devoted to this purpose, will do as much to keep the boys and girls at home while young, and to make the memory of the old home blessed in after life, as anything that I could name.

There is no reason why every farmer or farmer's boy should not have a few

nut-bearing trees of his own growing. And I would say to every one who reads this report, make the attempt. It will cost but little; the pleasure of seeing the straight row of thrifty young trees the length of your garden will pay you well for all the trouble of growing them; and if you should have more than you should need for your own use, call your neighbour in as he goes by, and make him a present of a dozen or more to set upon his own place. It will be a neighborly act that you will never regret.

Do not say "it takes too long to get the trees in bearing." I have young trees growing that are the grandchildren of those that came from the nuts that I planted only twenty years ago, I was sixteen years old then, and am not a very old man yet. I feel as keen enjoyment in raking over the golden leaves, and searching for the rich brown nuts as any of my younger friends, and I hope to experience the same enjoyment, and appreciate it too, for many years to come.—PROF. JAS. SATTERLEE, in *Primer of Horticulture*.

FORESTRY.

PROTECTION THAT IS NEEDED.

While the cry of the people of Great Britain and Ireland is constantly heard against the preservation of so much of the land at the cost of the wealthy in the form of wilderness and even the increase of moor and forest lands, a precisely opposite demand is arising on this continent among people who see the remnants of the wilderness being too rapidly broken up into small holdings. Strong efforts are now being made to preserve to the people of the State of New York some portion at least of the Adirondack forests. This natural wilderness contains some sixteen hundred thousand acres, which, though almost valueless as agricultural land, is invaluable as a timber reserve

and a pleasure resort as long as it remains covered with forest; which, judging from the manner in which the work of spoliation has been carried on, will not be very long. The system in vogue among the lumbermen, who have taken in hand the duty of improving this forest from the face of the earth, is most thorough. Every piece of wood that is worth the cost of transportation is first taken and the remainder is converted into charcoal, leaving the land completely stripped. Important as it is to preserve the forests for their own sake, in this case their important effects upon the climate renders it an absolute necessity. The Hudson and numberless other streams rise in the Adirondacks, and if these hills be stripped of their forests the water supply may possibly be reduced, but the certain result would be that periods of shallow water would alternate with dangerous floods. At a meeting of the New York Chamber of Commerce an expert declared that while on the shores of Lake Champlain the rainfall was but twenty-three inches, twenty miles back in the forest-clad mountains it was sixty inches, and this was mainly due, in his opinion, to the timber, although the height of the hills should also be taken into account. As only five hundred and seventy-three thousand acres of the wilderness belongs to the State it is proposed that the private interests in the remainder be at once purchased by the State, in order to protect its most valuable asset, the Erie Canal, which is endangered, and the entire tract be reserved as a public forest. If this be done, as there is strong hopes it will, the State of New York will be the first to establish in America a public forest, and every other community in America should take steps to follow so good an example. The provinces of Canada being in a far more favourable position than any of these States should most certainly be

the leaders. The water sheds of our rivers are still in the hands of the Provincial Governments and they can at their pleasure reserve as much of them as they will for the storage of moisture, timber, and health and strength. Those reserves if managed according to the best foreign methods should furnish no inconsiderable revenue, and we certainly have enough and to spare of broad rich acres waiting anxiously for the plough to permit these barren lands to retain their forest glories.--*Toronto News.*

EXPERIMENTS WITH TOMATOES.

N. Y. AGRICULTURAL EXPERIMENT STATION.

Our tests with tomatoes include 64 named samples. One hundred seeds of each kind were planted in boxes in the greenhouse April 9-11, and the time required for vegetation was six to nine days. The number of seeds which vegetated varied from 14 to 100 per cent. as between the different varieties, the average being 74 per cent. Four plants of each kind were transferred to the garden on May 24. The first bloom was noted 61 days from planting upon the Little Gem variety, and the last variety to bloom was the Improved Large Yellow, in 104 days from planting. The first tomato to ripen was of the Green-Gage variety, and was noted July 31, or 112 days from planting. The first large-fruited variety that ripened ten fruits was the Alpha, 135 days from planting, or upon August 22. The New Currant, a very small variety had ripened 10 fruits on August 18, and the Turk's Cap, another small variety, August 22. The President Garfield, a so-called new variety, failed to ripen any fruit. We find that the order of ripening of the varieties does not agree with that noted last season. Thus, last year the Acme was two days later than the Mayflower; the past season it was 7 days earlier. Last year the Acme was 6 days earlier than the Paragon;

the past season it was 30 days earlier. Last year the Acme and Trophy ripened the same day; the past season the Acme was 7 days earlier than one sample of the Trophy, and 11 days earlier than another.

It is interesting to note that tomatoes which came up in the garden as weeds from the last fall's seeding, seemed to ripen their fruit at about the same time with the earlier class as grown by us from the planting of April 9th-11th.

We note that as a rule smooth tomatoes have few cells, and conversely, that many-celled tomatoes are rough. The number of cells found varies in the fruits on the same plant, as does also the smoothness of the fruit. These facts suggest that in order to secure smooth fruit we should select for seed those which are few-celled. As evidence in favor of this suggestion, we note that fruits of the Acme tomato are invariably smooth, and the number of cells in this variety rarely exceeds four. The Cherry, the Currant and Apple tomatoes are also invariably smooth, and rarely have more than two cells.

The roots of a tomato plant examined occupied the upper eight inches of the soil, and were traced to a distance of 24 inches on one side, and 80 inches on the other. From this it appears that the plant drew its nourishment from a circle about $4\frac{1}{2}$ feet in diameter, or from an area of about 16 square feet. A single root was traced downward to a depth of $2\frac{1}{2}$ feet. The tap root was clothed with a multitude of fibrous roots to the depth of 8 inches, where it separated into massy branches. This rooting habit is what we would *a priori* expect from a plant originating in the tropics. It seems at present to be a safe generalization that all plants grown in our gardens, of tropical origin, are superficial rooters, and that consequently they not only require a hot season for their best development, but that the

manuring shall be placed within the area of soil occupied by the roots. *A priori* deep-manuring, or shallow-manuring or surface-manuring, as a practice, should depend upon the rooting character of the plants which are to be grown upon the soil which receives the manure.

E. LEWIS STURTEVANT, *Director.*

MARKETING FRUITS.

The marketing of a product is as important a matter as production. The profit depends fully as much upon proper sale as upon proper production. The profit is the margin between cost of production and price realized; hence a poor price destroys profit as effectually as excessive cost of production. The first point to observe is perfect honesty. Give honest measure. A short measure is an abomination unto the buyer of fruits. Let a quart package be two full pints: and let your peck be eight such quarts. Don't cheat, and greater shall be your reward. To be successful you must establish a good reputation, and to do this you must have honest measures.

Pack honestly. Let me tell you that next to honest measure, honest packing is the prime requisite of successful marketing. If you would make that reputation without which you can not make money, you will have the contents of every barrel, basket or box as good at the bottom or middle as at the top. Always sort your apples, peaches, plums, &c.; never put large and small ones in the same basket, and be very careful that you don't put the large ones on the top. The small ones will help to fill the basket very little and will spoil the looks and the sale of the whole. Keep them separate and they will measure more, the small ones will sell for as much as the mixed lot, and the large ones for extra fine fruit. Have the contents of each package of

the same grade throughout. "There's millions in it."—*From Rural New Yorker.*

FERTILIZERS.

Mr. Ware ventured to mention salt as a manure; he had seen excellent results from its use. If not plant food, it is certainly taken up by plants, as is shown by their salt taste. For mangolds, carrots and cabbages, it is certainly valuable in connection with other manures, and farther inland it must be more valuable. He had seen large crops of grass where the salt had been washed from curing fish. He would apply from ten to twenty bushels per acre of refuse salt, which can be obtained very cheaply.

Night soil is valuable, but it will not do to depend upon it alone; it must be used in connection with some other manures.

Farmers should depend mainly on their barns for manures, and use commercial fertilizers to eke them out and assist them. A report of the Connecticut Agricultural Experiment Station says that the price of commercial fertilizers is from thirty to thirty-five per cent. above the value of the materials, and farmers pay that for mixing and manipulating them. Stable manures do double or triple duty; they not only supply plant food, but have a chemical or mechanical action that brings out the fertilizing qualities in the soil, and this should be taken into account. Commercial fertilizers leave the soil in a sodden condition.

In regard to the application of manure, Mr. Ware said that the time had gone by when farmers need fear loss by evaporation at whatever time manures are spread, and if the land is in condition they may be applied at any time. Green manure, harrowed in in the fall, will be plant food in the spring, very much as

if composted. Green manure, if it does not injure the crop, will produce stalks rather than fruit. It should be composted to produce fruit, but if foliage is wanted may be applied green.

He believed in applying manure as fast as made; but would not object to spreading on snow, but would object to free spreading on frozen ground on a steep hill. He had seen water colored by manure washed into a hollow, when the crop did not show any more. He would apply manure on the surface, harrowing it in, but never ploughing in unless he ploughed a second time.

If manure is applied in autumn, and the ground is ploughed in spring, it brings up the soluble portion that has washed down.—*Discussions of the Mass. Hort. Society.*

COST OF RAISING MANGOLDS.

The great objection most farmers have to growing mangolds, is their supposed cost of production. Some writers on the subject say that the labor bill alone is more than the whole value of the crop. But my experience proves (to my own satisfaction at least) that the growing of mangolds is not only profitable, but that it is the most profitable crop for a dairy farmer to grow in this section of the country. This year I put in one acre on land that was in very poor condition, having been leased to a person for the last three years whose interest it was to take all he could out of the land before his lease expired.

I ploughed the land as deep as a good strong team could do it; put on three bags of artificial manure broadcast; harrowed it in thoroughly; ridged it up 26 inches apart; rolled the ridges with a two-horse roller; drilled in the seed on the top of the ridges, and then rolled it again. With this treatment I think every seed germinated. They

were hoed twice and cultivated three times. After the last cultivation the earth was thrown up to them with a double mouldboard plough. The yield was 26 tons of large solid mangolds, at a cost of \$1 33 per ton, as follows:—

| | |
|-------------------|---------|
| Rent of land..... | \$4 00 |
| Seed | 4 00 |
| Manure | 15 00 |
| Horse labor | 5 00 |
| Hand labor | 8 00 |
| Total | \$36 00 |

Allowing 60 pounds to the bushel, we have 906 bushels, costing less than 4 cents per bushel. When we take into consideration the fact that half a bushel fed along with the usual rations, will increase the milk yield two quarts per day, besides keeping the animal in good health, we have, in my estimation, one of the best crops that can be raised for feeding dairy cattle in winter.—*Cor. Country Gentleman.*

THE WEALTHY APPLE.

The Wealthy is a very thrifty but not very rapid grower, in this particular being much like the Duchess of Oldenburgh, the trees of the two varieties looking very much alike both in nursery and orchard. The chief reason for its rather slow growth is easily found in its early and abundant fruitfulness. Trees six and seven years set have often produced each a full barrel of marketable fruit. It is a regular bearer, and has fruit when any apple tree in the neighborhood has any. The Wealthy and the Duchess are about equally reliable in this particular.

As regards quality the Wealthy leaves little to be desired. It is a better dessert fruit than the Baldwin because it has softer flesh and a more delicate flavor, and for these reasons it is in the same proportion inferior for cooking purposes. In this it resembles the Fameuse. As to marketable qualities I never knew an apple to take the eye

and the palate of buyers any better. The fruit is always fair, even in size, and handsome in form and color. As regards keeping, it comes into eating about the first of January, or somewhat sooner sometimes, and I never had any difficulty in keeping them sound until the end of March, and often till the end of April. Further south they do not keep so well.—DR HOSKINS, in *The Home Farm*.

THE MRS. GARFIELD STRAWBERRY.

One of the most vigorous growing plants in our Strawberry trial-beds is this new variety. The plants were received too late last spring to perfect any berries; yet, to judge from the results under so adverse conditions, we were very favorable impressed with its desirable qualities.

It is a sculling of the Crescent, raised by Mr. Matthew Crawford, of Ohio, and is now introduced by Hale Brothers, of South Glastonbury, Conn., who describe it as follows:

"Growth of plant healthy and vigorous, resembling its parent, the Crescent, with broader foliage, however, and not making more than one-fourth as many runners; leaves clear and bright, standing drought and frost without injury; flowers perfect, with abundant, well developed stamens; fruit stalks of medium length, stout, and usually branching. Very prolific, equal to the Crescent in quantity of fruit per acre; and while not setting quite as many berries as that variety, they average much larger and hold their size better to the end of the season. Form conical, with slight neck; color, glossy bright scarlet. Its flavour is rich, sweet, and delicious; and while not equal to the Wilson in shipping and keeping qualities, it is much firmer than any other of the very productive sorts."—*American Garden*.

CONCERNING LEAVES.

Leaves have a peculiar and special share in the work of vegetation; every leaf is constructed of an intricate network of "veins," running through a soft pulpy substance. This framework is composed of woody fibres, its purpose being to support and distend the softer parts of the leaf. Accompanying these fibres through all their branchings, and usually running a little beyond their extremities into the green tissue, are minute tubes or vessels. Follow these back to the midrib of the leaf, and we find that they continue still farther, connecting with the circulatory system of the stem, which in turn extends down to the roots. This line of vessels, therefore, provides a direct course for the passage of the fluids absorbed by the roots, to the most remote portions of the leaves. One of the most important functions of the leaves is the collecting of carbonic acid gas from the air, and by the action of their green coloring matter, to combine it with the elements of the sap to form the constituents of growth. These compounds containing carbon form about fifty per cent. of the bulk of the plant, so we see that the leaves are really the most active portions of the vegetable organism, collecting fully one-half the food, and combining it with that furnished by the roots into the complex constituents of the perfectly developed plant. The chemical processes, which occur in the leaf, are too complicated for discussion here, but its anatomy, the utility of all its parts and the harmony with which they perform their work, are easily understood, and furnish us one of the best examples of the detailed perfection of nature's work.—W. E. STONE, in *American Agriculturist*.

BOOKS, &c., RECEIVED.

SCHOOL SUPPLEMENT for July-August, published at No. 9 Toronto Street, Toronto, is embellished with two fine portraits of Queen Victoria, also with a portrait of J. Greenleaf Whittier, and of Will Carlton.

THE PRIZE LIST of the Industrial Fair and Semi-Centennial Exposition to be held in Toronto, September 10th to 20th, 1884, is received. Entries close Saturday, August 23rd. Forms and information can be obtained of the Manager and Secretary, H. J. Hill, Esq., Toronto.

SETTLER'S POCKET GUIDE to Homesteads in the Canadian North-west, by John T. Moore, Toronto, gives a description of the lands at Crescent Lake, Assiniboia; North Elbow, in Saskatchewan; and Red Deer, in Alberta, with special reference to those offered by the Saskatchewan Land and Homestead Company.

ANNUAL REPORT of Nebraska State Horticultural Society for 1881, but, however, just issued in 1884, is an interesting pamphlet of 166 pages, for which we are indebted to Mr. Daniel H. Wheeler, as also for a copy of the PRIZE LIST of the Nebraska State Fair to be held in Omaha, September 5th to 12th, 1884.

PRIZE LIST of the Thirty-ninth Provincial Exhibition to be held at the City of Ottawa, under the auspices of the Agriculture and Arts Association of Ontario, September 22nd to 27th, 1884. Entries of horticultural products, ladies' work, and fine arts must be made on or before Saturday, August 30th. All information relating thereto will be furnished by Henry Wade, Esq., Sec., Toronto.

A BASKET OF CHERRIES was received, for which the kind sender will please to accept our thanks. It contained fine

specimens of American Heart, Black Tartarian, Tradescant's Black Heart, Reine Hortense, May Duke, Governor Wood, Black Eagle, Butner's Yellow, and of a seedling, which latter was of good quality, excellent flavour, and seemed to bear carriage remarkably well. Judging from these samples we conclude that the cherry crop in the vicinity of Hamilton is very good.

THE MISSIONARY PROBLEM, a compendious history of Protestant missions in the more important missionary fields, by James Croil, Montreal, published by Wm. Briggs, 78 King Street East, Toronto. From it we learn that the average contribution per communicant throughout christendom for this work is less than fifty cents a year; that a thousand millions of people are yet heathen; that there are in the United States and Great Britain one hundred and fourteen thousand ministers preaching to about seventy millions, but only two thousand two hundred and ninety-three preaching to this thousand millions of heathen. There is need of ten thousand more missionaries and fifty millions of dollars a year to prosecute this work, which might well be spared from the fourteen hundred millions of dollars annually spent in the United States and Great Britain upon liquors, to the manifest benefit of all concerned.

THE HURLBURT APPLE.—I consider it the most profitable apple we raise, as it is a vigorous grower and an early annual, and heavy bearer, the apples being mostly fair and saleable and free from the ravages of the codlin moth, and they cling well to the tree. Although not so good a keeper as the Baldwin it is far superior in quality, and always sells well in our home markets. It is a November and December apple. One of our best orchardists told the writer that if he were going to set out another orchard he would set one-half Hurlburts.—H. J. A. SIMMONS, in *Country Gentleman*.

THE OLD APPLE TREE.

Here's the old apple tree, where in boyhood I sported,
When my heart was as light as the blossoms it bore;
Where my old maiden aunt by the parson was courted,
In her prim cap and gown, like a damsel of yore.

On that rude oaken bench 'neath the bending boughs
 seated,
While the wild bee was humming its songs on the
 tree;
We youngsters oftimes in the summer were treated
To share with the elders their gossip and tea.

Look; here are the names of how many now sleeping-
Of parents and kindred, long gone to the tomb;
Yet the old apple tree, like a true friend is heaping
The shrine of their relics with beauty and bloom.

In this season of light that man's spirit rejoices,
While the old apple tree looks as gay as a bride,
I could dream that I heard every one of their voices
That so often have sat on this bench at my side.

Every rudely-carved name has some story to tell me,
That true-lover's knot I remember it well;
It was carved on that day when my first grief befel me,
The day of my parting from young Isabel.

Yes, here we two parted, and parted for ever,
I have wander'd since then like a pilgrim afar;
And have loved too again with some fervour, but never
Shone love on my heart like its first morning star.

And I'm come back to die in the home of my fathers,
And I sit 'neath the blossoms that mock my decay;
And thus my fond me n'ry the sad harvest gathers,
Of friendships and love that have long passed away.

Yes, the old apple tree, where in boyhood I sported,
And the rude oaken benches, they are still in their
 place;
But the dear household faces whose welcome I courted
They have vanished and left me, the last of my race.

CURE FOR CABBAGE PESTS.—A gentleman in West Virginia believes that he has discovered a simple and effectual remedy for the abominable pest, the cabbage worm. It is so simple, and easily obtained, that it should be tried by all who are in any way troubled with the creature. The remedy consists in procuring smart-weed or pepper-weed, as it is sometimes called; well known to all farmers, growing in and about farm-yards, or sometimes by the roadside. Take the weed green, and dry it thoroughly, so that it can be reduced to powder, which sprinkle over the young plants, or when the worms begin to appear; it will also prevent injury from the little black fleas that sometimes infest the plants. Possibly if the smart-weed were boiled in water, and that sprinkled on the plants it would serve the same purpose.—*N. E. Farmer.*

PROFIT IN RASPBERRIES.—Two thousand Cuthbert raspberry plants were set in the fall of 1881, in rows, five feet apart in the rows. The soil was a rich loam. In the spring the plants started early and grew right along, so that by fall the plantation had the appearance of a two years' growth. The young plants were pinched back when they had attained a growth of two feet, and in the rows between the plants a good crop of cabbage was grown. The plantation was well cultivated throughout the season of 1882 and not a weed allowed to grow. Now for the results: The past season there was picked and sold from the plantation of a little less than an acre, 100 bushels of fruit that sold for 13 cents per quart, net; or in round numbers, \$384 worth of berries. In addition to this, 48,000 plants have been dug from the patch this fall and sold to one nurseryman for \$3 per thousand, amounting to \$144. Enough plants were kept to set two acres, and the prospects for an immense fruit yield next season is good.—*New England Homestead.*

WOOD ASHES FOR ORCHARDS.—For orchards, says Dr. R. C. Kedzie, in the *New-York Tribune*, I regard ashes as worth more than six times the value of barn-yard manure, ton for ton. When barn-yard manure is composted with wood ashes, the coarse vegetable material and litter are rapidly broken down, and the manure is speedily fitted for use; there is some loss of nitrogen in the form of ammonia, but there will be no loss of mineral matter if kept from leaching by water. Wood ashes represent all the mineral elements of vegetable growth, and contain everything the farmer must give his crops except combined nitrogen. Wood ashes will vary in composition and value with the kind of wood and the part of the tree. I will take the ash of the body-wood of the beach-tree as representing the average of wood-ashes. A ton of such ashes contains 320 pounds of potash, worth \$16, and 105 pounds of phosphoric acid (insoluble), worth \$5.25. Omitting all the other ash constituents, which have some value of themselves, the potash and phosphoric acid of a ton of such ashes are worth \$21.25, or nearly six times the value of a ton of fresh horse-dung.