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BRIGHTON.

THE

Canadian Horticulturist

VOL XVI. 1893. No. 5.

THE BRIGHTON GRAPE.

TO our taste there is no more delicious grape of its season, for table use, than the Brighton. Its thin skin, juicy, tender pulp and excellent quality make it such a favorite for eating that, while it is at hand, no other variety, not even the famous Delaware, is preferred to it. The Hartford, Eumelan and Delaware, ripen about the same time, and the latter has always been considered the standard of excellence in quality, but the Brighton is now esteemed by many its superior. Of course, a good deal depends upon the locality on which it is grown, but, when one considers the larger size of the bunches and the greater productiveness of the latter, we are not surprised that it should be valued as one of the most promising and successful of the newer varieties and that it should be largely planted in the Eastern States where it has already taken its place as the leading table grape.

We feel warranted from our own experience in recommending this grape for extended cultivation in Ontario, especially in those localities where hybrids of foreign extraction have been found to succeed, and where early table grapes are in demand.

In size, color, form of bunch and berry, the Brighton somewhat resembles the famous Catawba, but it ripens a month earlier Our colored plate scarcely does justice to its color; the bunches too, though often very large, have usually some berries smaller than others, and this is not represented in our illustration

The Brighton was raised by Jacob Moore, of Brighton, N.Y., and is a cross between the native Labrusca family, of which the Concord is a type, and the Diana-Hamburg, of foreign extraction. The vine is a strong grower and pretty hardy, though it needs protection in our severe winters. It is also fairly productive when well cared for. The stems are medium to long-jointed and ripen early. Thinning out the smaller bunches is a wise practice and will result in the better development of the bunches that remain.

The following description of it by A. J. Downing will be interesting, in connection with this monograph: "Bunch medium to large, shouldered, moderately compact; berries medium to large, round, light red at first, changing to a dark crimson or maroon when fully matured, sometimes almost black, and covered with a thick lilac bloom. The berries adhere well to the peduncle; skin thin but tough; flesh tender, very slight pulp, sweet, juicy, slightly aromatic, very slightly vinous, and of very good quality for an early grape. It has its best flavor when it is first ripe, but becomes pasty and loses its sprightliness when fully ripe. It ripens nearly as early as the Hartford Prolific and before the Delaware."

This grape has been fully tested in Ontario so long ago as 1886. Mr. J. P. Williams, of Bloomfield, P. E. Co., then wrote concerning it in this Journal: "As to the best varieties, the Delaware has till lately held first place, but now the Brighton stands pre-eminently victor. It has steadily improved, with age, in the strength of the vine. This year I gathered all the fruit before the frost, beginning soon after the Champion. I could pick dozens of bunches that weighed ¾ lb. and a few turned the scale at 1½ lbs. I placed a number of different kinds of grapes in the fruit room separately, and, while the Brighton remained, none of the others seemed to attract my visitors. All pronounced it the best out-door grape they had ever eaten."

It is not, however, without its faults. In some localities it is quite subject to mildew, which quickly ruins the beauty of the bunches. It is not a good keeper in packing because of its tender skin, and this unfits it for carrying long distances without the greatest care in handling.

As grass seed is so light and easily blown away by the slightest wind, when you are sowing it you may anticipate trouble, but you needn't. Go into the garden and get a barrowful of light loam and sift it moderately fine, and into this mix your grass seed, mixing loam and seed very thoroughly and finely, then sow the mixture. This is how we do it all the time; caring little for the weather whether it blows or not.

Combined fungicides and insecticides are recommended whenever applicable, because of a saving of time; a less liability of injuring foliage; greater efficiency in some cases, and as a precautionary measure in others.

PETERBORO' FRUIT GROWERS' ASSOCIATION.

ON invitation from the Peterboro' Fruit Growers' Association, the writer was present at the annual meeting of that Society, held in the City of Peterboro' on the 22nd of February. Mr. E. B. Edwards, the former Secretary, was elected President. In opening the meeting he stated that the object, which in his opinion should be kept prominent by a local Association such as theirs, was to encourage farmers to devote their attention to the growing of fewer varieties of apples, and those only the very best for export. In this way they would be able to combine in their shipments and become known in the foreign markets for excellence in some one line. His advice was, that farmers of that neighborhood should plant five or ten acres of their land with one or two varieties of first-class apples, and give them the very best cultivation; and then, when the Peterboro' fruit growers could produce a large stock of first-class apples, they would command notice in the markets of the world, and perhaps bring buyers to their very doors. He would like to see the Peterboro' brand known in the markets of the world as indicative of high grade apples such as would command the top prices.

Apple scab was ably treated of by Prof. John Craig, of the Central Experimental Farm, Ottawa. He showed that it belonged to that class of fungi which feeds on living matter, as distinguished from those kinds which live on dead matter. It attacks both the fruit and foliage, weakening the vigor of the tree and marring the appearance and size of the fruit. The spores of the scab live through the winter on old wood and scales of the fruit buds. Some twigs of the Fameuse, King, and other varieties, well known to be subject to scab, were sent to him by Mr. Joseph Tweedle, of Stoney Creek, for microscopic examination; and, although the spores were at first invisible, even with the microscope, yet, after exposure to certain conditions favorable to their development, the spores germinated and could be seen to be present in large numbers. He advised the following treatment for scab: First, spraying with sulphate of copper, 1 pound to 50 gallons of water, in the spring as near the time when the spores are likely to germinate as possible. Afterwards, he would treat them with Bordeaux mixture and Paris green, made as shown in the following table, which also explains the probable cost:

Water	100 gals.	
Paris green	8 ozs.	8 cents.
Lime	8 lbs.	5 "
Sulphate of copper	8 "	80 "
		93 cents.

This mixture would be found most serviceable for the destruction of the apple spot, grape mildew, codling moth, raspberry anthracnose, canker worm, etc. The amount of the mixture required would be about a gallon and a half per tree of ordinary size, and this would amount to about $2 per acre for the two applications which would be necessary.

The first application of the Bordeaux mixture should be made just before the blossoms open, and the second application soon after the fruit is formed.

For gooseberry mildew, he recommended eau celeste, which should be applied early as a preventive, or potassium sulphide, eight ounces to 25 gallons water. This latter would only cost about 20 cents, and the price, therefore, need debar no one from using it.

The time for picking apples was discussed by Mr. Craig. In his opinion it was not best to allow apples to hang after the seeds had matured. Mr. Craig showed two samples of the Wealthy, one of which had hung on the tree ten days longer than the other. The latter had colored after it was picked, and on the first of March it was in better condition than the former. Mr. Craig had gained his experience in the following way: he had picked one-half the apples from a tree of Wealthy, early, just when they were mature, and the other half was left ten days longer. Of those first picked, only 15 per cent. were spoiled when last examined, while of the second picking 25 per cent. were decayed up to the same date, February 20th.

Propagating raspberries by layering was also treated of by Mr. Craig. This was the common method employed by nurserymen who shovel the earth in among the branches, covering nearly every part of the bush; the parts thus covered would all throw out small shoots and could be easily used in making new bushes. Most shrubs may be propagated from green wood slips having three or four leaves, if made in July and firmly set in the ground and kept shaded.

The writer, in his address, gave a detailed account of the common mistakes made by Canadian apple growers, and afterwards replied to numerous questions.

Grafting Nut Trees.—Top-working a hickory or walnut, or all common trees and shrubs, can be done by annular budding. June, when the bark slips easily, is the time. The method is simply this—take scoin ¼ to ¾ of an inch in diameter; remove a ring of bark 1½ to 2 inches long, bearing a good strong bud; cut off a limb of the stock, leaving a stub, from which another and similar ring of bark is removed. The ring from the scoin is carefully split, if necessary, and substituted, taking care that it neatly fits the remaining bark of the stub, and its edges when split are close enough to unite. Cover the whole with a paper sack tied below the wound and success is sure. Care is necessary that the parts to be united fit, and are not bruised.—Prof. J. L. Budd.

HORTICULTURE IN PUBLIC SCHOOLS.

THE fact, that by far the largest interests of our province are agricultural, is of itself sufficient reason for giving agricultural subjects prominence in a rural school course; but when we consider the practically indefinite expansion of which they are capable, it becomes a matter of natural importance that something should be done to bend the inclinations and direct the energies of a larger proportion of the population towards them. Not only is there a distaste for these pursuits, as shown by the disproportionate growth of urban population, but there is a lamentable ignorance of the scientific principles on which they rest. Among the many agencies to which we may look for improvment, none possess more advantages than the public schools, and horticulture presents the readiest means of introducing agricultural subjects in these schools. There is not a family represented that has not at least a small garden, so that many of the facts and theories of a class lesson could be verified or tested immediately by the pupils with little trouble and no expense. The material for the practical study of plant is always at hand. Horticultural subjects can be taken with pupils of all ages, along the lines of the most approved modern methods of teaching without disturbing the ordinary school work in the least. Indeed, natural science cannot well be introduced in primary schools except through the study of plants and their modes of growth. Any pupil who is old enough to notice the difference between a leaf and a root, or that a plant droops when pulled from the ground and revives again when placed in water, is old enough to begin the study of plants; and no pupil is so far advanced that he does not find something to interest him in even a limited garden.

As a mental discipline, quite apart from its practical side, this subject would have as much value as any on the course, and in point of interest is much beyond many of them. I have seen a high school class of boys and girls, partly from the town and partly from the country, listen as they would to a fairy tale while their teacher told the story of the common red clover and its relation to other crops on the farm.

But the difficulty lies rather with the teacher; unless he has an appreciation of the importance of the subject, and a living interest in it, I fear little progress would be made. Many of our teachers are young girls who, in addition to their intellectual immaturity, are supposed to have no interest in the theory and practice of horticulture, and possibly for that reason none. A large portion of the male teachers are from the country, but they too often think of the garden only as a place where they were forced to toil evenings after they had already done a fair day's work in the fields. The case, however, is not altogether hopeless.

Women are quite capable of inspiring love for fruits and flowers and giving useful instruction in their culture, if they can overcome a few conventionalities; and young men, who have left the farm disgusted with its drudgery and isolation, might be persuaded, especially after a few years experience in school teaching, that drudgery is not confined to the farm and that isolation itself is sometimes very desirable.

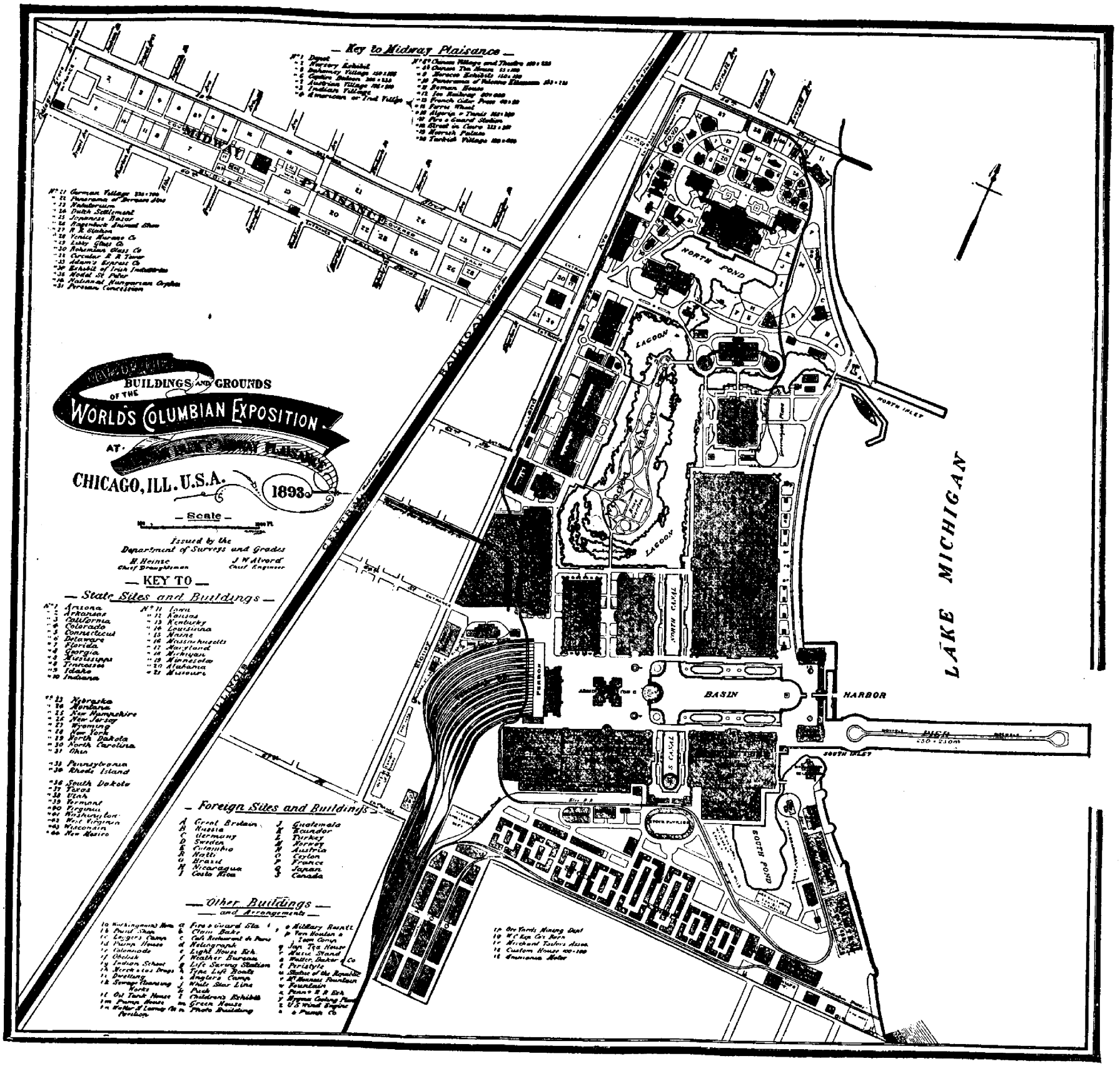
The introduction of horticulture into the school depends almost entirely on on the teacher, and therefore, any efforts to bring this about must be directed towards meeting the teacher and influencing him. I will suggest that the co-operation of the County Inspectors be secured either by presenting the subject to them at their yearly meeting in Toronto, or by special circulars, or by both methods. They, more than any other men except teachers could enforce and impose the teaching of Horticultural subjects in the public schools, and their aid would be invaluable. Every teacher must get his profession and County Model School, and it might be possible to induce some competent local horticulturist to address the teachers-in-training once or twice during the session to excite interest in the work, and at the same time secure the co-operation of the head-master. In every county, too, there is a yearly convention of teachers at which something might be done. The science master of the high schools are also able to influence the teachers of the country in this direction to a very large extent.

These suggestions are made to show that some definite steps might be taken, if the subject were thought of sufficient importance, and, whether it is or not, might very properly be a subject for discussion at the next meeting of the Association; and the whole matter, if favorably considered, be placed in the hands of an energetic or efficient committee. There is already an excellent text-book on agriculture, and the education department, I am sure, will assist in any well-developed scheme.

Windsor. A. MCNEILL.

KEROSENE FOR BLACK KNOT.

My next door neighbor had several plum trees bearing fine fruit, and all died covered with knots; but before dying I had secured a few sprouts and had some fine young trees, on which, when they were about six feet high, knots began to break out on the trunks, some six inches long. Having filled a small sewing machine oil can with coal oil, I gave the knots a dose; they stopped growing, but in about a month a few more made their appearance and some old ones began to swell again, then another dose finished them. The next year (last summer) a few spots appeared, they were treated before they broke out, and all the trees are now very thrifty, only scarred where the large knots were, as the knots died and fell off like loose bark, leaving dead spots over which the new bark is growing. If the trees are very badly affected, it is better to cut them down, they are so unsightly. The oil does not seem to have any bad effect on the sound part of the tree: but, like all other medicine, too much might be injurious, but I'd rather kill it trying to save than let the disease have its way. R. N. Y.


— Key to Midway Plaisance —
MIDWAY PLAISANCE
BUILDINGS AND GROUNDS OF THE WORLD'S COLUMBIAN EXPOSITION AT
CHICAGO, ILL. U.S.A.
1893
— Scale —
Issued by the Department of Surveys and Grades
H. Heinze, Chief Draughtsman
J. W. Alvord, Chief Engineer
— KEY TO —
— State Sites and Buildings —
— Foreign Sites and Buildings —
— Other Buildings — and Arrangements —
NORTH POND
LAGOON
NORTH ISLET
LAKE MICHIGAN
BASIN
HARBOR
SOUTH ISLET
SOUTH CANAL
SOUTH POND
PERRON
RAILROAD
ILLINOIS CENTRAL R.R.

NOTES FROM THE WORLD'S FAIR.—I.

A SHORT journey from Hamilton! The Chicago Express leaves at 4.10 p.m. and arrives at 8 a.m.; a night's rest in a sleeper, and you awake in Chicago.

On board were some Frenchmen—good-looking fellows, full of life and vivacity; only one of whom could speak English. The others speak French so fast it is almost impossible to catch the words. One is an artist, and interests the others with his sketch-book, adding an additional outline wherever he sees an interesting subject.

The great tunnel at Port Huron is so dark that you can see nothing, and so one can give no items of observation, save that in its dark recesses several officers of customs make us open our valises, and bid us attend at the baggage room on the American side, to open our trunks. Finding the writer was commissioned by the Minister of Agriculture of our Dominion, the officials at once gave way, out of courtesy, and he was passed without question.

The ride through Michigan was rather monotonous—an ordinary farming country, with little to indicate that the farmers were very prosperous. As we neared Chicago, the proximity of a large city was evidenced by the hundreds of

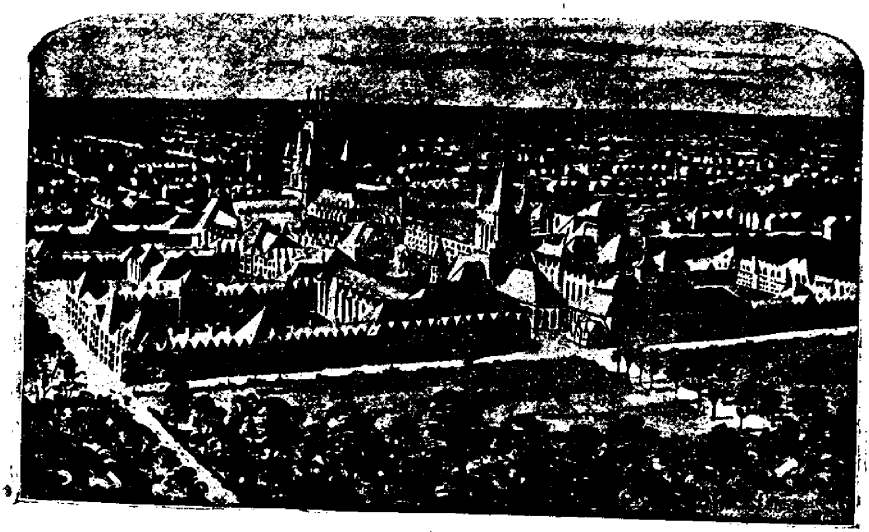


FIG. 531.—BIRD'S EYE VIEW OF UNIVERSITY.

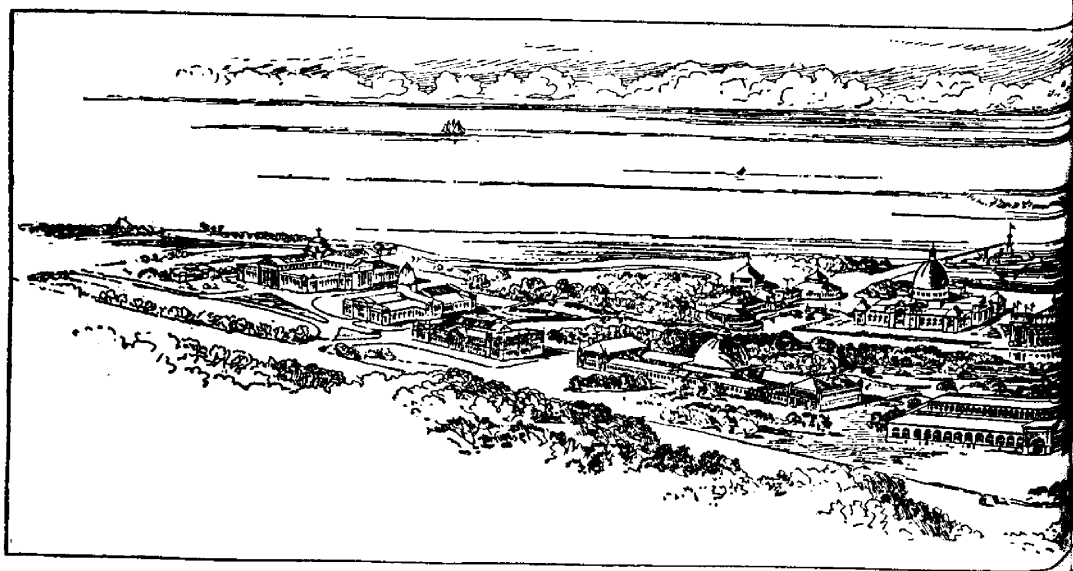
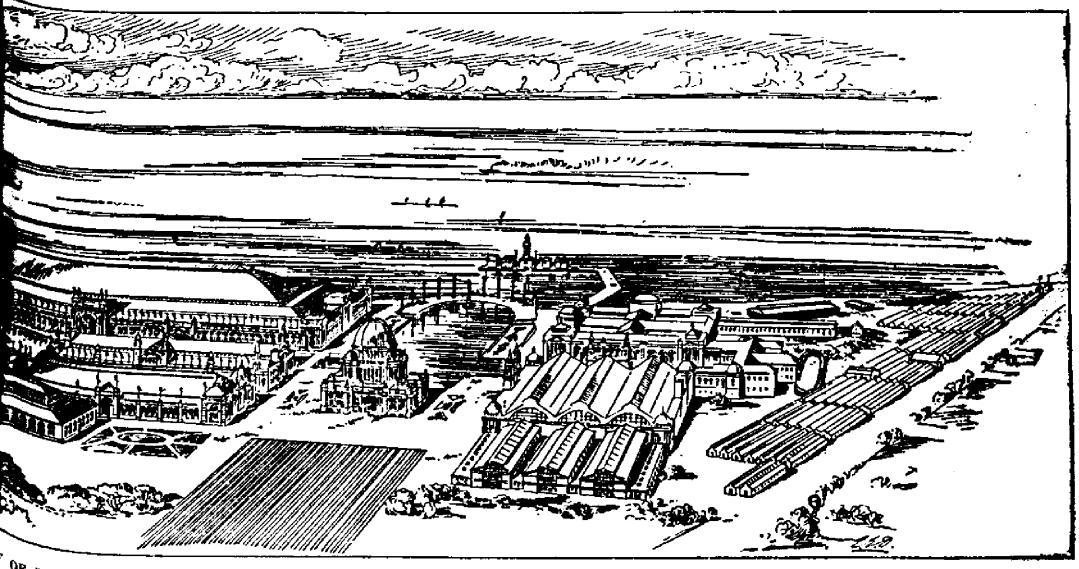


FIG. 532—BIRD'S EYE

acres laid out in building lots, with sidewalks and streets, and even shade-trees planted in advance of any houses.

Polk Street Station, where we leave our train, is a fine one, with every accommodation for a large crowd, such as may be anticipated very soon. Here our party of vivacious Frenchmen are ubiquitous, at the parcel-room with grips and rugs innumerable, or at the refreshment-room doing full justice to the needs of the body. At this Station you are in the centre of Chicago, but by no means near the fair grounds. Such an immense area is, of course, only to be had outside the city, and Jackson Park is eight miles away. The Cottage Grove cable cars, or the elevated railroad, and the Illinois Central are the best means of reaching it, but these are busy enough carrying exhibitors and workmen. How they will be able to carry the hundreds of thousands is a problem. To be within walking distance will be an advantage, and in recognition of this a great number of enormous temporary hotels are being rapidly pushed forward toward completion, outside the grounds, with single rooms at $1 per day without meals. Fortunately for all concerned, an immense railway depot is being completed just inside the grounds, and here railway trains from all lines are expected to land their hundreds of thousands of visitors.

The writer is fortunate in having a nephew at the University of Chicago, and through his kindness a visit to it was one of the first things on the programme. This is one of the great Universities of modern times—endowed with 7,000,000, largely by Mr. J. D. Rockfeller, its foundations are being laid broad and deep, and the buildings already open are but a promise of what is to follow. Only one year in operation, it has 700 students, with a promise of double that num-



OF THE WORLD'S FAIR.

ber next year. Our engraving shows a view of the huge quadrangle of buildings, as it will be when completed; only a portion is yet finished, but the work is being pushed forward with vigor, under the able supervision of the President, Dr. Harper. There are no bars of sex, color or nation, but the whole course is more in the interests of postgraduates than undergraduates, the design being to turn out scholars of very high attainments in special lines.

But how can we describe the great exposition to our readers? Pen and paper seems utterly inadequate even if employed all summer. Imagine 650 acres filled with immense buildings of the very finest architectural design; one of them alone, the Manufacturers and Liberal Arts, covering thirty acres! Besides the numerous magnificent buildings devoted to exhibits proper, every country and every state has its own respective building, for some prized relics and characteristic displays and for use as State offices; and intersecting the grounds there are several lagoons, with islands and bridges which give a fine effect to the whole. Standing on the tower of our Canadian building, and viewing the whole, to-day, the writer could not help feeling sad at the thought that seven months hence, these buildings will be taken down, and all the grandeur departed. It reminds one of those lines:—

This world is all a fleeting show,
For man's illusion given.

No one can get any good of a short visit; there is too much to be seen for a day or a week. Why one can hardly see the outside of the buildings in one day; and a day to each of the principal buildings is very little, besides the

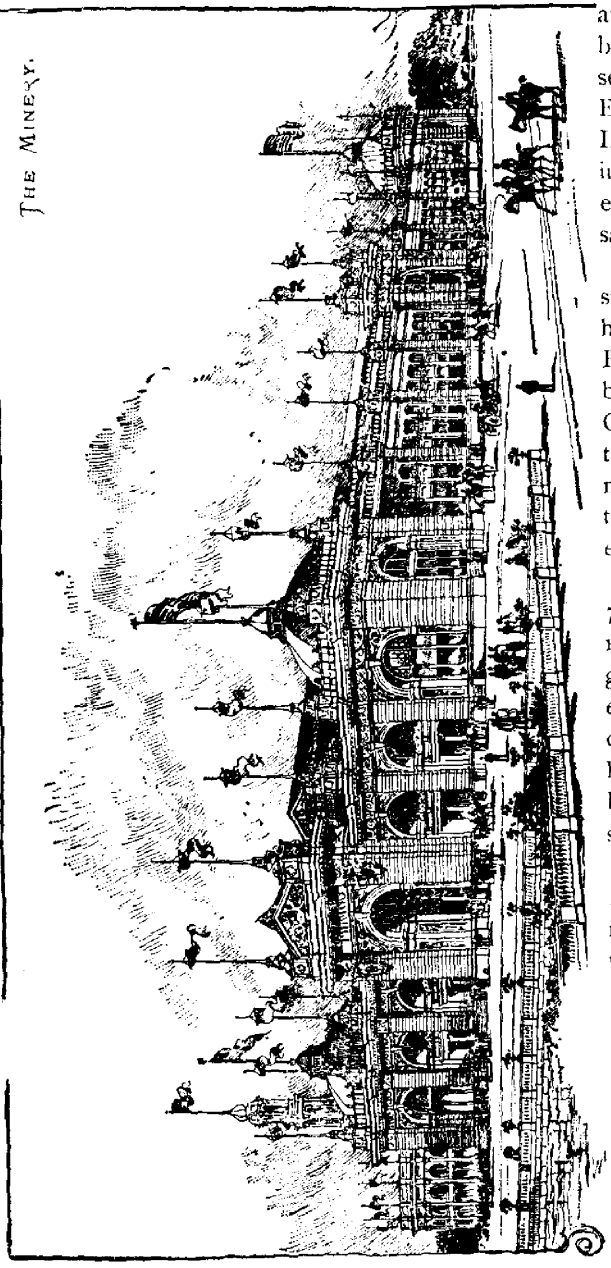


FIG. 533.

attractions of the State buildings, and the glimpses of street life of Egypt, Turkey, China, Ireland, etc., to be had in the peculiarly interesting "Midway Plaisance."

Unfortunately our space is well nigh exhausted for World's Fair topics this month, but for the benefit of Canadians who intend to visit us here this summer, we insert a map of the grounds and a bird's eye view of the same.

The Mining Building, 700 x 350 ft., will be a mine of wealth to the geologist, with its rich exhibits from all parts of the world. One little nickel from Sudbury mines weighs only six tons!

The Agricultural Building, which covers nine acres, is one of the most elaborate on the grounds. Its architecture is classic Renaissance, and is lavishly adorned with examples of the sculptor's art. Some of the corn decorations in it are very captivating. Ohio, Wisconsin and Iowa have

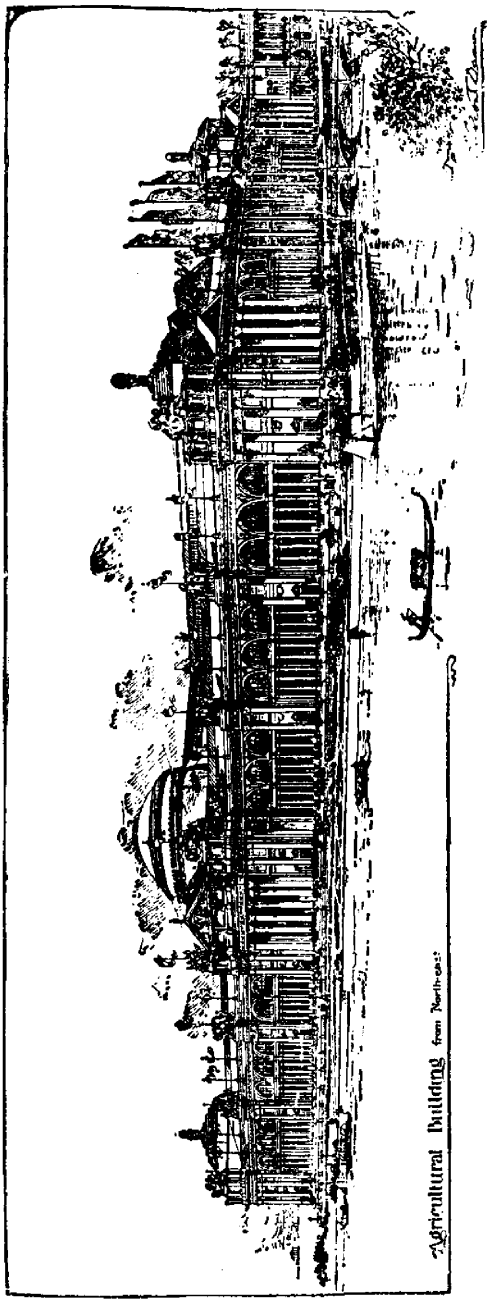


FIG. 534.

courts decorated beautifully with various colored corn, cut in various shapes, and set to form beautiful designs, along the cornice, on the ceilings, and up the columns. But in our opinion this is too artificial, and Canada's court trimmed with grains in a pretty but more natural style, is more sensible, and more instructive; indeed, with the trophies of the Experimenaal Farms, the Ontario Agricultural College, and the provincial exhibits, it will constitute a great triumph of skill.

"How much are your water-melons?"

"Two dollars each, sir."

"Has Mr. Blank bought any of you at that price?"

"We send one to his house every day."

"I just wanted to know. He is cashier on a salary of eight hundred dollars a year, and I'm on his bond for ten thousand dollars. Water-melons are very healthy, but if Blank can eat 'em at two dollars apiece, he must find another bondsman."—*Wall Street News.*

Dilute Bordeaux mixture, copper-arsenic solution and ammoniacal solution of copper carbonate are the most useful for the treatment of the diseases herein mentioned, and the first has the widest range of usefulness of all.

HOT WATER HEATING.

THE reply to question 542, in the March number of CANADIAN HORTICULTURIST, coming as it does from such excellent authority, will relieve many persons of doubts which still exists respecting the merits of hot water heating as applied to dwelling houses and other buildings, as well as to greenhouses. Mr. Beadle's words, "I unhesitatingly give the preference to hot water," will carry conviction to all who know anything of that gentleman's experience in such matters.

The subject of heating buildings by hot water, however, is in its infancy, and will not take its proper place in household economy until it is more generally understood and its practice greatly simplified.

I do not propose to write an essay on this subject at present, but have thought that a few pointers to intending builders, from one who has had nearly twenty-five years experience with this most economical method of heating dwelling houses, might be of service at present.

1. The boiler must be of sufficient capacity to heat the water sufficiently without forcing, during the *coldest nights*.

2. The piping must be of sufficient capacity to hold an abundance of water for the *coldest weather*.

3. The estimate for the length of the piping must be made on the *quantity of water required*, and due provision must be made to distribute the same to the necessary points with the least length of pipe, *i.e.*, pipe of the largest workable size.

4. Pipes must be laid with sufficient fall only, to prevent "pockets" being formed. One inch in one hundred feet is sufficient for this purpose if of the proper size and of the best quality, provided they are put in place by a competent workman.

5. No coils, or substitutes for such, should be permitted above the floors. Such furniture is utterly useless and very expensive.

6. The circulation of the water depends upon the difference between the weight of the ascending and the descending columns.

7. The difference in weight in the two columns is produced by the difference in the temperature of the air surrounding the pipes and the temperature of the water in the pipes. When the temperature is the same there will be no circulation.

8. The same amount of heat will be given off from the same area whether the pipes are laid horizontally or perpendicularly.

9. The cheapest work is that done by the most competent workmen.

Other "pointers" may be given, as well as further explanation made of the foregoing, should circumstances require them.

Lindsay, March, 1893. THOS. BEALL.

CURRANT GROWING FOR PROFIT.

ROM my experience of sixteen years work there is no fruit that gives such good returns for thorough care and cultivation, (and I may say considering last season's prices,) for neglect and poor cultivation, as the currant. At the same time no fruit shows such a marked result as the result of thorough care and cultivation. I have come to the conclusion that the following conditions are essential to the highest success:

SOIL.—Almost any kind with a clay subsoil, not more than two feet from surface, will produce good crops ; and with clay at even greater depth, if the soil has any mixture of clay or alluvial deposits.

LAYING OUT GROUND AND ECONOMIC PLANTING.—Prepare the land by ploughing and surface working, and then roll or level smooth. Mark crosswise with marks, set at distance intended to set plants in rows, say 6 feet for strong-growing varieties such as Black Naples and Raby Castle, and 5 feet for small growers, such as Lee's Prolific, Fay and Cherry. Next, run furrows lengthwise, 6 feet apart, using stakes 6 feet long in measuring, and throwing the furrows all one way in order to get even distances. This can be done by striking out one half of field, driving one way, and the other half the other way, using two sets of stakes for measuring and striking out. Let a small boy carry the plants and a man deepen the furrow to nine inches at each cross mark, the boy holding the plant against the land side of the furrow at the cross mark, while the man fills in the furrow immediately around it, packing the soil firmly on the roots, and then filling up to surface loosely. The operation is thus done well and rapidly. A man and boy should plant 1,000 to 1,500 bushes in a day.

CULTIVATION.—With this system a crop of vegetables, potatoes or corn, can be planted in hills, and cultivated both ways during the first and second seasons, after which the plants will occupy the ground, and then cultivation should be continued from year to year. In the fall, plough shallow with one horse plough toward the plants, 4 or 6 inches deep, three rounds completing the work on each row. In the spring, plough back in the same manner and cultivate with one horse crosswise, one round to each row. Then, if necessary, hoe down the soil that remains around the bushes. Such a plan will not cost more than $10 per acre per annum for cultivation.

MANURING.—Use two good forkfuls of stable manure to each plant until they are two years of age, and in proportion before that. This may be done either before or after ploughing in fall, and may either be worked into the soil in the spring or left on the surface as a mulch. This I prefer, as it keeps weeds down,

and also keeps the ground cool and loose, which is necessary to successful growth. Once hoeing after the crop is off, is usually enough to keep the grass and weeds away from the plants.

CARE.—This item might have been struck out of currant culture forty years ago, considering it aside from cultivation, pruning and manuring; but not so to-day, as every decade since then has more or less changed the application of the word, until now I take it to mean that the would-be successful grower must always be *taking care* that insects and diseases do not reduce his returns below the cost of production.

The only defense against the borer is by keeping up a strong, thrifty growth of young sound wood, as the destroyed canes are taken out at the annual pruning. The borer attacks all varieties, black, red or white, but the Raby Castle or Victoria seems best able to resist its attacks.

The currant worm only attacks red and white, the black being exempt. Two broods appear each season—the first soon after the leaves open in the spring, and the second just as the fruit is ripening. Paris green, diluted with water as per usual directions, and driven through the bushes with spray pump so as to wet all the foliage, will destroy the first brood, but as the second brood comes just at ripening time, fresh hellebore diluted in water, 2 lbs. to 40 gallons, and applied immediately will destroy them, or mixing the hellebore with sifted clay, road dust, lime or flour, one part to ten, and dusted thoroughly through the bushes, will destroy them. But I prefer the water and spraying pump, as the dusting is not so certain; for, if put on when the foliage is wet the dust clogs up and hinders the work, and, if put on when foliage is dry, the wind may blow it off before it has done its work. [Powdered hellebore without mixing with dust is very effective.—ED.] Hellebore should be applied always in the morning or forenoon, as the worms are most active in the warm part of the day, and it loses its strength by evaporation in three or four hours. I find it destroys them entirely if they get it soon after application, if not, they continue to eat and grow fat. Be sure your druggist gives you fresh hellebore, which has not lost its strength by exposure to air in the shop.

To dissolve in water, stir 2 lbs. into a pail of hot water and let it stand fifteen minutes, then pour off liquid into 40 gallons of cold water.

I tried the water can for applying the poison last year, and was not successful, as it did not wet the foliage below, where the worms usually hatch, but the spray makes a thorough job; and I find if the work is well done and in proper time on the first brood, there will not be enough of them left to produce the second brood. The latter is much more difficult to treat, on account of the hellebore losing its strength so soon after application. I would say just here that hellebore is not poisonous to man one day after application.

Many say the worms destroy their bushes in a day or two after hatching,

but this is not true. The eggs are laid along the ribs on the lower side of the leaf in batches of one to two dozen, and when hatched each little worm is not more than $\frac{1}{16}$ of an inch long, and begins eating a hole through the leaf, giving it the appearance of having been shot through with fine shot. If the grower keeps a lookout for them, they are very easily found by these perforated leaves here and there, near the base of the bushes ; and, as the brood will not all be hatched in less than a week, it is as well to wait till they are nearly all out (especially when using hellebore), as none of the first hatched will be large enough to destroy enough foliage in that time to do any material damage. Let me say again here, *do the work thoroughly the first time*, in every respect, and you will save yourself a great deal of trouble later on.

I find also in wet seasons, like that of last June, a *leaf blight* on the Cherry, Fay, Red Dutch, and White currants, only the Raby Castle, or Victoria, escaping. It makes its appearance shortly before the fruit begins to ripen, and, by the time the fruit is fully ripe, nearly all the foliage has been destroyed and has fallen to the ground, leaving the fruit exposed to sun scald ; in consequence it must be picked immediately or be lost.

Bordeaux mixture has been tried and recommended for this, and if it should be effectual the Paris green could be applied in it for the first brood of worms.

Defoliation, whether caused by the worm or by the blight will do more to stop the growth and vitality of the currant bush than any other cause and the effects are easily seen for two or three years after, as it seems almost impossible to get a currant to grow, or bear for two or three years after being once thoroughly defoliated ; therefore we must, if possible, prevent it.

Another source of loss is *surface water*. *Take care* to keep it off, especially in hot weather, as I believe it tends to increase the effects of the blight, besides making the surface hard. A good plan, if the ground is not underdrained, is to run a furrow between each row and cross furrow in water courses, after each cultivation ; at least on heavy soils One great advantage of keeping the foliage on is the heavy crops of large currants, another is that the fruit will hang on for weeks after it is ripe ; but if growth and foliage is weak and slim, the fruit will not keep, and must be picked all at once, forcing the crop on the markets and lowering the prices. Another loss will be found in the fruit being splashed with mud and sand when not protected by dense foliage, making it unsalable.

As to *varieties*, I would prefer the Black Naples for a medium to early black, and, if Black Champion holds good its claims, I would plant it with a view to lengthening the season of harvesting the crop, as it ripens later and very evenly. In all other points it is as good as the Naples, except not quite as good a grower. Lee's Prolific is rather a slow grower, with fruit smaller, and it is a very good bearer. Many are planting the Lee's in preference to the Naples, probably because they have been sold bogus plants of Naples which are being sold by careless or unprincipled nurserymen.

In my opinion, the genuine pure Black Naples will hold its own with any yet variety out. Victoria or Raby Castle is the best cropper and has the strongest foliage of any red variety, holding its fruit late in the season. With good cultivation, pruning, manuring, and *care*, it can be made to attain a size which will command a fair price in market, and thus it fills the bill for a medium sized red currant. It is also a much stronger and finer shaped grower, than the others. Of Cherry and Fay, I prefer the latter, as it produces fruit buds much more abundantly and consequently it is more prolific. It is a little subject to the same weakness as the Cherry, viz., that of producing blind eyes where there ought to be fruit buds. I have been told by a good authority that pinching the ends of the new growth of the Fay, about June 20th, will cause the fruit buds to develop nicely and produce a full crop ; while the practice has failed to make any difference in the case of the Cherry. I saw a very fine crop of Fay on the ground of the person who thus informed me, while his Cherry currants were a poor crop. I will test this for myself this year and would like to see others try it and report.

As to *pruning*, I find fruiting bushes of Raby Castle or Victoria may be spurred to one bud on all side branches, and, if growth is long, the terminal shoot may be cut back one third its length. Fay and Cherry are better if thinned out and not cut back, as the cutting back seems to injure the remaining part of shoot.

For black currants a general thinning out and keeping out of suckers seems to be all that is necessary, always of course cutting out wood weakened by borers or lacking in thriftiness on account of age or other causes, leaving one or two new suckers to take the place of any that require to be cut out. With good strong growth of one or two feet of new wood, I would cut out one half annually, either by thinning or spurring. I never prune during the first or second year, except cutting off straggling, low or broken down branches ; especially in the case of Fay and Cherry, which are subject to breaking down of the green wood when growing. However if they are not pruned until bearing age, they will grow slower and not break so easily. After they have grown to some size and made a good shaped bush, I commence pruning, as the crop will keep the growth somewhat in check.

In regard to *supply and demand*, I have never seen prices so high as last season, and I have no doubt they will remain high enough for a good profit for some years to come, as there is still a profit at half the present prices, under economical cultivation. With improved machinery for manufacture into commercial products there is no telling where the demand will end. A large quantity is being mixed with raspberries and canned or made into jams, jellies, etc., and the flavor seems to suit most palates better than either fruit alone, made up in the same way.

A machine has been lately invented for extracting the seeds from tomatoes

for the manufacture of catsup, which will do the work almost as fast as they can be shovelled into it, and does the work well. I have no doubt this machine can be used also for extracting seed from currants, grapes, etc.; some of our canners are already experimenting with it on grapes, and, if they succeed, this will result in an increased demand for the raw product.

Last season red currants brought from four to six cents per pound for Raby Castle, and from six to nine cents for Cherry and Fay. The former at above prices brought the most money per acre last season, for the blight on the latter reduced the crop.

I would say to all who can, plant and grow more currants, at least. if prepared to stand by the above directions; but if not, let them alone, or you will be like the man who bit off more than he could chew.

Stoney Creek, Ont. JOSEPH TWEDDIE.

Poison for the Curculio —Many experimenters have tried spraying their plum trees with arsenites to destroy the curculio, with varying success. Some results of a definite character were given by G. C. Davis, of Michigan, in the Stockman. The stung fruit was first all picked off, and then some trees were sprayed and the rest left unsprayed. The trees were then tightly covered with cheese cloth, and curiculios introduced under all. In a week it was found that nearly all the unsprayed fruit was stung. Only 37 per cent. of the sprayed fruit was stung. No dead insects were found under the unsprayed sacking; but under the sprayed 28 per cent. were dead. It was found that the insect lived two or three days after eating the poison, and thus the remedy was not so prompt as desirable, as they might sting many plums in the interim. Spraying is therefore only a partial remedy. It should be applied three or four times—first, before blossoming; and then at intervals afterward, but never while the trees are in bloom to poison bees and honey. Under favorable circumstances it may prove valuable, and sometimes a sufficient remedy for this insect.

Kerosene Emulsion.—At a recent meeting of the Western Iowa Horticultural Society, Capt. C. L. Watrous described a plan for applying kerosene emulsion, which he had seen used in Eastern nurseries. It is especially adapted for plant-lice on young trees, and would appear to be a most effective way of reaching these little pests. No pump is necessary, but the operator takes a large sponge in each hand, dips them into the dish of diluted emulsion, then presses them together on the opposite sides of the stem of the plant or trunk of the tree close to the ground. By a quick upward movement the whole plant is drawn between the sponges, wetting every part, and especially the under sides of the leaves, where the lice are most numerous.

In this way small trees in nursery rows and garden shrubs can probably be treated more quickly and effectually than by spraying. If care is taken in pressing out the excess of water when taking sponges from pail and avoiding drip from too much pressure when applying, waste of material will be less.

GOOSEBERRY MILDEW.

SIR,—Could you in the CANADIAN HORTICULTURIST say exactly what the mildew is, if it effects only the leaves, or the leaves and fruit of the gooseberry, and if there is any remedy for it?

A SUBSCRIBER, *Montreal, Que.*

THIS mildew, according to Scribner, belongs to the same general class of fungi as the powdery mildew of the grape. It has the specific name of Sphærotheca mors-uvæ. It attacks its host only on the surface, giving the exterior a whitish, powdery appearance. The slender filaments of the fungus throw out growths which draw nourishment from its host, and finally send out upright growths which form oblong cells by means of a division wall across the top. See Fig. 535. These cells are summer spores, and each one is capable of immediate germination. They are produced as described, in large numbers, and this accounts for the rapid spread of the fungus in the summer time, the spores being very easily carried about in every direction by the wind, even to very distant places. In Fig. 535 the upright branches are shown as at *a*, and the summer spores in process of formation by division at *b*, one or two having fallen off. Each of these will quickly germinate if they lie in a moist place during the heat of the summer, the first movement being to throw out horizontal threads, to be succeeded by the upright ones, thus repeating the life history as as above described.

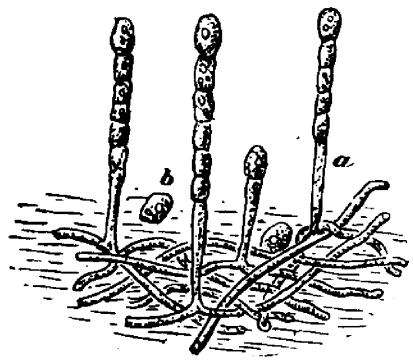


FIG. 535.

FIG. 536.

FIG. 537.

This mildew first attacks the young half-grown leaves and ends of the young shoots, and very soon after, patches of the same may be found upon the fruit itself.

In order to enable this evil fungus to survive, there is another class of spores called winter spores. In the case of the powdery mildew of the grape, these are not mature until late in the season, but in the gooseberry mildew they are found in maturity as early as the month of June.

Fig. 536, *a* and *b* represents two filaments uniting, and soon after, the one at *b* becomes swollen, and then it assumes the form of Fig. 537, and is called the perethecium. This, when mature, contains sacs of winter spores, or asci, and on account of the pressure from within, it

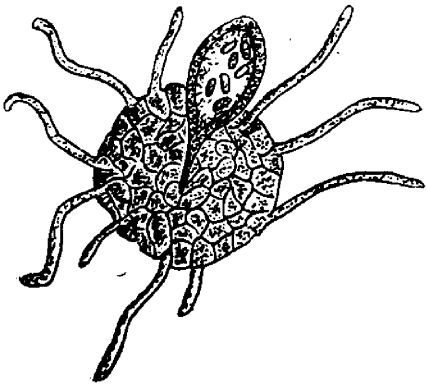


FIG. 538.

opens in the course of time and allows these spore sacs to escape. The spore sac protects the spores during the severe weather of winter; but, during the warm weather of the early spring, allows them to escape, and, being very light and very numerous, enough are easily blown about to continue the propagation of the fungus upon the young growth of the foliage. Fig. 538.

The best remedy is spraying with potassium sulphide. This work must be done early before the mildew appears on the bushes, for its action is rather preventive than remedial. The proportion of this insecticide required is one-half ounce dissolved in a gallon of hot water.

THE APPLE TREE APHIS (*Aphis Mali*).

THE apple louse often appears in immense numbers on the young foliage of our apple trees, checking considerably the vigor of the tree. The eggs are deposited in autumn, and remain in crevices of the bark, and about the base of the buds; and though at first light yellow, soon change to black. The lice hatched from these eggs are all females, wingless, and greenish-yellow in color, with black eyes and tail; and each produce living young at the rate of about two a week which are also in turn equally prolific. Our illustration shows the wingless female, and the winged male which is not born till late in the season. The small one at the right shows the natural size.

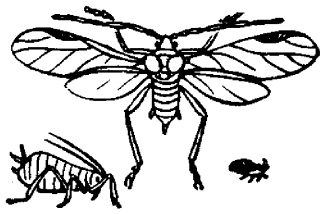


FIG. 539.—The Apple Aphis. The perfect fly, with the louse enlarged on the left, and twice the natural size on the right.

Spraying with kerosene emulsion is the most effective remedy.

The profit to be derived from spraying orchards often exceeds $20 per acre, and for vineyards is much more. The fruit crop of any State would be enhanced in value by several million dollars annually if the practice were generally followed.

APPLE ROT.

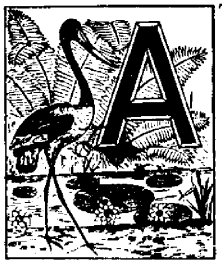
ULLETIN 44 of the Kentucky Experiment Station contains the following statement : " Probably no enemy of the orchardist destroys more fruit, and is the occasion of more loss in Kentucky, than the rot fungus, known to botanists as Gloeosporium versicolor." The trees selected for treatment were sprayed four times with Bordeaux mixture during the season, and an equal number were left untreated. In summing up the results of the experiments the following statement is made : " Throughout the summer the trees to which the mixture was applied were more thrifty in appearance, owing to the more healthy green and better general state of the foliage. In every case the leaves began to fall sooner from untreated than from the sprayed trees. The proportion of rotting to not rotting apples was in every case lessened by spraying, and we are in a position to say, as a result of these experiments, that spraying with Bordeaux mixture will save from rotting 7 per cent. to 31 per cent. of the whole number of apples."

The conclusion arrived at is that the average increase in crop, due to spraying, is 97 pounds of fruit per tree. This increase is due to several causes, among which may be mentioned the saving from rot, and the prevention of scab on both foliage and fruit, thus increasing the size of the fruit.

These results are quite in accord with those obtained at the Ohio Station, and one interesting additional fact may be noted. To test the relative keeping qualities of sprayed and unsprayed fruit, one hundred apple trees free from scab were selected from those that had been sprayed, and an equal number of scabby apples from those that were not sprayed. The apples were stored October 30th, and examined at frequent intervals, all of the rotten fruit being counted and removed each time. This experiment was tried with Baldwin, Smith's Cider, Bellflower, Newton Pippin and Northern Spy. It was found at the end of two weeks that there were nearly three times as many rotten apples among the unsprayed as among the sprayed. There was somewhat less difference between the two lots later in the season, but the sprayed kept better than the unsprayed, and kept longer. In every case some of the sprayed were sound when all of the unsprayed had rotted.

These experiments, conducted in different States, and without co-operation, give essentially the same results, and serve greatly to strengthen the conclusions arrived at independently. They show that spraying with the Bordeaux mixture pays in the prevention of rot, if in nothing else. As a matter of fact, however, it pays in many other ways.

ST. THOMAS NOTES AND COMMENTS.



T a meeting of the Western New York Horticultural Society Mr. Barry, the President, is reported as saying that the Experiment Stations had proved that spraying for the plum curculio was of no advantage. Is Mr. Barry correct? If so, we may as well lay away our spraying pumps and provide sheets and rubber mallets, and go for the curculio in the good old way. I had in some way formed the opinion that to spray plum trees was the proper thing to do, and had my plans all laid for the summer campaign. Mr. Barry also said that it had been shown that seventy per cent. of the feed values could be saved and returned in manure. I would like to know how this is done Perhaps, Mr. Editor, you can give me and others some light on these two points.

I see that Mr. Bunbury, of Oakville, would like to have the duty removed from spraying pumps; just like some people, they are never satisfied. Don't he know that raw sugar is free and water and air; the latter can come in from all quarters perfectly free while we might reasonably expect to have a duty placed on all but the north wind, that being the only wind produced on Canadian soil; and what right has he to want anything better than is made in Canada? I happened to want some digging spades this spring, that are not made in Canada, so I had to pay forty-one cents each duty on them. Serves me right, I should not crave improved tools.

SWEET PEAS.—I had the best success with sweet peas last year I ever had, and I'll tell you how I managed it: After I forked over my asparagus bed in March, I planted a row of sweet peas three inches deep between two rows of asparagus; the row was thirty feet long. After they were well up I stretched eighteen inch wire netting along the row, with a stake at each end and one in the middle. This served them to run on until the 20th of June, when we quit cutting asparagus. The asparagus grew up rapidly and carried the peas up with them until they were five feet high. We had flowers in abundance for ourselves and for the neighbors, and they continued to bloom until long after frost came. I want some others to try this plan and see if they are not successful.

St. Thomas, Ont. A. W. GRAHAM.

The treatment advised for the cherry consists in making two or three applications of Paris green, two ounces to fifty gallons of water.

Peach trees and American varieties of plums have very tender foliage, and must be treated with very weak mixtures, if at all.

HYBRIDISING.

HAVING received some inquiries on this subject, the following remarks by Prof. Budd in Popular Gardening will be opportune :

POLLEN GATHERING.—This is first in order. If the dry pollen is at hand we can touch the stigmas at the nick of time when the nectar is secreted, even if the weather be quite unfavorable. Our plan of gathering pollen of apple, pear, plum, peach, etc., is rapid, and so far has been successful. When the blossoms are fully expanded, and before many of the anthers have matured and burst, the stamens are plucked with thumb and finger and dropped into a clean, bright tin cup. While not attempting to pluck the pistils, no special care is taken to avoid it, as they do no harm. In a dry, warm room the anthers in the cup soon ripen, and when stirred with a moistened pencil brush it will take on pollen enough to fertilize several blossoms.

REMOVING ANTHERS.—When the blossoms of the varieties to be fertilized are beginning to open, select one or two of the strong central ones of a cluster and pinch off the others. With small botanist's shears nip off the anthers of the selected blossoms, which an assistant at once covers with a small sack—widest at the lower end—made of light white muslin.

APPLYING THE POLLEN.—In from 20 to 36 hours after removing the anthers, if the weather is fairly warm, the stigmas have secreted the nectar which causes the pollen to adhere. With an assistant to take off and replace the sacks, the work of touching the stigmas with the pollen brush is quite rapid. In practice, we find the use of pins in fastening the sack to place is far more rapid and convenient than strings.

AFTER CARE.—A label should state the cross made, and a week after the sacks should be taken off, and in all cases where the fruit has formed it should be covered loosely with musquito bar, which is kept in place until fruits mature to show the successful crosses, to protect from birds, and to give boys a hint that it is valuable property.

MAILING OF POLLEN.—The pollen of our orchard fruite, and some of our small fruits, is not an evanescent and perishable as is usually supposed. Apple pollen, mingled with dried stamens and pistils in an open tin cup, was germinated last spring by Dr. Halsted fully two weeks after it was gathered, and we know it can safely be sent by mail long distances. In some cases this will specially aid us in our work. For instance, Mr. Peter M. Gideon can send south for his pollen of choice winter apples, instead of sending, as he proposes, his hardy seedlings south to be operated upon.

TOO THICK.

WE shall never again probably have too many trees in our country. There are too few now. Very many country homes are unsheltered, unshaded and unadorned by the beauties of nature. In some of the older districts, however, trees have been planted thickly in spots and allowed to grow up, crowding each other out of shape, so that we rarely see fine specimens of any kind of ornamental tree. I, as well as many others, have long advocated planting trees thickly, to be thinned out as growth necessitates; but proper thinning has been so much neglected, I am led to believe such advice should not have been so general.

Not far from where I am writing, a large stone dwelling house is surrounded by a wide belt of trees consisting of almost every known kind, and which, I am sure the planter intended to have thinned in course of time; but they have been allowed to grow into a thicket of unsightly shrubs, without one well-formed tree among them. To the present proprietor, who is a widow, I some years ago suggested thinning, but was somewhat taken back, when told she wished they were thicker, which verified the old adage, "proffered advice is seldom thankfully received." The love of trees is an admirable sentiment, but for the judicious arrangement of trees, it needs to be accompanied with common sense. I could point to a number of instances of plantations ruined for want of thinning.

The number, distribution and care of trees and shrubs about a rural residence form an unerring indication of the taste of the owners or inhabitants. The wonderful diversity in the form and habit of trees affords wide scope for delightful study. Still, year after year, thousands of trees are being planted which will never reach maturity, because they are not given room enough.

In towns and villages the street trees are in many instances, crowding each other so that we have much more shade than beauty. In very hot weather, shade is desirable, and no doubt, is, to some extent, healthful, but there is a possibility of having too much shade. We often see dwelling houses so much shaded by trees that the sunshine is entirely excluded. We should not need to be reminded that sunshine is essential to the healthy development of the human race. It is clearly evidenced by the pale faces of the dwellers in overshaded houses,—their children growing up slender and white like potato sprouts in a damp cellar, unable to withstand diseases, even in their slightest forms. Too much shade causes rot in roofs and windows. Planters of shade and ornamental trees, who make more judicious distribution, derive lasting benefits and gratification without risk of injurious effects.

Cataraqui. D. NICHOL.

THE PLUM CURCULIO.

The beetles hibernate under leaves or bark, in woods or other sheltered places near stone-fruit orchards. They issue from such winter quarters as soon as, or before, the buds put out in the spring. Both male and female feed on the tender foliage for some time before the females have a chance to oviposit in the young fruit. While the nights are cool they hide under any shelter within reach. Where the base of the tree is kept clean and the earth raked, chips laid around under the trees form a most satisfactory trap for them, and in the early morning they are somewhat torpid and easily killed. Later in the season the jarring process is one of the most satisfactory ways of securing an uninjured crop of fruit. The arsenical treatment is based on the habit of both sexes of feeding on the young foliage in the early season, and secondly, on the habit of the female gnawing with her jaws a crescent-shaped mark in order to form a deadened flap around the egg she has thrust under the skin of the fruit. One thing to be considered in the use of arsenites against this insect is the effect of these mineral poisons on the different stone-fruit trees. Spraying against the plum curculio is only partially successful, and the same may be said of other rhynchophorus or snout bearing beetles, which injuriously affect the fruit, viz.: the quince and the apple curculio, and plum gougers.—V. RILEY, *U. S. Entomologist, Washington, D. C.*

DIFFERENCES IN GRAPES.

The skin of the Niagara is a little firmer—more papery, so to speak—than that of the Concord. The seeds vary from one to six in the Niagara ; from one to four in the Concord, the size being about the same. The pulp of the Concord is tougher than that of the Niagara ; the seeds do not separate so readily, and there is more acidity in the pulp around them. The flesh—"fat," as it is often called—attached to the skin of the Concord, is rather sweeter than that attached to the skin of the Niagara. If, however, the seeds of each are rejected, the Niagara is the sweeter grape, because, as above stated, the acidity of the pulp next the seeds of the Concord is more pronounced than in the Niagara. If the seeds are not rejected, the Niagara is somewhat more sprightly than the Concord. The muskiness or foxiness of the Niagara is more emphatic than that of the Concord, both as to taste and odor. The berries of the Niagara are more liable to rot than those of the Concord. Both vines are strong growers ; the Concord is the hardier.—Rural New Yorker.

Raspberries may be treated with Bordeaux mixture alone ; grapes with the same until the fruit sets, after which use copper carbonate. Potatoes should be sprayed at least five times with Bordeaux mixture and Paris green.

PEACH GROWING.

The varieties selected must be largely determined by the locality in which they are to be grown, as some varieties thrive better in some localities than others. If convenient to market, in many cases the earlier varieties are the most profitable, provided, of course, they are of good quality, but with peaches, as with almost every other variety of fruit, if an extra fine quality is grown, there is no difficulty in selling at a good price. When grown more especially for home consumption, select of varieties that will give a supply through the longest season. Peaches are particularly a fresh fruit, and are best in season, and little or no effort is usually made to keep them any longer.

Peaches need a reasonably loose soil, and will not thrive if growing in sod for any considerable length of time. The soil should be prepared in a good tilth by plowing and harrowing. Peaches are so often injured by severe cold, freezing weather, that in a majority of cases spring planting is preferable to fall, but it is an item to make all the preparation possible in advance so that at the first favorable opportunity in the spring the planting can be done.

The holes for the trees can be dug after the soil is properly prepared. These should be at least three feet square, so as to give plenty of room to the roots. In setting out, as with all trees, it will be best to cut out all injured roots, and then in setting out see that they are spread out evenly and naturally—as much as in the same position as they originally grew as possible.

Have the soil fine and see that it is filled well in among the roots. This is very important in the spring setting. And one advantage in early setting is that a much better opportunity is afforded for the soil to get well settled around the roots before hot, dry weather sets in.

With peaches, nearly or quite all of the pruning should be done in the spring. There is so much risk of the new growth being killed, and, of course, will need to be cut out in the spring, that it is best to defer pruning until reasonably early in the spring. The peach needs severe pruning annually—from one-third to one-half of the new growth should be cut out. This will aid materially in securing a better quality of fruit.

Wood or coal ashes, old lines or old leather are good materials to use as fertilizers, and these can always be applied with benefit. The soap suds on wash days, too, are good ; in fact, anything that contains potash and phosphoric acid are good to use with this fruit. In pruning, the trees should be headed low. Sufficient cultivation should be given to keep the soil reasonably clean and in good tilth.—Farm Life.

For the plum curculio and shot-hole fungus use Bordeaux mixture and Paris green combined, making three or four applications.

The Garden and Lawn.

HOW TO SUCCEED WITH ROSES IN CANADA.—II.

WINTER PROTECTION.

ALL roses may be said to be hardy, if the wood is well ripened; that is, a simple freezing, even if long continued, will not injure them, and very few roses succumb to the frosts of winter alone in this locality; but as the spring advances the sap responds to the call of a bright sun, and a sharp frost the following night may congeal it and the cane is irreparably injured. Thus it will be seen that it is of the greatest importance to protect the bushes from the sun's action till the danger from frost is past; rather protect a little longer and throw the bloom a trifle late than strive to start them early and have them injured. We know of no better protection than earth, and when the plants are far enough apart to afford sufficient earth it should be drawn or mounded up about the canes to a height of at least twelve inches. We use this mode of protection exclusively; should they be too close together, leaves will be found an excellent covering; long, strawy manure will answer, but it must not be used in sufficient quantity to heat. Where pine or spruce branches can be had, they will answer admirably.

ROSES IN POTS.—For this purpose, nice, healthy plants should be procured not later than May, and carefully planted in three-inch pots, well drained. After the first watering, which should be a thorough one, water should be used sparingly until growth begins. It is well to plunge the pots in the garden in a spot where they will not be overlooked. As the pots fill with roots, transplant into larger pots and be careful to pick off all buds as soon as they appear, up till October. The plants should be encouraged by careful attention to make a free growth, as it is only on strong, healthy canes that good roses can be expected. An occasional watering with liquid manure will be found to improve the growth. The plants should be taken indoors before any hard frosts occur. We grow large numbers of plants for this purpose annually, which we can supply in the fall, by express or freight.

BUDDED ROSES—THEIR ADVANTAGES AND DISADVANTAGES.—The advantage of a rose budded on the Manetti root is that it is a vigorous grower. The

roots throw out an abundance of fibres; thus weakly growing varieties of the rose can be made to attain a size more quickly than if upon their own roots. The Manetti root adapts itself to a variety of soils more readily than that of the Hybrid roses, and if planted in good season the strong budded plants always produce some bloom the same season. We know of but one objection to the budded, or, as they are frequently called, grafted, roses, and that is their tendency to throw up canes or suckers from below the union, which being of a stronger habit will eventually divert the sap from the desired course and kill all that is valuable of the rose if not removed. But when a shoot is observed coming from the root, it is only needful to compare the foliage with that of the rose from which it shoots. While nearly all hybrid perpetual roses have five leaflets to each petiole or leaf stalk, the Manetti has seven. If the shoot is found, upon examination, to be a sucker from the root, it must be at once detached, either cut or broken off, close to the root from which it starts. The rose grower has but to once recognize its peculiar appearance and it can never again play the imposter. The old saying, "Forewarned is forearmed," holds good in this case. Budded roses should be planted deep. Four or five inches below the surface is a proper depth to place the bud or point of union.

MULCHING is done by covering the surface of the ground with manure The sun having great power in the months of June and July, it is often hard to keep the roots of the rose moist and cool; and this can only be done by covering the ground around the plants with manure, or else with straw, moss, grass clippings, or anything that will serve the desired end. The improved quality and prolonged duration of the bloom will repay the trouble.

INSECT PESTS—THRIP.—The rose thrip appears upon the under surface of the leaves, almost as soon as the leaves are developed. Though small, they are often very numerous and very active, and, if left undisturbed, will quickly destroy the appearance of the plant. To remove them, syringe with soap-suds, mixed with strong tobacco tea, or, if refuse tobacco cannot be had, use sufficient carbolic acid in the soap suds to make it smell. An emulsion of coal oil is also effective.

THE GREEN WORM OR CATERPILLAR appears just in time to feed upon the tender points of buds. Hellebore powder will, if unadulterated, quickly destroy this troublesome pest. It usually happens that, if the thrip is well guarded against, the green worm makes but little, if any, headway; still, it is well to be on the outlook for him. A few plants can be kept free from this insect by simply catching and crushing it.

THE ROSE APHIS sometimes appears in great numbers, first upon the tips of the young canes, becoming, if unmolested, more numerous and more difficult to destroy. The same remedy that subdues the thrip will destroy the aphis. We

know of some who have but a few plants, that destroy this insect with Persian insect powder.

ROSE BUG.—Fortunately this terrible scourge does not flourish on soils of a heavy nature, where roses succeed the best. The bug loves a light, warm, sandy soil. The coal oil emulsion is the best remedy that we know of, with the addition of carbolic acid. No insect can relish the flavor that pervades the plant after a mixture containing ever so little of the acid has been applied. As rain removes all traces of the insecticides, they must be applied more frequently during rainy weather.

ROSE SLUG.—This insect is about half an inch long; they are semi-transparent and have a slimy appearance. They are easily destroyed with hellebore powder, finely sifted coal ashes, or even road dust, if dusted over the foliage often.

MILDEW.—This fungous disease is often caused by sudden changes in the temperature. It is most troublesome where the roses have not sufficient exposure to the light and air. We use, with success, soot and sulphur mixed, frequently dusted over the foliage from a muslin bag, until the disease disappears.

COAL OIL EMULSION.—Soft soap, one quart, add two quarts of water and bring to a boil. While boiling, add gradually one pint of coal oil, stirring vigorously for several minutes. To use, add fourteen parts water to one of the emulsion. Mix thoroughly and apply with hand syringe or hand whisk.

A WORD FOR THE EVER BLOOMING ROSES.—For planting out for summer bloom, we consider these roses to be indispensable. They bloom without ceasing from June till frost. They can be had in so many colors and shades not attainable in the hybrid perpetual class. They possess a fragrance peculiar to themselves. We find them less liable to insect pests than the hybrid perpetuals, and lastly, they can now be had as cheaply as ordinary bedding plants. Two-year-old plants, while costing more than younger ones, are sure to grow and bloom at once, and are preferred by many.

Hamilton. WEBSTER BROS.

ERRATA—On page 119, in place of "We have wintered them (tender roses) without protection," read *with* protection, and the rest the same.

Never use big rough grasses like timothy on the lawn; stick to the fine varieties as Kentucky blue-grass, red top, and Rhode Island bent grass. These fine grasses form a large proportion of the mixed lawn grasses you buy at the seed stores, and any one of them, especially the Kentucky blue or red top, used alone will make a capital lawn. You may also include, or sow separately all over, a little white clover; never, though, sow either yellow or red clover on the lawn.

THE WATER LILY IN A TUB.

IN Volume XIII, Mr. L. B. Rice, of Michigan, gave directions for growing this beautiful aquatic in tubs. His plan was to cut a kerosene barrel in two, place six inches of clay in the bottom, and two or three inches of lighter muck on the top of this. The tub was set with top three or four inches below the level of the lawn. The roots of the water lily are planted firmly in the bottom, and the tub filled with water. The whole is protected for the winter with leaves and straw. Mr. Rice usually plants six or eight buds in each tub in the fall, which if they grow well, will produce flowers in the following June.

Mr. Barrett, of New Jersey, has discovered a small flowered form of the sweet-scented water lily, about half the size of the common form, and more fragrant. He considers it the most satisfactory variety for planting in tubs. It is known as Nymphæa odorata, var. minor. The illustration, taken from American Gardening, is a representation of this variety planted in an old butter tub on Mr. Rice's plan.

FIG. 540.—NYMPHÆA ODORATA VAR. MINOR.

The Apiary.

ITALIAN BEES.

JUST as the horticulturist is constantly looking for the best varieties to plant and cultivate, and just as much of his success depends upon the proper selection of these varieties, so the bee-keeper should consider carefully the best bees to purchase when engaging in his business. Unfortunately because we have only indirect control of the selection of the male, the drone, we are liable to fold our hands and say there is no use in attempting to secure the best stock, they will *run out* anyway. I say only indirectly have we control of the selection of the drone. Almost every one knows a queen bee is the mother of the colony, and she is impregnated once in a lifetime only, and that on the wing. The reason why the queen is fertilized on the wing is, first to prevent impregnation with her own blood which she would do if impregnated in the hive. Next, the swiftest and most active drone becomes the parent of the future worker bees. We can indirectly select drones by keeping down undesirable ones in the neighborhood. But the fact that we cannot control entirely the selection of drones, is only a reason for re-doubling our efforts in carefully selecting where we can. Much as we may have the theory of selection by heart, I am afraid there are but few who follow it properly. Queen breeders know that a customer will be pleased when he gets a queen which pleases the eye. If she pleases the eye and produces workers which prove good honey gatherers, so much the better, but she must please the eye first. I have never felt justified in stocking our apiary of 95 colonies for beauty alone. True, the two can be combined very often but if anything has to be sacrificed it should be beauty. We have in bee-keeping, common black or German bees, Italian, Carmolian, Cyprian and Syrian, also Tunisian, or, as they have been wrongfully called, Punic bees. There are others with which we are not so well acquainted, which do not require to be mentioned here. Punic bees are very undesirable, and any one would be foolish to purchase such. They started with a great flourish of trumpets and were advertised at a high price. Cyprian and Syrian bees were, about ten years ago, quite common amongst advanced bee-keepers, but to-day a pure queen can probably not be purchased upon the American continent. The queens are extremely prolific; when angered the bees can scarcely be subdued; for building queen cells they are good. The black bees are troubled with the moth, are easily robbed, when handled, instead of adhering to the combs they incline to run over the combs and cluster in bunches, they are cross, cap comb honey well. The Carmolian bees are very prolific, gentle, cap honey well, liable to swarm often. It may be that confining the queen to certain combs the prolific tendency

can be kept under control. I intend to try these bees again this season, but I feel satisfied that, except in the hands of the specialist, these bees will not be likely to prove a success. The Italian bees have stood the test for many years; they are gentle, free from moth, robber proof to a large extent, and an all round good bee. I think we should aim at having such bees. Now a fancy price need not be paid for such bees; sometimes they can be bought at the same price as hybrids, at any rate for $1 more per colony. If they cannot be got for that, the hybrid colony can be re-queened for $1 in the honey season. Now I admit that many a hybrid colony may do as well as an Italian. I have no objections to a dash of black blood unless to breed from, and no fancy price need be paid for a good queen. Bees reproduce themselves very rapidly, and, correspondingly rapidly, stock will *run out*. New blood should be infused to keep and improve vitality.

Brantford, Ont R. F. HOLTERMAN, A. O. A. C.

WHEN FRUIT TREES NEED BEES.

IN very fine seasons when the springs are bright, fine and mild, fruit will doubtless set very well without the intervention of bees—the wind, assisted by the sunshine, being a sufficient agent for the distribution of the pollen; but in cold, wet seasons, says the author of Guide to Bees, the aid of bees is unquestionably essential to the fertilization of the bloom by carrying the pollen, not anywhere at haphazard, as the wind does, but from blossom to blossom and nowhere else.

In wet and cold weather the pollen is more inclined to adhere to the blossom than in fine, warm weather, and thus it is that the wind fails in unfavorable seasons to secure that which can then be obtained only by the help of bees—viz., the proper fertilization of the fruit blossom, with the result of a proportionately abundant crop of fruit.

I would invite any persons who may be incredulous on this point, to visit in a professedly bad fruit year—say during August or the early part of September—the localities in which our great apiaries are situated. Let them carefully view the country lying in a radius of two miles from the apiary itself, and they will find that in almost every case the fruit trees are laden with heavy crops, while they will observe as they get farther from the vicinity of the apiary (supposing that not many bees are kept in the country around) that the fruit crops steadily deteriorate.

I am convinced that so soon as bee-keepers and fruit-farmers begin to recognize the importance of the one industry in relation to the other, more prosperous times will be in store for both, and we shall not only hear of better fruit harvests, but of larger returns of honey also.

The Canadian Horticulturist

SUBSCRIPTION PRICE, $1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter are at our risk. Receipts will be acknowledged upon the address label.

Notes and Comments.

THE BAR SECKEL is a new pear which originated with Jacob Moore. It combines the size of the Bartlett with very nearly the Seckel flavor.

THE BRILLIANT, one of Prof. Munson's hybrid grapes, is said to be one of the best red varieties. The vine is a good grower, perfectly healthy, and bears well. The bunches are of good size, fruit red, nearly as large as Concord, and of the very best quality, ripening July 20, with very little rot.

THE VERMONT BEAUTY is spoken of as the most desirable of all dessert pears; it is hardy in Vermont, its native State, and is a good shipper. The Rural New Yorker says: "The fruit ripens a little later than the Seckel and much excels that variety in size and beauty. In form the fruit is of full medium size, obovate, yellow, and covered on the sunny side with a bright carmine-red, making it indeed a beauty. The flesh is rich, juicy, aromatic. It cannot do otherwise than stand at the head of our fall pears." Dr. Hoskins says that it is "the most piquant in flavor of any pear known."

NATIVE hazelnuts, according to the same journal, are too small to have any market value, and until they are increased in size by seedling cultivation we must look to the English filbert if we would engage in profitable work. A. S. Fuller, who owns a small farm near the Rural Grounds, details his disastrous experience in the New York Tribune, in the matter of cultivating in quantity the English filbert. His trees grew finely for a few years, but, before they bore many nuts, were killed by blight. This has been the experience of others.

ENGLISH CHILDREN should be taught at school, according to the Gardener's Chronicle, that it is a patriotic virtue to buy and eat home-grown apples, instead of those imported from Canada and the United States! Surely this could not be generally approved of as a plan for the advancement of English fruit interests. The final appeal is always that of real merit, and other things being equal, the best apples will be in most demand.

The editor of that journal cites the Baldwin and King as samples of our apples, and says that it is their color, not their quality, that sells them. This is true perhaps of the former, but in our opinion it is a happy union of both in the case of the King that makes it advance every year a little beyond its price the year preceding.

HARRIS' STEP LADDER.—It will be remembered that Mr. Thomas Harris, of Meaford, has invented a very strong and serviceable ladder to be used in gathering fruit, grafting, and other garden work. A cut of it appeared in our journal about a year ago. He writes: "I have lately invented two other horticultural tools, chiefly designed to be used in connection with my patent ladder. When they are ready I will advise you concerning them. I have several letters speaking highly of my ladder. I can make them perfectly safe in various lengths up to fifteen feet. I think they will be particularly useful in top-grafting, because they are so firm that one can work from the top step as safely and comfortably as if on the ground; the basket holder can be used for the tool-basket, for knife, hammer, scions, etc., you can hang your saw on one hook and a basket on the other, and stock your coat and hat on the top. It only needs a looking-glass to make it a complete wardrobe."

Question Drawer.

Best and Most Profitable Market Plum.

564. SIR,—In answer to Mr. Hickling, I would say, for sandy soil, Washington, Improved Gage, Lombard, McLaughlin, Reine Claude. For clay, which is far the best soil for plums, Bradshaw, Niagara, Washington, Imperial Gage, Lombard, Glass Seedling, Yellow Egg, Pond's Seedling, Reine Claude, and Coe's Golden Drop, and a great many more varieties about as good; but different soils and localities make so much difference in growth and hardiness, that is is hard to give a list that will always suit.

Yours etc.,

G. W. CLINE, *Winona.*

Earliest and Latest Plum for Profit.

565. SIR,—In reply to Mr. Switzer's question, the earliest with me is Bradshaw, Niagara, Washington, Duane's Purple, all ripening in the same week. Mr. Holton, of Hamilton, has a green plum which is very much earlier and when put on the market will be a great acquisition for early market. For late, German Prune, Reine Claude, and Coe's Golden Drop, all ripening about the same date. There is a late plum that I have not fruited yet, Grand Duke, a Bradshaw in size and color and later than all; recommended by gentlemen of reputation, and I believe it will be our best yet for latest.

G. W. CLINE, *Winona.*

Rocky Mountain Blue Spruce (*Picea Pungens*).

566. SIR,—Kindly say by return mail what the premium, Picea pungens, is like. Has it a good color? It is in the color that its value as an ornamental tree would consist.

C. W.

Reply by Mr. John Craig.

As grown from seed, of course there is always more or less variation in color of the young plants, some of them do not surpass in beauty good specimens of our native white spruce, but the majority exhibit the characteristic bluish green shade so much admired. The finest specimens are multiplied by grafting or by means of cuttings. The plants furnished the Association are grown from selected Rocky Mountain seed, but may be expected to vary considerably.

Yellow (or Golden) Willow.

567. SIR,—Can you give me the name of the yellow barked willow that grows in the vicinity of Hamilton;

C. W.

Reply by Mr. John Craig.

The willow referred to by your correspondent is probably variety *vitellina* of *Salix alba.* This, with the common crack willow (*S. fragilis*), was introduced at an early date from Europe, and large specimens of both are found in Ontario, Quebec, and the Maritime Provinces. In the Annapolis Valley, Nova Scotia,

these large willows are striking figures in the landscape. The common white willow, *Salix alba*, were used to a considerable extent throughout the States of Iowa and Illinois, in stockyard windbreaks, and boundary shelter belts. More valuable trees are now planted.

Squash Bug and Striped Beetle.

568. SIR,—Please tell me through the journal the best way to keep off squash bugs, and also the little striped beetle from the cucumber and melon vines? They destroyed the first plants last summer, and the second lot did not ripen well before the frost.

SUBSCRIBER.

For young squash bugs, sprinkle or spray with kerosene emulsion, but it will be necessary to hand pick the largest ones. If pieces of board are placed among the plants, the bugs will collect on it at night, and may be easily caught. The best way to keep the striped beetle from cucumber vines is to cover the plants with a netting during the time when they are abundant.

Pruning the Grape.

569. SIR.—Please give further directions in the CANADIAN HORTICULTURIST on grape pruning. I followed your directions so far with good success, but want to know if any of the young growth has to be removed in blooming time, after the second spring pruning?

MRS. B. KIRKMAN, *Seaforth.*

Most of our fruit growers neglect any farther attention after spring pruning; but the proper method is to pinch off the ends of all useless growth, in order to stop it, and throw back the strength into the fruit. It is not considered wise to remove much wood or foliage in the summer.

Spraying among Raspberries.

570. SIR.—Would spraying apple trees with Paris green injure raspberry plants under them? I have two acres so planted.

W. H. CHAPLIN, *Newcastle.*

No, not the slightest. The spraying is over a month before raspberries are ripe, by which time all traces of poison would be washed off.

Currant Leaf Blight.

571. SIR.—The leaves on my currant bushes for the past two years have dropped considerably. How can it be prevented?

WM. HARRIS, *Rockwood.*

Try spraying with the Bordeaux mixture when leaves first appear, and repeat two weeks after.

An Improved Baldwin.

372. SIR.—I send you an apple which we call Baldwin, but it is very superior in flavor to the ordinary Baldwin. I also send you a seedling apple, the longest keeper I have, but of poor exterior. W. HICK, *Goderich.*

The seedling is not worth propagating; the other is probably the well-known Baldwin grown under favorable conditions, but if its better flavor is constant it should be noted.

Greenfields' Seedling Apple.

373. SIR.—At the last meeting of the Ottawa Horticultural Society, Mr. S. Greenfield exhibited two seedling apples, one of which I enclose for your opinion. It is not only iron but steel clad. G. H. FAWCETT, *Ottawa.*

Note on the apple by Mr. John Craig, Central Experimental Farm.

DESCRIPTION.—Large, roundish, conic; color, deep yellow splashed with light and dark carmine; stalk, long, slender; cavity, slightly russetted, round, of medium depth; basin, broad, moderately deep, corrugated; calyx, partially open; flesh, white, rather coarse, sharply sub-acid, moderately juicy; fair quality. Mr. Greenfield cannot give the parentage of this seedling, as in the process of selecting from a large number, the record became confused. Being a decided winter variety, and raised on heavy clay soil in a very exposed position, it would seem to warrant propagation for the purpose of testing it on other soils and under varying conditions. The efforts of Mr. Greenfield towards the production of desirable and hardy varieties of fruits have been unremitting, and are deserving of the highest commendation.

Open Letters.

The Gideon Apple.

This is a variety originated by the veteran Peter Gideon of Minnesota, and is not as well known as it ought to be. It is a beautiful apple, from medium to large in size. Color, a pale yellow, with a beautiful pale pink blush on each side. It is not, strictly speaking, a dessert apple, but is a splendid cooker, cannot be excelled for sauce, pies, etc., and has a rich flavor particularly its own. Season, late fall. The tree is an upright grower, of good shape, and needs very little pruning. Foliage, dark green, and healthy looking, perfectly hardy and prolific. The writer sent a basket of this fruit along with other varieties to Mr. A. H. Pettit, Superintendent of the Ontario Exhibit for the World's Fair, and in acknowledging the receipt of the collection, Mr. Pettit said: the Wealthy was beautiful, but it had to take a second place looking at the blushes of the Gideon. For a late fall cooking apple, it cannot be excelled, and should be more extensively planted.

W. S. T., *Cornwall.*

The Williams Strawberry.

SIR :—May I correct what I said in our last report concerning the Williams. I do not mean to say it would yield two baskets to one of *any* other variety; but that, side by side with Bubach, I found it yielded twice as much as the latter. I further said that if I were confined to growing Wilson and Crescent, while others might grow Williams, I would give up strawberry growing altogether.

W. H. LEE, *Virgil, Ont.*

Pears on Apples.

SIR,—I noticed a question about grafting pears on apples. I have seen Duchess growing and bearing very well on apple stock. The Tolman Sweet is the best apple for this purpose.

HUGH JONES, *Walkerton.*

Abundance and Prince of Wales Plums.

SIR,—With respect to the Japan plums, I have grown the Abundance for three years. It appears to be perfectly hardy at Owen Sound. There has not been a terminal bud injured. It has shown no signs of black knot as yet; a very rapid grower—made shoots last year five feet long. It has not fruited yet; blossomed last year but did not set any fruit. From present appearance it will make a good record this year.

As the time for planting is at hand, I wish to say a few words in favor of the Prince of Wales plum. It is not a new variety, for I have grown it for many years. It has not been brought before the public, as I am aware of, as it should have been. The tree is a rapid grower while young, and, like many of the English varieties, it adapts itself readily to Canadian soil. It is an abundant bearer, almost to a fault, of large, even-sized plums, very handsome in the basket; good for preserving, and a good shipper, as it colors well before it gets soft. It is not quite so highly flavored as the Lawrence, Favorite or the Green Gage, but tolerable for table use.

Owen Sound, April 10th, 1893.

R. TROTTER.

Our Book Table.

THE ROSE.—A treatise on the cultivation, history, family characteristics, etc., of the various groups of roses, with accurate descriptions of the varieties now generally grown. By H. B. Ellwanger. Revised edition. Dodd, Mead & Co., New York, 1892.

This new edition of our excellent work on the rose, comes out in beautiful style of binding, and with considerable additional matter. It is so practical, and withal so entertaining, that every rose-grower, whether amateur or professional, needs to have it at hand after reading, as a book of reference. The excellent descriptive catalogue of over one thousand of the finest varieties at the end, is constant value; and the chapters on soil, planting, pruning, manures, insects and diseases, propagation, exhibiting, etc., are up to the latest methods.

FACTS ON FOSTITE.—C. H. Jooster, 3 Cocuties Slip, New York, sends us a pamphlet on this subject, in which he claims to be the cheaper and more easily applied than Bordeaux mixture, and as effectual.

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