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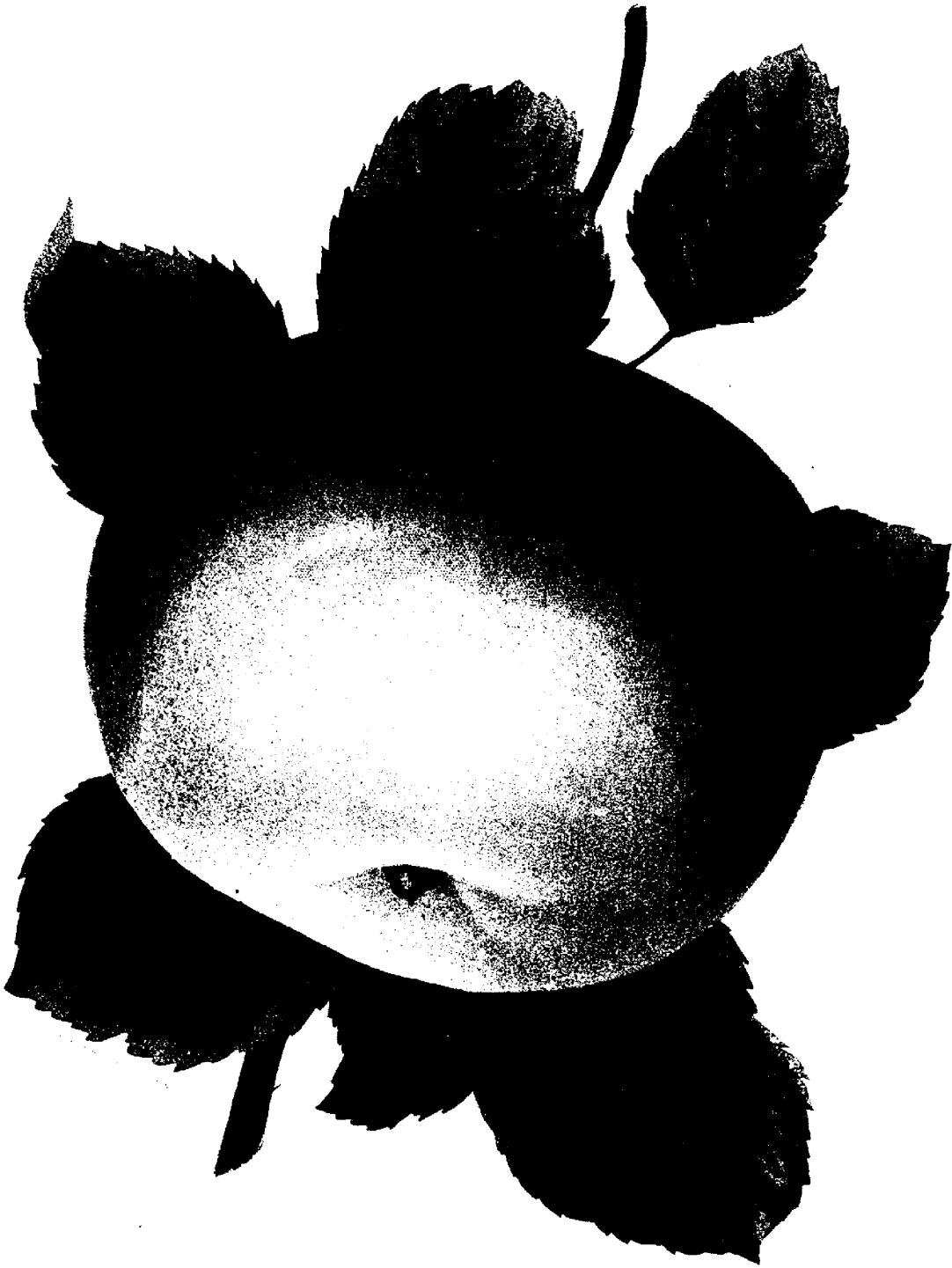
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RED BIETIGHEIMER.

Of German origin. Tree a strong grower and abundant bearer ; flesh white, firm, sub-acid, with a brisk, pleasant flavor ; in season from October to February.

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THE OLD YEAR.

Since thy dim dawn, Old Year,
How much of hope and fear!
How many a bitter tear
Hath fallen from sorrow's eye!
How many lithe and bright,
Who hailed thee with delight,
Have bowed before time's might
And laid them down to die.

Billow of time, sweep on!
Go join the ages gone,
Where earth's sun never shone;
Farewell! but not for aye;
Thou'lt meet me on that day
When sun and stars decay,
And time shall be no more.

THE RED BIETIGHEIMER.



WE have such an excellent list of autumn apples already in cultivation, that it seems almost unnecessary to place before our readers any other variety. The Gravenstein is almost perfect, so good in quality, so excellent in appearance, so healthy in growth; and the Blenheim Orange is another excellent fall apple, averaging larger than the Gravenstein; but here is another aspirant for the precedence of apples of its season, for market purposes, viz., the *Red Bietigheimer*.

It is comparatively new, the first notices appearing in Canadian publications about ten years ago. It is of German origin, and seems to succeed well in Canadian soil. The tree is a vigorous grower and abundant bearer; the fruit large to very large; skin pale green, mostly covered

with purplish crimson ; the flesh is mild, sub acid with a brisk pleasant flavor. Season, September and October ; some say it can well be kept till February. The apple is large and handsome, and its peculiar shade of color commands ready attention.

This variety, among others, was shown by the Province of British Columbia, at the World's Fair, last year, and attracted constant attention. One sample weighed a pound and a-half avordupois, and measured nearly sixteen inches in circumference.

We have not yet grown this apple at Maplehurst, and therefore we would be glad to hear from anyone who has grown it in Canada.

NOTES ON THE NOVEMBER NUMBER OF THE HORTICULTURIST.

General Grant Crab.



QUITE approve of the remarks made under this heading referring to Siberian crabs in general, but think the selection of the frontispiece unfortunate. In my experience, and I have known it for fifteen years, General Grant is one of the poorest of the whole class. It is true that the tree is vigorous, productive and decidedly ornamental when in full bloom, but the quality of its fruit is, to my taste, simply execrable ; indeed such a combination of astringency and bitterness is rarely to be met with. I cannot account for Downing's estimate of its quality. In this respect it ranks next to its American cousin Soulard, which is a true variation of *Pyrus coronaria*. When such fine varieties as "Whitney No. 20," "Martha," "Orange" and "Gibb," can be grown with equal ease, there seems little reason for cultivating General Grant. The report of the Montreal Horticultural Society for 1884, contains an exhaustive paper on Siberian crabs, by the late Charles Gibb, of Abbotsford. He says of this variety, "It might be useful further North. I do not seem to want it either for home use or for market, and have cut all my trees down."

NOTE BY EDITOR.—Mr. Craig's remarks are quite in place regarding the reading matter on the colored plate of General Grant crab which describes it as of good quality. The Lithographic Company always print these descriptions on the plates, but we never allow them on our work. This last order of 18,000 when it came to our binders had this blemish, by some mistake of the Company, and it was too late to refuse them. Our readers will please pay no attention to the descriptions printed on the plates.

Talman Sweet in British Columbia.

Mr. Starret's experience with Talman Sweet raises an interesting question regarding the adaptability of certain varieties to different soil and climatic conditions.

Talman Sweet is known to succeed in many trying sections, as far as cold is concerned, in the north-western States and in Canada. In the trial orchard at the Experimental Farm, Stump is decidedly tender, being injured each winter, while Talman Sweet alongside rarely loses an inch of its terminal growth. These facts illustrate the value of multiplied testing stations, and so emphasizes the good work now being undertaken by the Ontario Government, in conjunction with the Provincial Fruit Growers' Association.

Arch-Grafting.

This ingenious method of strengthening the tops of trees, as described by Mr. Leveans, is decidedly novel and apparently of much practical value. It calls to mind a useful system practised by Mr. Robert Jack, of Chateauguay, P.Q. In his large orchard many old trees have been prevented from splitting by bracing with iron rods. Whenever a fork showed signs of splitting, the two principal limbs involved were connected at some distance above the crotch by means of an iron bracing rod. This brace consisted of a round iron rod of the proper length to connect the branches. Each end of this rod was supplied with a threaded bolt attached by a loose eye or loop. Holes were then bored through the branches, the bolts inserted and the operation completed by the addition of washers and burrs. Many of these braces had been in use for years without any apparent local injury to the trees.

Acclimation of Plants.

The whole subject embracing the acclimation of plants and its possibilities, is an exceedingly interesting one, and one allowing free scope to the theorist.

It does not seem to me feasible to discuss this subject apart from the closely allied principle of heredity. Acclimation only appears reasonably possible when working through heredity. That this has occurred, there are too many familiar examples about us to allow us to doubt for a moment the statement. The Box Elder (*Uegundo aceroides*) of Ohio and that of Manitoba are botanically the same, yet the Ohio form is not hardy at Ottawa, much less in Manitoba. The Eastern American elm, botanically the same as that native to Manitoba, winter kills at Brandon. These Northern forms have, undoubtedly, been developed by a slow system of acclimation working through seedling production. Within the present lifetime of man, the apple and most other cultivated fruits have extended their area of profitable cultivation northward, always through seedling production, accidental or otherwise; but no amount of nursing has ever rendered any individual of these fruits better able to withstand the vicissitudes of climate, or has added to its hardiness—that is in the life of a single generation. So that it would probably be a waste of time and energy to attempt the production of hardy varieties by propagating, by grafting from individuals grown in cold climates; but by following nature's method through seedling production, the area of probable success rapidly widens.

New Grapes.

I am glad to corroborate what has been said regarding the Victoria grape. It has proved vigorous, productive, and of fair quality at Ottawa, but does not ripen early enough for growers in this latitude. Woodruff is an exceedingly handsome variety, productive, but rather poor in quality and later than Concord. El Dorado is my favorite white grape, but is not profitable, and is partially self-sterile. Vergennes is one of the most satisfactory red varieties in the experimental vineyard. Combined with great productiveness are good quality and excellent keeping properties. It is the best winter grape in our collection. Miller grape is a very happy combination of the European *V. vinifera* and the American *V. cordifolia*. It also keeps excellently. Secretary is a variety of the same type.

Figs.

The note referring to "Canadian Grown Figs," recalls the fact that a sample package of figs grown by H. Pafford, at Niagara-on-the-Lake, mailed to this office, but for some unknown reason never came into my hands. I think the credit of growing this sample (without glass) should be awarded to Mayor Pafford.

Ottawa.

J. CRAIG.

NOTE BY EDITOR.—The figs came to hand, with a tag on which was printed "From the Central Experimental Farm." Evidently they were forwarded here by mistake.

THE LIEBIG APPLE.

The Russian apples were introduced in the belief that they would prove of special value for what is familiarly called the cold North, and their introduction will undoubtedly make it practicable to successfully grow this fruit several degrees further north than would otherwise be possible. A variety that is now being planted in large quantities in severe sections in Iowa, Minnesota and Wisconsin is the Liebig. It is a variety of poor quality for dessert purposes, though not to be despised for this use where other fruit is scarce. Its chief value, however, is a cooking apple, for which purpose it is doubtful if it can be excelled. It is a winter apple in north Iowa. The fruit is large, broadly conical in form, and when ripe, well colored with red. The tree is a vigorous grower of spreading habit, seldom, if ever, blighting badly, and very much hardier than the Duchess of Oldenburg. It is, perhaps, the hardiest of the valuable kinds of apples, and well worth trying by those living in the extreme North and by those who are situated where the common belief is that only crab apples can be grown. It is not a new variety, and can be bought of the general nursery trade in the Mississippi valley. The Hiberna resembles it closely, and the two names are by many nurseries applied to the same kind.—Rural World.

CODLING MOTH AND APPLE INSPECTION.



HE codling moth must be routed from Ontario orchards, and our shippers must exert themselves more faithfully in spraying with Paris green, the best known means of exterminating it. Then, in packing, all wormy apples should be sold at home or fed to stock ; never shipped to distant markets, else the results will prove most disastrous to our Canadian export trade. Recently a car load of apples has been seized in British Columbia by the fruit inspector of that province and ordered to be destroyed, because they were found to be infested with this moth. This is in accordance with one of the laws of British Columbia. The section reads : " All persons possessing, forwarding or distributing trees, plants, nursery stock or fruit, infested with any insects, such as woolly aphis, apple tree aphis, scaly bark louse, oyster shell louse, San Jose scale, red scale borers, currant worms or other known injurious insects, shall have the same disinfected and cleansed of such insects before forwarding, distributing, selling or disposing of said plants or fruits."

Here is the clipping from the Daily Globe of Friday, November 2nd, in reference to the seizure of these apples :

Alleged Apple Pest.

Mr. Bosworth, Assistant Freight Traffic Manager of the C. P. R., received the following dispatch yesterday : " British Columbia Government Fruit Inspector is condemning apples shipped from Ontario on account of their being infected by a larvæ of the codling moth, and he is insisting that a car load of apples now there shall be destroyed by fire. Unless shippers are careful in filling orders for British Columbia market to see that the fruit is free from infection of this kind, serious loss will result." Inquiry by the Globe among the fruit dealers of this city failed to reveal any cause of such alarm as is suggested by the dispatch. There is no prevalence of the codling moth this year, and the shipment in question they think must have been of fruit poorly handled, if it was not made up of windfalls.

Now, there is no doubt that such carelessness is the management of orchards by some growers, and consequently their fruit is badly infested with the codling moth. But this state of affairs can, and should, be remedied. Sheep or pigs in the orchard will eat all the wormy fruit as it falls, hay bands will catch them, spraying will poison them, and careful sorting will prevent any of them being exported.

Would it not be well for growers of first-class fruit to be all agreed together that they will pack only stock which is free from worms, and graded according to our No. 1 and 2 classes, which have already been described in the CANADIAN HORTICULTURIST, and these hand in their names to the editor, for publication, under a special heading, in the advertising columns? Such a list would not need to cost each grower more than ten cents per month ; and circulating, as it would, among the leading fruit merchants of Canada, United States and Great Britain, would tend to bring our best growers into connection with the best buyers. The grades referred to, as defined by the writer, are as follows :—

Grade No. 1 shall consist of well-grown samples of the variety named, somewhat uniform in size, well shaped, of normal color, and free from scab, worm-hole, curculio, knot, etc.

Grade No. 2 shall consist of apples free from scab, worm-hole, but which, from lack of uniformity in size, and owing to deficiency in color or abnormal shape, are unfit to be graded No. 1.

These grades had the approval of our Association, but for some reason or other the Act as passed by the Dominion requires grades which cannot be conformed with. The Act is, therefore, impracticable, and should be changed. It will be found under the General Inspector's Act. The portion referred to reads as follows :—

Apples.

109. In the inspection of closed packages of apples, the inspector shall open not less than one package in five, and, if the manner of packing is found to be fraudulent or unfair, then he shall open all the packages put up by such shippers.

(2) Every package found to be fairly and properly packed, he shall brand as "No. 1 Inspected Canadian Apples," or "No. 2 Inspected Canadian Apples," as the case may be, if fit to be so branded.

(3) The inspector shall also examine the varieties of apples submitted for inspection, and correct the nomenclature if incorrectly marked, or, if the name of the variety is not marked, he shall cause it to be marked upon the package.

(4) The inspector may charge a fee of ten cents for each package inspected by him, said charge to cover the cost of opening and closing the package.

110. No. 1 inspected Canadian apples shall consist of perfect specimens of one variety, of uniform size, and, in case of a colored variety, fairly uniform color, and shall be free from scab, worm holes, knots or blemishes of any kind.

(2) No. 2 inspected Canadian apples shall consist of specimens of one variety, free from scab, worm holes, knots or blemishes of any kind, but not uniform in size or color.

The report of the committee of our Association on this subject will be found in our report for 1892, page 65. This committee, of which Mr. A. H. Pettit was chairman, advised that these grades be amended in accordance with the terms originally defined in the CANADIAN HORTICULTURIST, and this the Dominion Government, through Mr. J. F. Wood, promised to consider.

The desire for an inspector of apples is widespread, not only among fruit growers themselves, but also among apple merchants. In proof of this, here is an extract from the Fruit Trade Journal, published in New York :—

"Many Canadian merchants are complaining of the swindling operation of some packers, who top off barrels of apples with one or two good layers, and the balance with culls. There is talk of having the Legislature take up the matter and appoint an inspector. Leading fruit men of Ottawa have been interviewed by the Free Press as follows :—

"Mr. H. A. Brouse said :—'Yes, I certainly am in favor of a scheme of Government inspection. The loss is something terrible, but we have adopted a remedy for our financial loss, though the annoyance and trouble cannot be repaid. We buy our goods in a way that we deduct so much for loss or deteriorated quality, but even then the evil is not avoided. We are annoyed by mixed barrels and fraudulent branding. It is impossible, when getting in hundreds of barrels, to examine them all, and we often run against a badly packed barrel.'

"Bate & Co. said :—'Yes, we are certainly in favor of an inspector. It is a long standing complaint and a serious loss, and cannot be remedied too soon.'

"Kavanagh Bros. said :—'This bad packing of fruit is a perfect nuisance, and a matter of a great loss. Certainly, a fruit inspector should be appointed at once.'

The question before us is: Is apple inspection practicable or impracticable and if practicable, how?

Perhaps our previous plan was impracticable. No man is willing to undertake the work of apple inspection on the mere chance of getting now and then a car load of apples to inspect at ten cents a barrel, nor is any man willing to become responsible for the marking of a grade of apples in car load lots and thus assuming the responsibility of saying that the whole are No. 1 grade; but he can condemn such lots as he finds to be packed in a fraudulent manner. It would be well to employ an expert fruit inspector by the Dominion, who shall be paid a liberal salary, and whose business it shall be, (1) in the spring to inspect fruit trees and vines that are being imported and thus prevent the introduction of fungus diseases and injurious insects; (2) in the month of June or July and August, to enforce the Plum Knot Act and the destruction of peach yellows; and (3) from September to March, to inspect such shipments of apples as it may be possible for him, in order to prevent, as far as he can, the shipment of any fruit that he finds is fraudulently packed, or which is infected with codling moth or apple scab. Also in case of any apples found to be inferior to the brand under which they are shipped, he should cause the brand to be erased from those barrels. To the same man appeal could be made by either buyers or sellers, in case of a dispute as to whether a certain lot of apples which had been purchased was up to the grade marked upon them.

Certainly the grades should be clearly defined; and then as much publicity as possible should be given to them, in order that they may become a convenient basis of bargain.

DROUTH ON NEWLY SET TREES.

A period of drouth is an exceedingly trying time for newly set shade or fruit trees. They then require the greatest care, and unless continually watched with an eye to their needs they will surely die. More failures result from neglect of newly planted trees than from any other cause. When trees are set they should be well mulched, but this alone is not sufficient to insure success. When a hot, dry spell comes on, the surface of the ground around the trees should be well and frequently stirred. When watering is resorted to, a mulch, not only in the immediate vicinity of the tree trunk, but for some distance around the roots, will prove of the greatest benefit in retaining the moisture. Unless the trees are thus mulched a watering in a dry time is as likely to do harm as good. The water applied should be put on at evening, and a thorough soaking should be given. Never allow the ground around the trees to become hard and crusted over the surface if you can possibly help it, and you can by keeping on a good mulch. Any substance that will soak up moisture and retain it well will do to put around trees. Such a mulch serves a double purpose; it retains moisture in the ground below it, and holds moisture in itself to be given up as the soil beneath it dries. The water should be put on only when the ground where it is applied is shaded.—The Farm.

PRUNING THE GRAPE.

SIR,—Please tell me how to prune grape vines, and when should it be done?

H. W. BRAINARD, *Notch Hill, B. C.*



HERE is no better time than the mild days of December for pruning the grape, providing the wood is not cut back too close to the new buds. It may also be done in early spring, but if deferred too long there is loss of strength by profuse bleeding. There are many systems of pruning the grape, each of which has ardent advocates. At Maplehurst we practice the Fuller system, which we may briefly describe as follows:—The first year after planting allow only one stem to grow (Fig. 709), and at the end of the first year, cut this back to within about one foot from the ground. The second year allow two buds to grow, producing two branches as in Fig. 710.

At the end of the second year, bend down these two branches to form two arms, and these should be trained each way four or five feet along the lower

wire, forming what are known as the "two arms." From these uprights are grown about every foot apart, as in Fig. 711, and every year these are cut back to within one or two buds of the old wood of these two arms.

It is a great temptation to do longer pruning, or to have many of the uprights uncut; but the result seems always to be disastrous, for the growth will go to these higher parts to the almost entire abortion of the buds below. Then when it becomes very desirable to cut back, there are no buds left on the main arms to renew the growth for the season following.

In addition to this, the only pruning needed in the summer, is simply to rub off superfluous sprouts when they are just beginning to push, and to stop the young growth about a leaf or two beyond the last bunch of grapes.



FIG. 709.

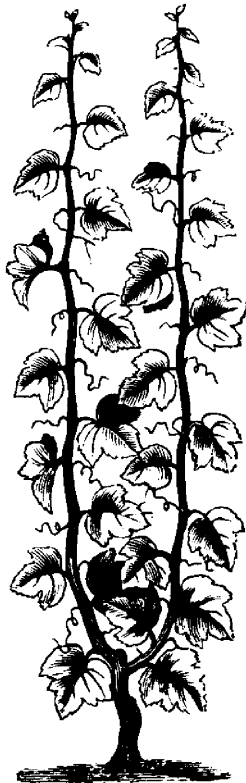


FIG. 710.

The tying up is very important and often neglected. Three wires are sufficient, and to these the uprights should be kept tied, as they grow, or the vineyard will present a very untidy appearance.



FIG. 711.

THE PALM TREE.

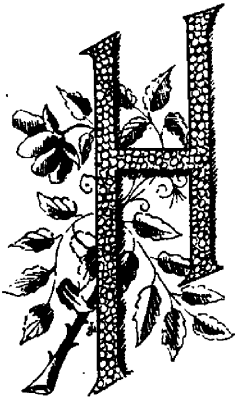
Among the Indians of Brazil there is a tradition that the whole human race sprang from a Palm tree. It has been a symbol of excellence for things good and beautiful. Among the ancients it was an emblem of victory, and, as such, was worn by the early Christian martyrs, and has been found sculptured on their tombs. The Mohammedans venerate it. Certain trees, said to have been propagated from some originally planted by the prophet's daughter, are held sacred and the fruit sold at enormous prices. The day upon which Christ entered Jerusalem, riding upon the colt of an ass, is called Palm Sunday, being the first day of the Holy Week. In Europe real Palm branches are distributed among the people. Gæthe says :

" In Rome, on Palm Sunday,
They have the true Palm,
The cardinals bow reverently
And sing old psalms.

Elsewhere these songs are sung 'mid Olive branches ;
More southern climes must be content with the sad Willow."

The books relating to the religion of Buddha, were nearly all of them written upon the leaves of the Fan Palm, and by missionaries they have been used in the place of paper. The noble aspect of this tree, together with its surpassing utility, has caused it to be called "the prince of the vegetable kingdom," and it has been immortalized in history, mythology and poetry.—From Trees in History and Mythologie.

THE NEW YORK STATE FAIR. SOME NEW FRUITS.



HAVING had the privilege of judging the fruits at the New York State fair, and also some of our own fairs, I thought perhaps a few notes of comparison and a description of how our neighbors do things, might be of interest to your readers. Taking quantity, the New York State Fair was ahead of anything I have seen outside of the World's Fair. The Society had offered \$200 for the best collection of fruits exhibited by any individual or association, and there was a strong competition between the Western New York and the Central New York Horticultural Societies. The prize being won by the Western, which had over 1,000 plates of fruit on exhibition. The total of fruit as exhibited was 400 plates of grapes, 1,300 of pears, 5,500 of apples, 900 plums, 250 peaches, besides samples of currants, berries, etc., and you can see they want nothing small of a man over there, when they asked one man to judge it all. The arrangement of this fruit, owing to the want of proper buildings, was anything but artistic or convenient for inspection or judging. The building which had been constructed for horticultural exhibits, was largely taken up with plants and flowers—which were very fine—and a large portion of the fruit had to be shown under canvas, two large tents being erected for this purpose. In point of quality, none of the fruits, excepting plums and pears, would excell the fruits exhibited at our township and county fairs, and these would not exceed or equal our display at the Industrial Exhibition, only in the number of varieties. Ellwanger & Barry, of Rochester, showed 125 varieties of pears, besides a large exhibit of plums and grapes. S. D. Willard, of Geneva, showed a fine display of plums, many of them new varieties; among them were the Burbank, Black Diamond, Archduke, Monarch, Prince of Wales, Field, and others. There was, among other new things exhibited, a plum called Palmer's favorite, which attracted my attention. It was similar in shape to Pond's Seedling, though not quite as large, a dull red or pink, but peculiarly mottled, and the quality was excellent. I hope we may, ere long, get it to test at our Ontario Experiment Stations. There was a large new white currant shown by a Mr. Marvin, large as the White Grape and considerably later. The State Experimental Station showed a very fine and instructive exhibit of fruit and vegetables, nicely arranged and named, which was well worth studying, though I had not time to inspect and take notes of it. But just here I would like to suggest that an exhibit from our Experiment Stations should be arranged at Toronto and some others of our important fairs, another year, and properly labeled, so people could learn to know the different varieties of fruits when they see them, for I find a deplorable ignorance in this respect,

even among exhibitors, in all of our local fairs. The old dodge of giving a new name to some old variety of fruit, in order to sell it I suppose, was observed here in one or two cases. Our old Pond's seedling was shown under the name of Saratoga. I had expected to learn something of system, etc., in managing and arranging fruit exhibits, but I was somewhat disappointed. I was requested to be on hand the 6th of September, the day the fair opened, but the fruit was not in readiness for judging till afternoon of the 8th, as entries kept coming in till that time and were received, and some even put up after I had commenced my work. But all drawbacks and inconvenience was amply made up by the courtesy and kindness of the officials, some of whom promised to come to Canada and take lessons in arranging fruit exhibits.

St. Catharines.

A. M. SMITH.

Currants and Gooseberries, Fall Planting.—The following is an answer to "A Reader."—By all means plant in the fall, and as early as possible, your plants will gain almost a year's growth by it, that is if they are in good, healthy condition when received, and the ground in which you plant them is not low enough to hold water on in winter. Both gooseberries and currants start to grow so early in the spring that it is better to plant them in fall than in spring. In planting, don't cut them hard back, simply tip them, but cut out the branches, leaving from three to five to each plant according to its strength. They do not need covering in winter, but a mulching of manure up about them will help them. We sometimes have it as cold as 25° to 30° below zero here, and I find both gooseberry and currant bushes quite hardy. I would also plant raspberries now. Cut the canes back to eighteen inches or two feet, and before hard frost sets in lay down the plants and cover them with a good coating of soil. Planting these things in the fall has been my practice for years, and I seldom lose a plant.—Gardening.

Careless Fruit Packing.—It pays to exercise care in putting up apples for the big markets. A study of the conditions in New York, Boston or Chicago, shows there is much need of repeating the old injunctions about assorting and selecting fruit. It is hard to find a really first-class barrel of apples. In almost every package there will be enough small, gnarled or wormy fruit, to reduce materially the price of the package. It is a grievous blunder from every standpoint. Suppose apples worth \$2 per bbl. when of high grade. The dull packer argues that if he smuggles in a peck of second or third-rate fruit, he will get the price of first-class fruit for it. But he fails. Instead of selling poor fruit for first-class, it results in his selling his first-class fruit for \$1.50, the price of a lower grade. This has been talked and written about, until it is a "vain repetition," but it is still necessary to repeat it. Keep the poor fruit at home—feed it to stock—or let it rot on the ground. Never ship it to market.—Am. Agriculturist.

PLANTING ORCHARDS.



RECENT bulletin issued by the Cornell Experiment Station, by L. A. Baily, treats this important subject at some length. We condense some of the more important paragraphs as follows :

Preparation of Land.—It is generally best to put the land in hoed crops the season before planting, as most soils need the cultivation to bring them into a mellow and uniform condition. If the subsoil is hard and impervious, plow very deep, and in some cases, as for dwarf pears, subsoiling will pay well. Lands which hold surface water must be tile drained, whether flat or rolling.

When to Plant.—My own opinion is that fall planting is generally preferable to spring planting upon thoroughly drained soils, particularly for the hardy tree fruits, like apples, pears, and plums ; and if the ground is in good condition and the stock well matured, peaches can sometimes be set in October with success. The trees for fall planting should be well matured. Some nurserymen strip the leaves from trees before growth is complete, in order to put the trees on the market for September delivery. This weakens the trees and is the cause of many failures. Place your orders for trees in August and September, with orders to let the trees stand unmolested till the leaves begin to fall. Get everything ready, and plant the trees as soon as delivered, without heeling in. Trees are mature enough to take up, in New York, in late September or early October. Unless all conditions are right, spring planting is safest.

Distance Apart.—Do not set too close. Trees are wide feeders. Roots nor branches should interfere. Do not set aside rows close to fences. Trees must be sprayed, and they should be planted so as to be most easily accessible. The following represents the outside average limit when the trees are allowed to take their natural form :

Apples.....	40 feet each way.
Pears, standard.....	20 to 25 ft.
Pears, dwarf.....	12 ft. to 1 rod.
Quinces.....	1 rod.
Peaches.....	20 ft.
Plums.....	20 ft.
Apricots.....	20 ft.
Grapes.....	6 x 8 to 8 x 10.
Currants.....	4 x 6 to 6 x 8.
Blackberries.....	4 x 7 to 6 x 9.
Raspberries.....	3 x 6 to 5 x 8.

Where the soil is strong and the grower makes a thorough work of cultivating, fertilizing and pruning, these distances may be reduced somewhat, except with apples. In general it is not best to plant shorter-lived trees between, but a first-class orchardist may do so with profit.

How to Plant.—Plow the whole land first, and fit it well. Level culture is best. Dig holes by hand, broad and ample; in hard soils make the holes larger than in loose, mellow soils. Set the trees an inch or two deeper than they stood in the nursery. Dwarf pears should be set three to six inches below the bud. Get the soil thoroughly firmed about the roots. Leave no air spaces. Fill the hole full enough to carry off surface water, and stamp the earth firmly about the tree.

A SUMMER HOUSE.

The simple and attractive design shown here which was furnished the Country Gentleman by Mr. Mahly N. Cutter, Architect, New York. The

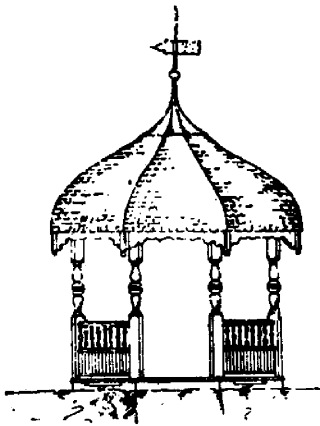


FIG. 712.

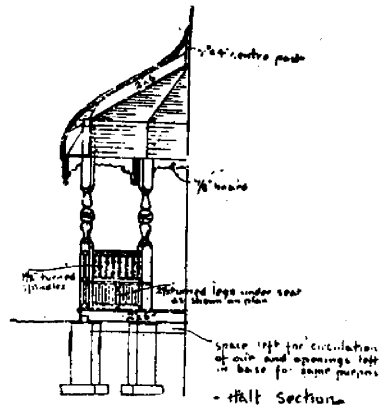


FIG. 713.

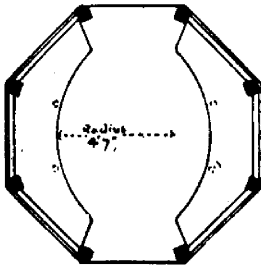


FIG. 714.

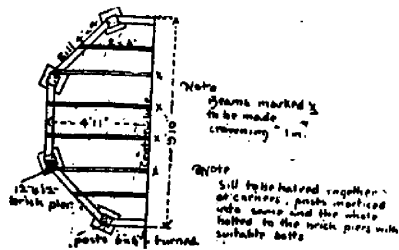


FIG. 715.

foundation consists of eight twelve-inch brick piers, on which rest sills 4 x 4, and then beams, supporting 6-inch turned columns. The roof rafters are 2 x 6, and centre posts 4 x 4. The spindles for railings are 1 1/2 inch turned. Any wood most convenient can be employed; a close grained wood which is not quickly attacked by the weather is to be preferred. It makes a very cosy little nook, and looks well almost anywhere.

SOME NOTES ON BERRY GROWING.



RED raspberries are about as profitable as any that can be raised. As a rule they sell higher even than strawberries, and when properly treated will yield a splendid crop. Mine I suppose are the Cuthbert variety, although they were transplanted from an old garden, and I never knew positively what the variety was. They are as large as the end of one's middle finger, and very dark red when ripe. In fact, they should never be picked until they reach that color, as they are dry until that time. But when ripe they are sweet and delicious, with the true raspberry flavor. They are also quite firm, and will bear transportation well. My method of growing is to plant in hills four feet apart each way. We leave from five to seven canes to grow each year, cutting out all the rest, as well as all the suckers that come up in the early part of the season. After the crop has been gathered, we cut out all the old canes in order to give the new ones a better chance for the rest of the season. The new are cut down to about one-third their length late in the fall, and then bent over and covered with straw and earth to protect from frost. We uncover them early in the spring and tie the canes up to stakes, of which we use only one for each hill. We give them the same dose of liquid manure that is given the strawberries. It is very little trouble to keep the soil between the rows free from weeds and cut out the many suckers that appear. If the canes are not very vigorous, we leave six or seven in a hill, but generally five canes are enough to secure the best results.

I am satisfied that a moderate amount of shade is beneficial to red raspberries. The general theory is that no kind of plant will grow as well, or produce as well, when it stands near to trees, which are supposed to absorb nearly all the nutriment there is in the soil, leaving very little for any other plants. But when raspberries are treated in the way I have described, the shade of trees seems to give them extra vigor, the berries grow larger as well as the canes, and the yield is very much larger. In order to test the matter, I selected eight hills growing together in the shade, and eight growing in the open sunlight. For eight pickings I counted the berries from these sixteen hills, in all of which the canes had been treated in precisely the same manner. From the eight hills growing in part shade we gathered 3,167 berries; from the eight growing in open sunlight only 2,123 berries. Here was a difference of one-third in the number of berries alone, which was still farther increased by the size of the berries, those in shade being about one-third larger than those in sun. The eight best hills averaged nearly 400 berries each, from these eight pickings, and according to count, it took 200 of the berries to make a quart. There was a good deal of difference even among these, but six hills which were most in the shade gave respectively 351, 366, 422, 573, 483 and 414 berries. Taking the season of picking right through, these hills and others like them yielded from

four to five quarts each. My whole patch, taking the lighter hills with the heavier, averaged three quarts per hill.

There is no reason why the cultivation of raspberries should not be a profitable business if conducted as part of the work on a farm. A piece of land 200 feet square, somewhat less than an acre, would contain 2,500 hills. At an average of three quarts to the hill, there would be 7,500 quarts, which at 10 cents per quart, a fair average price during the past season, would amount to \$750. It costs no more to pick them than it does to pick strawberries, the season of picking lasts no longer than a month, the care and cultivation occupy much less time than strawberries, and are consequently much less expensive. For actual profit, I had rather have two acres of well cultivated red raspberries than a thirty-acre farm stocked with ten milch cows.—Country Gentleman.

Feeding the Orchard.—I contend, says Professor Roberts (1) that the soil should be cultivated and plant food set free to the uttermost limit ; (2) that leguminous and tap-rooted plants should be used as plant-food gatherers ; (3) that animals should be kept as much for the value of the manure they produce as for the profit realized from them otherwise ; (4) that the least possible amount of stalk and vine and limb consistent with economy and the health of the plant be grown ; and (5) after having practiced all the economy possible, if there is still a lack of fertility, in order to secure the highest quality of product and the greatest net income, that commercial fertilizers of a high grade should be applied with a liberal hand. If it is found at any time that commercial fertilizers give better net results than farm manures, then there should be no hesitancy in changing from one to the other. I believe that farm manures which have lain in the open yards or have been heated, and which have been drawn long distances, are far more expensive than are high grade fertilizers. Stable manure exposed in piles from April to October often loses half its value ; therefore, I am led to believe that many tons of manure which are transported from the city contain less than a dollar's worth of soluble plant-food. This may act beneficially as a mulch, but so far as the plant-food it contains is concerned, it is too often an expensive way of preserving the fertility of the land.

Among the peaches, Mountain Rose, Oldmixon Free, Moore's Favorite, Stump, Crawford's Late, Late Rareripe come in from the earliest to the latest. About, or just as good, are Hance's Golden, Crawford's Early, Chair's Choice, Brandywine, Red Rareripe, Globe, Fox's Seedling (one of the hardiest). Among the extra-sized peaches are Reeve's Favorite, Mary's Choice (probably one and the same peach re-named) ; Susquehanna is one of the largest. The above are all freestones. Enough clings come from California to supply the market for that class. They keep better than freestones.—R. N. Y.

PLUM GROWING AT BERLIN.



THE past season's plum crop in this neighborhood was exceptionally fine, although not quite so abundant as the previous season's; the fruit was better in quality, larger in size, and the darker varieties finer in color, and with but a slight percentage of rotting. Hitherto it was almost impossible to get a good crop of Victorias and Pond's Seedling, on account of their rotting propensities. The past season was an exception; the fruit colored finely, and fancy prices obtained on account of their beauty for canning purposes. The plum rot may be mainly attributed to the curculio, from punctures made usually at the apex of the fruit. This is done after the time of depositing the eggs and after the spraying is finished. From the incisions made, a gum exudes, which in appearance resembles diamonds; these excrescences become pasty during moist weather, and life being ever on the alert to invade matter when in a proper state for inception, takes immediate possession, hence the appearance of the fungus; the cherry may be affected in a similar manner. Hitherto I have used aloes to ward off the plum curculio with good success, but, running short of that drug, had to fall back on Paris green very reluctantly; but was agreeably disappointed, having found it equally effective, not only in checking the curculio, but in preventing the fruit from rotting. This may be attributed to both the arsenical and copery ingredients which are well known in science as preventives of fermentation and decomposition. The use of copper sulphate was known by the farmers and foresters of Britain nearly a century ago, for preventing the smut in wheat and the dry rot in the Scotch pine timber.

Acting from the experience of my neighbors who had almost defoliated their trees by using too much Paris green and without an admixture of lime—which is absolutely necessary in order to neutralize the effects of the poison on the foliage—I found that a teaspoonful of Paris green to a three gallon pailful of water and a handful of slacked lime thrown in was sufficient for the purpose. Lime even used alone is a fungicide and will clear trees of lichens, which are closely related to fungi. It may not be out of place to remark, that since the use of Paris green to kill the potato beetle has been made, a perceptible lessening in the potato rot has been effected. It may be also noticed that since spraying is now generally practised, by either using Paris green or sulphate of copper (blue vitriol), the black-knot which has hitherto been so destructive to plum and cherry trees, has almost disappeared.

The black-knot fungus appears to belong to a genera indigenous to this continent, affecting many of our forest trees, such as black ash, pine, cedar (*Arbor vite*), cherry, etc.; but exotics of both *Cerasus* and *Prunus*, even the hardy sloe (*Prunus spinosa*) suffer the worst, probably due to climate extremes. Internal decay or fungoid decomposition expels the resin or gum through fissures and cracks upon the surface, and on these substances the fungus spores are deposited, and not directly on the bark as some suppose.

Berlin.

SIMON ROY.

PRUNING THE GRAPE.



R. JABEZ FISHER, of Fitchburg, the well-known cultivator of fine fruit, gave a discourse at Boston, before the meeting of the Massachusetts Horticultural Society, the substance of which we give in condensed form. He purchased his first vine, a Concord, forty years ago. Ten years afterward he had an enormous crop, four and a-half tons upon three fourths of an acre, which sold at a high

price. Success with grape-growing at present depended on circumstances, and if a person had a vineyard well situated and in good condition, he would advise growing the best possible product.

His experience taught him that the best soil is a strong one, inclining to clay, but not too heavy, with good drainage. Shelter is useful. A field in fit condition for corn is also suitable for grapevines. No training is necessary the first year. As soon as the leaves fall the vines should be cut down, leaving two or three buds only. The second year a single stake to each vine is sufficient. The pruning of the second year is similar to the first. A permanent support should be provided the third year, whether trellis, stakes or otherwise, as preferred. The object is to grow a single strong cane. When the length of six feet is attained this cane should be stopped by pinching off the point. All laterals that grow from this cane should be pinched so close that they may not divert growth from it. If it makes a growth of five to six-sixteenth of an inch in diameter, it will be safe to allow it to fruit for half its length, and it should be cut back to that point at the fall pruning. If less vigorous, the whole should be cut away as in previous years.

Fruiting too soon injures a vine seriously. If the vines are six feet apart they may fruit one cane and grow a new one, cutting out the one that has borne fruit. If twelve feet distant, two arms may be fruited of six feet each and two new canes produced to replace those fruited. This will require a year or two more to reach full bearing. Each vine may be allowed to carry as many clusters of fruit as there are spurs growing from the arm. Each fruiting spur may be tied to the trellis or allowed to swing free as in the Kniffen system. The system above described is the renewal system, the vine being, so to say, renewed each year and thus kept perpetually young. If the land is in good heart, and no other crop is grown upon it, no fertilization will be required before the third year, but otherwise it should be supplied from the commencement.

The Japanese Honeysuckle and our native Bittersweet both have great merits in the adornment of house-walls, and another acquisition from Japan, in the way of a climber, is *Clematis paniculata*. With its delicate foam-like masses of white flowers, exquisitely aromatic, it has become a feature of the September landscape in various parts of the Boston suburbs. When combined with the Virginia Creeper its effect is strikingly beautiful.—Garden and Forest.

INTENSIVE FARMING.



LAST fall I became convinced that I had been trying to farm on too extensive a scale; that I had spent a great deal of time, labor and money in cultivating a large area rather indifferently, and I determined to see what I could do this year in the way of intensive farming. I selected a piece of land about as poor as any on the farm—which, by the way, is saying a good deal—but chose it because it was sheltered by a cedar hedge from the north-west winds, and had a slight slope toward the south-east. On this piece, 250 feet by 70 feet (about four-tenths of an acre) I spread manure from my cow stables—rich from feeding cotton-seed meal, bran and corn meal—covering the land at least three inches deep. I plowed and harrowed it carefully, and September 20, sowed it all to spinach in rows 36 inches apart. This did not grow well enough to sell any in the fall, but all through January and February I sold it at \$1.20 per bush., using only the thinnings.

March 8, after giving the bed a very careful harrowing and raking, I sowed 18 rows (250 feet) each, of Eclipse beets, putting two rows between each two rows of spinach. I also sowed two rows, same length, of potato onion sets: and again March 12, ten rows more of Eclipse beets and four rows of onion sets. March 22, I sowed two rows of radishes; March 31, two rows of radishes: April 5, four rows of lettuce and four rows of turnips. May 14, I had cut out all the spinach in the bed, and on the rows thus left vacant, I gave a dressing of 200 pounds of superphosphate, working it well into the soil with my Planet Jr. wheel hoe. In these rows, we set out lettuce transplanted from the four rows mentioned above, and Early Jersey Wakefield cabbage raised in the hothouse—13 rows of lettuce and 10 rows of cabbage. All the onions, beets radishes, carrots and turnips, were sold bunched, cabbage and lettuce, of course, by the head, and the spinach by the bushel. The returns from the "salad patch," as we call it, to date are as follows:

Spinach	\$61 65	Beets, bunched.. ..	\$21 84
Onions, in bunches	28 51	Cabbage.....	31 76
Lettuce.....	44 00	Carrots, bunched.....	13 00
Radishes, in bunches.....	21 69	Turnips, bunched.....	5 60
Beet tops, for greens	8 47		
Total.....			\$239 32

I think there are enough beets, carrots, cabbages and turnips still in the ground to bring this amount up to \$500, and I am sure, from this experiment that, could I have given this "patch" all the time needed, I could have increased these returns by at least one-half. I am also sure that the returns would have been much greater had I given the bed a dressing of nitrate of soda early in the spring. The cold, wet spring prevented the nitrification of the

manure, and the spinach got no good from it until quite late. Had I used the nitrate, I could have had the spinach sold off sooner, would have got more of it and for it, and could have set out my cabbage and lettuce earlier.

I think I planted too close, or should have left out every fourth row, as I found that many plants were damaged in hoeing, weeding and transplanting. The moral of this, to me, is: Stop spreading yourself and your manure over many acres, work only as much land as you can fertilize, and cultivate in the most thorough manner, and devote your best energies to getting the greatest possible crops from it. Try to raise 500 bushels of potatoes on one acre instead of 1, 10 or 20—its much less work.—R. N. Y.

Care of Apples.—There is no question about the importance of, so far as possible, preventing the bruising of the fruit. From what has been said in strong terms concerning the barrier of a tough skin which nature has placed upon the apples, it goes without saying that this defence should not be ruthlessly broken down. It may be safely assumed that germs of decay are lurking almost everywhere, ready to come in contact with any substances. A bruise or cut in the skin is, therefore, even worse than a rough place caused by a scab fungus on a lodgment provided by the minute spores of various sorts. If the juice exudes, it at once furnishes the choicest of conditions for molds to grow. An apple bruised is a fruit for the decay of which germs are specially invited, and when such a specimen is placed in the midst of other fruit it soon becomes a point of infection for its neighbors on all sides. Seldom is a fully rotten apple found in a bin without several others near it being more or less affected. A rotten apple is not its brother's keeper. The surrounding conditions favor or retard the growth of the decay fungi. If the temperature is near freezing they are comparatively inactive, but when the room is warm and moist the fruit cannot be expected to keep well. Cold storage naturally checks the decay. The ideal apple has no fungous defacements and no bruises. If it could be placed in a dry, cool room free from fungous germs, it ought to keep indefinitely until chemical change ruins it as an article of food.—Germantown Telegraph.

Grapes never ripen any after picking. All that can be expected in the way of change is the evaporation of some of the water and finally decay. They must be in perfect condition for eating when plucked, or the full value of the fruits will be missed. They should be plucked as soon as ripe, however, and be stored away in some cold place. They can be preserved even longer than pears. Raspberries, strawberries and blackberries gain very little after picking. They should be allowed to reach their full growth before picking, but they are worthless for keeping if allowed to reach the stage commonly known as "dead ripe." They are then unfit for shipping. Practically the destructive forces have already started into operation at that point, and nothing will check them after such a start.—Rural World.

EVAPORATED APPLES.



THE crop reports state that the apple crop in the United States is only about half the usual yield. In localities where the crop is good, apple buyers are numerous, and are offering good figures for sound winter fruit. The question will arise in many a farmer's mind how to dispose of his apples so that they will bring the largest returns. This question may be answered in different ways. If the farmer is situated near a good market, and has good storage for his winter's fruit, it may pay him best to pick it carefully and hold it until he thinks the market will go no higher, and then dispose of the fruit himself. But when the orchard is of considerable size, the most profitable way to handle the apple crop is to dry it.

Take the present prices offered in New York for evaporated fruit, ten and one half cents per pound. At six pounds of dried fruit to the bushel of apples, this would represent sixty-five cents per bushel, and this for any apples large enough to dry. Many varieties of apples will overrun the six pounds. Russets, it is claimed, will make nine pounds of dried fruit to the bushel. This would represent the sum of ninety cents a bushel for every bushel evaporated of this variety.

Small apples, under two inches in diameter, are made into what is called "chops," or jelly stock; even the core and peelings have a commercial value, either dried or made into vinegar.

When apples are sold to the general buyer, the culls and small fruit are thrown out and frequently left to rot on the ground. In an orchard of any size this item alone, if saved, would pay for an evaporator in one year.

It costs as much money to hand-pick one bushel of winter fruit as it does to evaporate the same amount.

A sudden wind squall in our locality blew off thousands of bushels of the prematurely-ripened fruit. What will become of all these apples on the ground? Ninety-nine bushels out of every hundred will rot; the one-hundredth will belong to a man who has an evaporator, and he will realize fifty cents a bushel from these windfalls, after paying all expenses of drying. As fifty cents per bushel is about as high a price as is ever offered for picked winter fruit, this ought to be a good argument in favor of having an evaporator.

Do not infer that the price of evaporated apples always remains at ten or ten and one-half cents; rather the contrary. But when dried apples are worth five cents per pound, choice winter apples will be abundant at twenty five cents per bushel.

The evaporator offers every man who has a twenty-five acre orchard a market for his fruit. When evaporated, it can be kept unchanged for years if the proper precautions are used.

And yet, judging from the experience of those who have gone into the

business and had to buy their apples, it is not, taking one year with another, a very profitable investment, for I know personally of four firms that have, after a few years' evaporating, lost their whole capital.

There is an erroneous idea that running an evaporator requires a good deal of skill. This is not so. Any farmer who has two or three girls can dry his crop without any other help.

The whole secret of evaporating fruit can be summed up in a few words: A continuous current of rapidly-moving hot air carried through the fruit. This is the whole secret, no matter what form of dryer you use. And any form of dryer that will not allow of the air being kept in motion is not, properly speaking, an evaporator.—New York Examiner.

UTILIZING A CELLAR'S WARMTH.

The illustration shows a convenient way of starting plants in the early spring, upon the sunny side of one's house. A frame is built against the underpinning of the house and over one of the cellar windows, which is hinged so as to be raised and hooked to the floor timbers of the house. The warm air of the cellar, being allowed to enter the enclosed frame outside, tempers any sud-

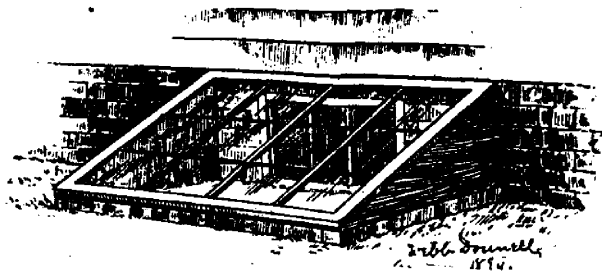


FIG. 716.

den chill in the atmosphere, either at night or on cloudy days, particularly where the cellar contains a furnace, or other heating apparatus. Of course, such an arrangement does not in any way take the place of a hot bed, but will serve the purposes of a large class of persons whose early plants are usually started in boxes in the kitchen window.—American Garden.

Thinning Plantations.—It is a good time, too, for a walk of inspection through young plantations to mark the trees which have been overshadowed and stunted by their stronger neighbors or crowded out of shape. Such trees should be removed to give the other ones free chance of expansion, for whenever trees begin to interfere and struggle with each other for the mastery, it is best to stop the battle at once.—Garden and Forest.



↻ The Garden and Lawn. ↻

ORCHIDS FOR AMATEURS.



THE most popular flowers of the day, perhaps, are the orchids. Many varieties are sold at fabulous prices, and persons are sent into all parts of the world where they grow to collect new varieties. Amateurs are beginning to attempt the culture of some kinds, and I am very glad of this, because there are several fine varieties which can be grown in the ordinary greenhouse, and the study of this peculiar class of plants is sure to be greatly enjoyed. It is difficult to say which is most interesting to the enthusiastic florist, their beauty or their pecu-

liarities. It has been demonstrated satisfactorily of late that some of the best sorts can be grown among ordinary collections of plants: Even some kinds which were formerly considered hothouse varieties, can be brought to perfection in a house adapted to carnations, and other plants of similar character. Experience has shown that *Dendrobium nobile*, *Wardianum* and *Densiflorum*, and a large number of cypripediums, cattelyas, lycastes, oncidiums and epidendrums may be grown in the ordinary greenhouse along with a miscellaneous collection of plants. This being the case, I would urge amateurs possessing such houses to invest a few dollars in good plants, and experiment with them.

There are two classes of orchids: those which grow in earth, called terrestrial orchids, and those which grow on trees, rocks and similar places, epiphytal orchids. Most kinds require a long season of rest, especially the class last named. In their native habitat, flowering and growing periods are succeeded by periods of complete rest, and we must imitate Nature's management of them if we would be successful with them. All orchids which form what is called pseudo-bulbs, must be thoroughly matured before success can be attained in their culture. Evergreen sorts, which do not form these bulbs, require to be kept moist at all times, but a larger quantity of water is required at times when they are making growth than after that growth is completed.

The chief essentials in orchid culture are fresh soil for such kinds as require earth to grow in, clean pots, freedom from insects, and a steady temperature. *Dendrobiums* do about equally well in pots, baskets, or on blocks of

cork or bark, with a little moss wired about their roots to retain moisture. The erect growers are best adapted to pot culture, while those of pendulous habit are displayed to the best effect if grown in baskets filled with peat and sphagnum moss, which should also be used in pots. The best drainage should be given. All the dendrobiums require a good deal of water while making growth. Cypripediums are of comparatively easy culture, and seldom fail to produce flowers. Plant them in peat and moss in about equal quantities, give their roots considerable room, and see that drainage is perfect. Do not let them get dry at any time, and be careful to see that water does not get into the axil of the leaf, as it induces rot. Do not try many kinds at first. Procure your plants of well-known dealers in this class of flowers, and ask for instructions for their culture to be sent with them. If you succeed with a few of the commoner and less exacting kinds, you can very safely try your hand at the culture of other sorts.

—EBEN E. REXFORD, in *Am. Agriculturist*.

AMONG THE FLOWERS.

The garden gate swung to and fro,
 Then came a whisper soft and low,
 And said the lily to the rose :
 "That is her lover, I suppose."
 Says rose : "He comes here every day,
 I wonder what they have to say ?"
 "They don't see us," the jasmine sighs,
 "Each looks into the other's eyes !"

"He loves her so," the rose replied,
 "Oh !—here they come," the violet cried.
 "He holds her hand," the pansy said,
 "And, like the rose, she blushes red."
 And rose remarked : "It is not right
 For us to listen—nor polite—
 To all their vows—and tender sighs—
 Oh ! dear—he kissed her—shut your eyes !"

—Godey's Magazine.

AN INEXPENSIVE GREENHOUSE.



THE illustration (Figure 717) shows the plan for a greenhouse which is cheap and gives a different temperature in the various parts of the house, yet is heated with only one fire. It really consists of two small greenhouses joined together as shown. The front part is ten feet wide and twenty-two feet long. I have used this greenhouse for two winters and it works admirably. I grow palms and hothouse plants in one section, and primroses, cinerarias and cool greenhouse plants in the other, and all thrive satisfactorily. To build the house I dug in the ground two and a half feet, then set in oak posts eight feet long, sinking them three feet in the ground. This left the walls five feet high, except the south wall, which is only four feet high. This wall being low lets in plenty of sunshine. The framework is oak scantling two by three inches, and the walls are made of oak boards one inch thick. Then earth is banked up to the top of the wall and sodded. The rafters on the south side are seven feet long; all the other rafters are four and one-half feet long.

The letter *a* indicates the position of the stove, which is an old-fashioned wood heating stove, for which I paid \$1.50. The legs are left off and it is set on bricks so as to place it low down, and over it is built the cutting bench, the bottom of the bench being two feet from the top of the stove. A large pot of water is kept on the stove to maintain du-moisture in the air. A large piece of sheet-iron is placed between the stove and the wall; another piece is arranged so as to be easily moved in and out between the top of the stove and the bottom of the cutting bench. The dotted lines show where the flue passes from the stove. The flue is made of six inch tile, except one joint of stovepipe next the stove. This tile is supported by strong galvanized wire fastened to the wall at one end, and to the rail on the flower bench at the other end. The joints of tile are luted together with wet clay, which makes it easy to take them down for cleaning out the soot, which must be done about once a month in winter. The bench indicated by *b* and *c* is built high enough to allow two and one-half feet space under it, which gives room to get under to put wood in the stove; *b* is a bed of heliotrope, which is always in bloom, and *c* is where the carnations are grown for winter blooming.

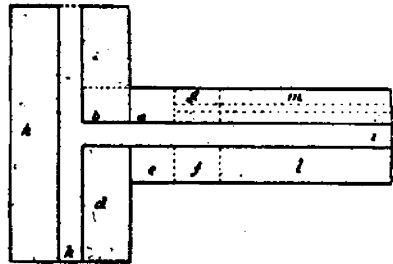


FIG. 717.

The fire is allowed to burn its full force only in zero weather, when it must be looked after every four hours. In moderately cold weather it may be left all

night. There is always a difference of ten to twelve degrees between the middle and the ends of the greenhouse. At *d* is the rose bench, where roses are grown for cut flowers, a Marechal Niel being in the end nearest the fire. The bench is two feet height; *e* is the place for begonias and young palms; *f*, smilax, the bench low down; *g*, coleus, begonias, etc.; *h*, a large palm; *i*, a tall plant. All the benches, *k*, *l* and *m*, are used for plants for sale. The walks are two feet wide; the door is in the west end, and a storm door is built outside. I did all the work myself, and the greenhouse cost me \$50. With a few cold frames in addition it will, if well managed, turn out \$200 to \$300 worth of plants and cut flowers per year.

Still, if the purse will admit, I advise to build it on the level ground and not dig. Use two thicknesses of board and put tarred paper between them, as the building will last much longer, will not be so damp in continued wet weather, and will then allow cold frames to be placed outside the east wall. My house has a good drain, which is indispensable for a house built below the level of the ground.—F. H. FELTER, Ohio, in American Agriculturist.

Heeling in Trees for Spring Planting.—If the trees are properly heeled in a sheltered place to prevent evaporation, a sufficient number of roots will form to keep the branches plump during the winter; the scars, where bruised roots have been cut away, will have become calloused over, and they will suffer no shock when removed to their abiding place in spring, but will continue to grow as if they never had been disturbed. If trees are to be brought from a distance it is, therefore, better to procure them in the autumn than to wait until spring, and everything will be at hand for prompt action at a time when work of many kinds is pressing. If it is too late to secure the trees in time to heel them in while the ground is still warm and open, they should be procured at once and wintered in a cellar or pit. If they are heeled in they should be placed in a rather shallow trench and in an inclined position, and far enough apart to allow fine soil to penetrate every portion of the space occupied by the roots without leaving any unfilled interstices. The ground, of course, should be dry and well drained; no stones, clods or sods should be used in the filling, nothing but finely pulverized soil. A portion of the stems, as well as the roots, should be buried and the surface rounded, and it is better to dig a trench around the whole area occupied by the tree-roots, because mice will not be liable to push up under the snow against an inclined bank of earth.—Garden and Forest.

Prof. Budd says, as the united result of many trials, made under the direction of the Russian Government, it has been decided that the best time to cut trees was near the end of June while the bark would peel freely.

A CHEAP GREENHOUSE AND COLD FRAME.



HEREWITH submit the plan of a cheap greenhouse, with cold frame attachment, which can be built of all new material and fitted up ready for operation for about \$21.50, and if anybody has lumber lying idle they can build it at a still less figure. I have operated one for my own private use the past winter, and it was a decided success; only twice throughout that season did

I use three wicks, this was in cold snaps when the outside temperature marked from 10 to 16 degrees below zero, and I then found no difficulty in maintaining an average night temperature of 52 degrees. At no other time did I burn more than two wicks and often only one. I kept a small basin of water on one side of the stove, giving it just heat enough to evaporate a moist air, and filling it about twice a day; the fumes from the stove were hardly noticeable after being lighted an hour.

In this house I grew a general variety of plants and bulbs, the latter doing exceptionally well. The cost of heating was one-half gallon oil per day in severe weather. Many of your readers no doubt, like myself, are feeling the business depression of the past year, and this is a handy practical house and set of frames at hard time prices. In my estimate the cost of shutters to cover the cold frames is not included. The cold frames can be connected with the house by one siding board in the frame, put on hinges, and opened on severe cold nights to prevent damage from frost.

In constructing the house I would say that the siding is nailed to the joist and the whole inside is lined with builders' paper fastened in place with strips, and the whole covered with whitewash. Anyone, at a little extra expense, can make a double siding with an air space, which aids greatly in keeping out the frost.

Plans for a cheap greenhouse and potting shed 17 feet long and 7 feet high, with cold frame attachment: greenhouse and frame proper, 12 feet long; house 7 feet wide and cold frame 6 feet wide, built at a cost of \$21.33 for first-class material, and at a much less price if you have waste lumber and other material lying idle.

PRICE AND QUANTITIES OF MATERIAL NEEDED.

6 joists, 3 x 4 in., at 18 cts. each	\$ 1 08
6 fence rails, at 16 cts. each	96
20 Novelty sidings, at 25 cts. each	5 00
4 boxes glass, 10 x 12 in., at \$2.50 each	10 00
12 batten strips, at 5 cts. each	60
9 plain boards for shelves, etc., at 16 cts. each	1 44
Paper for lining	24
Putty	20
Nails	20
Oil stove, $\frac{3}{4}$ in. wick and pan	1 60
Total	\$21 33

Asked for further particulars, Mr. Townsend says :

In answer to your questions I will say that, first of all, my object was to see how cheap a house (adapted to the use of an amateur) could be built and fitted ready for use. There are so many people who keep plants in their houses without satisfaction, owing to the high temperature and dust of the living rooms, who say to themselves, "Oh! if I only had a conservatory or a greenhouse." Then they sit down to figure out the cost of such a structure, and sighing within themselves at their inability to build, relegate it all to the sweet by-and-bye. Thus, I fitted up this house at the least possible expense, and grew all kinds of plants in it to perfection.

The roof of my house is all glass, laid in $1\frac{1}{4}$ inch strips fastened to cross rails (fence rails), supported by joists. A row of glass is also laid in strips under the eaves, 10 inches deep, end touching end; then comes a wide board, and below that comes the cold frame. The back is solid boards, also the west end, while the east end is $\frac{3}{4}$ inch boards.

The stove is set in the middle of the greenhouse proper, in a hole dug in the ground, boarded up, and lined with old pieces of tin. Over the stove is a thin piece of sheet iron which acts as a radiator. I use no pipes.

An amateur can never fail with my method, as, simple as it is, the health of the plants prove it as successful and advantageous as the larger house heated with hot water.

The potting shed is separate from the greenhouse, and acts a double purpose, being useful for storing potting soil and general work, also, breaking the force of the cold entrance. The house is built perfectly tight with a tin roof. A light gutter, made V shaped out of batten strips, and painted water tight, carries the drip to the end whence it runs down a small pipe to the water barrel set in the ground under the bench; thus you always have water for wetting and syringing when necessary, and it is always at the temperature of the house. I would also state that the bench over the stove is protected with a tin shield or screen, the first shelf being $2\frac{1}{2}$ feet above the stove; when the heat reaches the tin, it expands out into the house. In fumigating, all that is necessary is to put some tobacco on the stove and it soon does the work.

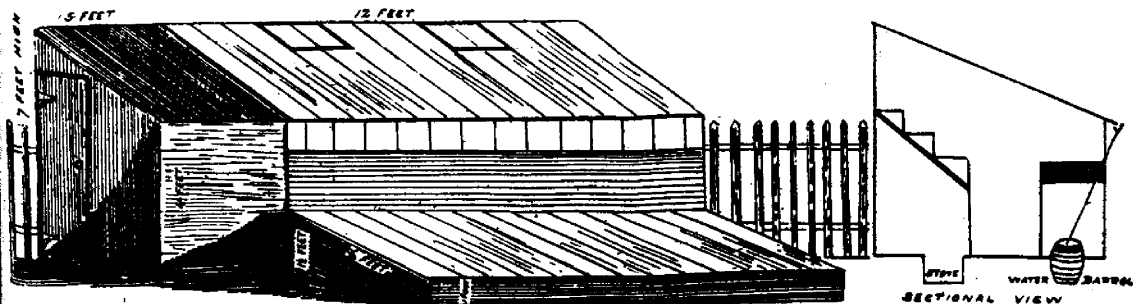


FIG. 718.—A CHEAP GREENHOUSE AND COLD FRAME.

VINES ON DWELLINGS.



WHEN selecting vines to plant alongside of a house or fence, it must be remembered that there are two distinct classes of them. One class contains those that need a trellis or something to support them as they twine; the other, those clinging to whatever they touch, just as the well-known English ivy does. The latter kind is usually called self-climbers, because of requiring no assistance to climb. Therefore, for planting alongside of houses or close fences, these self-climbers must be selected. Fortunately, the variety in this class is a large one, and some of the best of them will be mentioned. The Virginia creeper is worthy of early mention. It is one of the best known of all vines, to a great extent because of its beautiful foliage in autumn time. It is not, however, just the vine for a dwelling house, because of its twiggy growth. It becomes too bushy for neatness. It seems much more in place about carriage houses or similar buildings. The twiggy growth spoken of affords room for English sparrows to build their nests. To some this would be a recommendation, but to the majority of persons it would be the opposite. In another member of this family, which comes from Japan, the *Ampelopsis Veitchii*, and called Japan ivy, there is a vine unequalled for the purpose. If quick growth, shining green, beautiful foliage, brilliant colored leaves in the fall count, it is far ahead of all other vines, when there is to be considered the tenacity with which it clings to a wall, be it ever so smooth. It is simply impossible to tear it away. Having mentioned about the Virginia creeper harboring sparrows, it must be said of this one that it is impossible for a bird to build in it. There is nothing but the stems against the wall and the projecting leaves therefrom. The well-known Trumpet vine is another good clinging one. Give it a coarse wall or a decaying tree to ascend and it is in its element, and what a gorgeous display its large, brilliant, trumpet-shaped flowers are in July and August. There are three colors, red, crimson, and orange. The European ivy exist in several varieties. The English is the most common, but there is a small leaved sort from Russia which may be hardier. About Philadelphia there are many houses which have their northern or eastern sides well covered with ivy. On the sunny side it gets destroyed in severe winters. It is evergreen, of course. There is a *Euonymus* which is evergreen, and which climbs as ivy does. Its foliage is very small and the vine grows slowly. It seems hardly suited for house planting, but for covering small buildings or for trees it is of value. There are three other vines, all of them new or rare, which may come to be much used. *Schizophragma* is one, and *Hydrangea Scandens* is the other. Both have been called climbing hydrangea, though to the latter the name properly belongs. This climbing hydrangea, bears heads of flowers as the well-known shrubs of this name do, though not equal in beauty to the best of them. But it is a grand vine where a

strong, robust one is wanted. It forms thick, "chunky" shoots, which cling very tightly to what they touch. It bears large, green leaves, mostly on small branchlets which stand out from the wall. It makes an excellent shelter for birds in summer while the foliage is on. It is not very well known yet, but when it is it will be much used. The last to be named is a native of our own country, growing wild in the Southern States. It is the *Decumaria Barbara*, by some called the American climbing hydrangea, because of its near botanical relationship to it. It is of much finer growth than the preceding one. The leaves are small, thick and fleshy. When it gets fairly started its growth is rapid and it soon gets to the top of a wall. It is a very neat climber. It bears white, sweet-scented flowers in flat heads. These are some of the most common of the self-climbing vines; and, as will be seen, there are some suitable for all purposes.—Practical Farmer.

Another Climbing Plant from Japan coming into marked favor is *Euonymus radicans*. While the English ivy flourishes in places in and about Boston, occasionally growing well over a house-wall or a ledge, it is not thoroughly hardy. Even in Newport, where it seems to be well at home, it is badly winter-killed at times. *E. radicans*, being evergreen and perfectly hardy, makes a good substitute for the English ivy in certain respects, but, like its compatriot, the *Ampelopsis tricuspidata*, it does not take kindly to every soil. It is also slow in getting a good start, and does not clamber so high as the English ivy, but once well started it grows rapidly in good soil. It is growing luxuriantly over a corner turret of the fine Public Library in Malden, and another conspicuous example of the beautiful effect it can produce is seen in Brookline, where it has mantled a high rustic fence with an arch over a driveway. Altogether, *E. radicans* has qualities that commend it for extensive use in places where a climbing evergreen is desired. Its general introduction would do much to give interest to the winter aspect of parks and house-grounds.—Garden and Forest.

New Ornamentals.—Josiah Hoopes, of West Chester, Pa., mentions the following among the most satisfactory of the newer shrubs, although not strictly novelties: *Exochorda grandiflora*, *Viburnum plicatum*, *Weigela candida*, *Spiræa callosa*, *Spiræa crispifolia*, *Rhodotypus kemoides*, and the dwarf Japan maples. The *Exochorda*, from the north of China, produces large white flowers in May, but is difficult to propagate; *Viburnum plicatum* is one of the finest of the genus; *Weigela candida* is a fine, erect grower, becoming a large shrub, and it produces a profusion of white flowers early in summer; *Spiræa crispifolia* is a very small, short shrub, about a foot high, with pink flowers, and blooming through summer; *Rhodotypus* has single white flowers late in spring, and handsome foliage.

TREES IN WINTER.



HAVE often thought that this subject ought to receive from planters more attention than it does at present. The individuality of different ornamental trees is much more apparent in winter than in summer. When clothed with foliage we lose all the character and variety noticeable in the arrangement of their branches and twigs, which is very distinct in different species. One of the most obvious features in connection with the wintery aspect of trees is their tone of color. The common elm, for example, stands out nearly black when seen against a clear grey sky or when snow is lying on the ground, and the same may be said of the common hawthorne. Oaks are a little more cheerful in tone, and poplars still more so, as their growth is more pliant. A poplar when swayed to and fro on a bright winter's day is one of the most beautiful of all trees, because then the different shades of soft silvery grey and brown are reflected from the branches in a very pleasing manner. Poplars are always in motion, too, whenever there is the slightest breeze, and this gives variety and interest to the groups of other trees in which they are planted. They are very attractive when budding out in the spring, which some of them do very early, and their green shades being very delicate, harmonize thoroughly with the soft browns of the stems and branches.

One of the lightest and brightest of all trees in the winter, however, is undoubtedly the common birch, which should always find a place on the lawn, and especially in the vicinity of ornamental water. Seen on a bright sunny day in December, the Silvery birch is one of the most beautiful of all ornamental trees, and when covered with white hoar-frost, it is difficult to imagine a more attractive object. The Wych elm and larch are also beautiful under the circumstances just named. The larch, when planted as an isolated specimen on the lawn, is most effective, and very different from the same tree when drawn up in a mixed plantation. As a solitary specimen it varies in height from 50 feet to 100 feet, and its light, drooping branches feather down to the turf in the most graceful manner. No ornamental tree is more beautiful in the early spring months, when its young foliage shows the freshest and most delicate shades of green imaginable. The common ash is a bright-looking tree in winter, the bark being of a silvery grey or light brown tint. This tree ought to be more generally planted in the suburbs than it is, for as a town tree it is immeasurably superior to either the elm, lime or chestnut, all of which suffer from drought and red spider during hot summers, and lose their leaves or become rusty towards the end of July. The ash is rather late in leafing, but, like the planes, its foliage keeps fresh and green until the sharp frosts of autumn cause it to fall, and on this account it deserves a place in town squares and gardens.—The Garden.



The Canadian Horticulturist

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✦ Notes and Comments. ✦

THE YIELD OF A 5-YEAR OLD BEN DAVIS APPLE TREE.—Mr. J. G. Mitchell, of Clarksburg, writes us giving the exact amount of fruit harvested this year from a Ben Davis apple tree planted in the spring of 1889, and receiving garden cultivation. The quantity was one barrel No. 1 apples, twelve pounds No. 2, and nine pounds of culls. He stated that nine trees of the same variety, planted the same day, but receiving only ordinary orchard cultivation, yielded together only an aggregate of one barrel of No. 1 apples. This statement shows what care, cultivation, manure, water and spraying will do for the apple grower.

THE PARAGON CHESTNUT is very productive, according to a writer in the Rural New Yorker. The original tree, now fifteen years old, bears an average of $1\frac{1}{2}$ bushels of nuts, and Mr. Engle, who owns it, thinks they would average 75 bushels per acre. To change an old chestnut grove to this variety he would cut down in winter, and when the sprouts grew from the stumps he would splice graft them to Paragon. This work he does in April.

SAWDUST MANURE is commended by another writer in the same journal. He has used it for two years on some land, and the result was, "better crops, earlier, less injury from drouth, and land as mellow as an ash heap." We have long used sawdust bedding at Maplehurst, for want of straw, and not from choice. Sawdust will remain in the ground a long time without rotting, and therefore does not become available as soon as straw. Still its mechanical effect would be excellent, and the ammonia absorbed would, no doubt, become immediately available.

THE DIRECTOR of the Experimental Farms of Canada never forgets that he was once an officer of our Association, and never loses an opportunity to render us a kind turn. He writes that he can spare us for distribution in spring of 1895, a limited number of the following plants:—Sarah Raspberry, Douglas Spruce, Pinus Ponderosa, Rosa Rubifolia, Cotoneaster Vulgaris.

The last one he believes would make a most interesting shrub. It grows from three to four feet high; and although the flower is comparatively insignificant, the foliage is very pretty, and the bush is covered with red berries in the autumn and winter. Owing to the number of these various plants being limited our members will need to leave the selection to us.

❧ Question Drawer. ❧

The Western Juneberry.

684. SIR,—Is there any other class of Juneberry that would be better here, in the County of Brant, than the Western Saskatoon? ED. MACS, *Echo Place, Ont.*

Reply by John Craig, Ottawa.

A number of varieties, or variations, of the Western Juneberry have arisen by selection in the hands of nurserymen during the past few years. We have not yet fruited any of these special forms at the Ottawa Farm, but I am led to believe that some of them, such as "Success" and "Osage," are marked improvements on the original type. Besides being more decidedly dwarfed, they bear much larger fruit. The first named variety, I believe, was introduced by Lovett & Co., and is now in the hands of nurserymen generally. The second was introduced some years ago by Gardener & Son, of Osage, Iowa, U.S. It may be well to say, however, in connection with growing this fruit, that it is useless to set out a small number of plants, as they, like cherries, are specially prized by birds, and if only a few plants are set out it is quite unlikely that the owner will be able to gather much fruit from them.

To Drive Away Rabbits From Fruit Trees.

685. SIR,—Would you kindly inform me of a wash to prevent rabbits from attacking young apple trees? S. J. RUTHERFORD, *Gaspereau, N.S.*

Rabbits are sometimes very destructive in the winter time to young apple trees, and there are many simple remedies. Sprinkling blood about the trees is one of these; another is to dip rags in melted sulphur and then secure them to sticks and stick them promiscuously through the orchard. Another, which is used in California, is commercial aloes, one pound to four gallons of water, both sprinkled upon the leaves and painted upon the bark.

Fruit Growing in the North-West.

686. SIR,—Can any of your correspondents tell me what fruits may be grown at South Edmonton, Alberta? Would the Russian apples succeed there?

CHARLOTTE E. GWYN, *Maplehurst, Dundas.*

Reply by Mr. John Craig, Ottawa.

Replying to the questions of Charlotte E. Gwyn, touching the possibility of growing fruit in South Edmonton, Alberta, I may say that thus far our experience has not led us to expect that our present class of large fruits can be grown with any degree of success in any portion of the North-West Territories. Russian apples and Siberian crabs are, undoubtedly, the hardiest members of the edible fruited class of the *Pyrus* family, but these have failed to endure the winters in almost every case. A specimen apple was received, however, last year, which proved to be "Whitney's No. 20 crab," and grown at Prince Albert. It is possible that they could be grown to a limited extent by training them in dwarf or bush form, and so arranging the roots as to allow of the trees being laid down and protected in the autumn in the same manner that peach trees are now being grown at the Central Farm at Ottawa. This division of the Farm has been sending out during the past two years seeds of the hardiest crabs and Russian apples to interested settlers in this line of work in Manitoba and the North-West Provinces. It is hoped that by planting these seeds and securing the trees on their own roots undisturbed, that a variety may be secured sufficiently hardy to live and bear fruit in that climate. Having once obtained a start, other seedlings would, no doubt, be produced with much greater rapidity and certainty of success. Among the fruits which have succeeded at Indian Head are the native Buffalo berry (*Shepherdia Argentea*), the Dwarf Sand cherry (*Prunus Pumila*) of the Western Plains, the American gooseberries, currants, raspberries and the native Saskatoon or Juneberry (*Amelanchier*).

The Prince Englebert Plum.

687. SIR,—Please tell me if Prince Englebert is a desirable plum; what are its faults, and is the tree healthy and productive?

ED. MAUS, *Echo Place.*

Reply by Mr. S. D. Willard, Geneva, N. Y.

We have fruited the Prince Englebert plum for years and regard it as one of the finest in point of quality that is grown in the orchard. The tree is perfectly hardy and an excellent producer, and everything to commend it. Why there is not more demand for it I do not know. Its season of ripening, however, may be a little against it, as it cannot be called a real early or late plum, but I believe it is a variety that should be more generally found in all orchards.

* Open Letters. *

The Reynard Apple.

SIR,—The specimen of the Reynard apple which you have grown at Maplehurst reached me safely. I have cut the apple to test it, and to my thinking it is much improved and also more mature than it is with us at this same date (October 9th). Although I grow a few on scions, I am not very familiar with the Reynard as grown in our best fruit counties where I have long since sent scions. It is such an imposing apple in size and shape, etc., that we are a little proud of it as a seedling of the County of Yarmouth, since our conditions are not favorable for growing fruit. The Reynard originated with Mr. Richard Reynard, of Tusket, who found the seedling growing by the road in an unsettled part of the country. Mr. Reynard removed the wildling to his own place, and was rewarded in due time with apples that averaged larger than any other kind grown in our county. In quality the fruit here is only second-rate, but it is a fair keeper, lasting until mid-winter, and its showy appearance makes it of market value.

CHARLES E. BROWN, *Yarmouth, N. S.*

The Early Michigan Peach.

SIR,—In your October number, page 346, you say that in Canada you need a good peach to come between the Hales and Early Crawford. In this section we have just the peach for that purpose, the Early Michigan. It has a red cheek, white flesh, and is a free stone. Its quality is unsurpassed, and is just the peach to fill the gap you mention. It is as hardy as the hardiest and an early bearer. If you wish it I could send you a few trees next spring for trial. The peach originated in this county. In an orchard of one thousand trees I have set nine hundred of this variety. It sells readily and brings in the returns early. Two years ago I sold my crop under contract for \$1.50 per bushel, and from my four acres my returns amounted to \$900. The Yellow St. John is a few days later than this peach, and is not so good a bearer.

S. S. BAILEY, *East Paris, Mich.*

Apples in the Cochrane Cases.

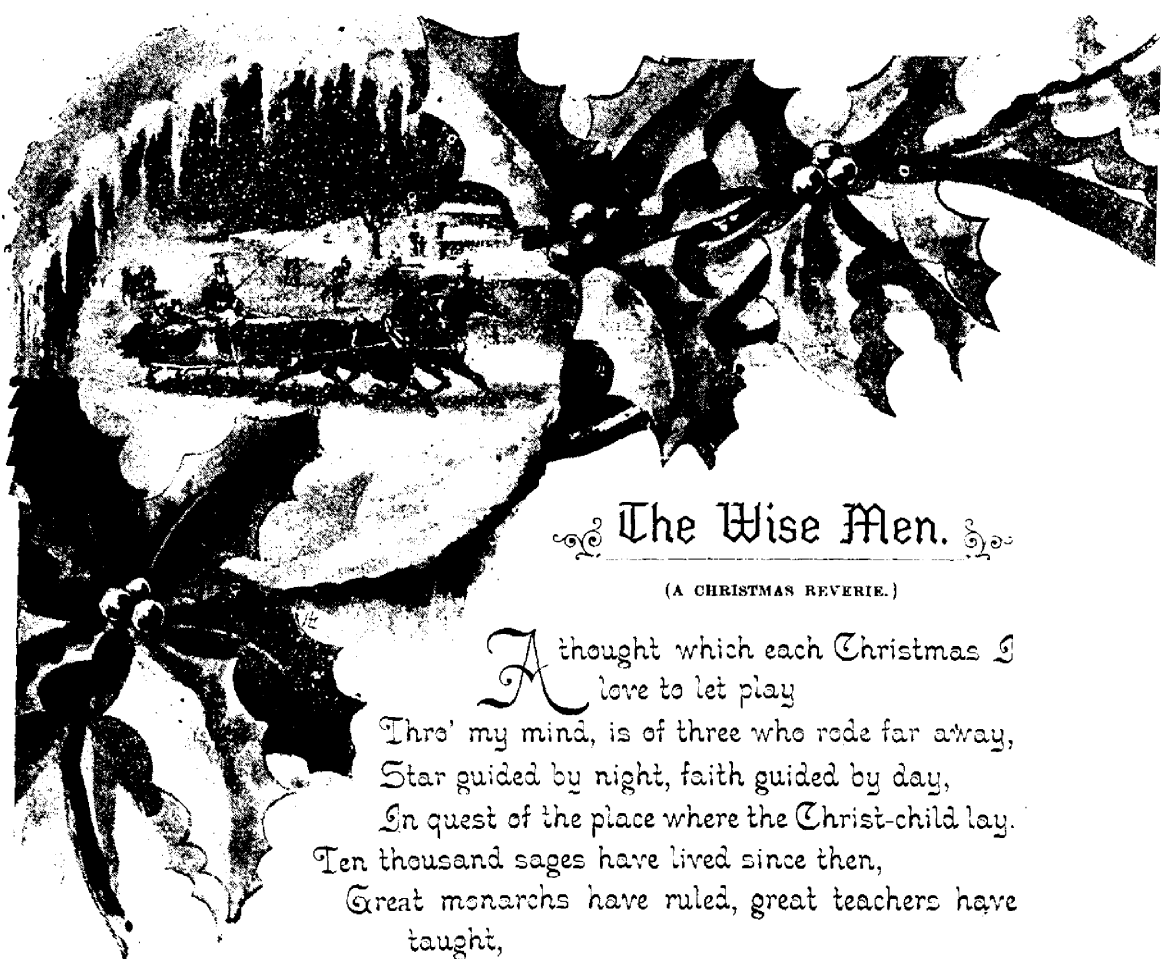
SIR,—I have shipped about fifty cases of St. Lawrence apples to Scotland, but they did not sell so well as the Duchess, bringing in Edinburgh 10/ per case, and 9/ 10d. in Liverpool. At these prices, which are gross prices, it does not pay to ship St. Lawrence in cases; and to show the injustice or at least the great discouragement to the shipper, my St. Lawrence, which retailed at 10/, were disposed of on Princess St., Edinburgh, at 8d. per pound. At this rate the retailer should make a profit of 22/ or \$5.50 per case. There seems to be something wrong in this, for the fact that the retailer could ask 8d. per pound would prove that the apples reached Edinburgh in prime condition. Nova Scotia fruit growers have also shipped some of their Gravensteins in my cases, and at a good profit. I shipped the cases in shooks from here to Wolfville.

R. J. SHEPHERD, JR., *Montreal, Que.*

Cold Grapery.

I have been very successful with the grapes in cold grapery, some of the bunches going over two lbs. and well shouldered. I had about twenty lbs. and they lasted about ten weeks in good order, the last not being cut until sharp frost, and a few are (Nov. 12th) still on hand. Is there any market for them as a table grape? The outside grapes here did not amount to much, there seems to have been such a glut of grapes. Another year there is a prospect of a good quantity, as the vines have grown well.

A. J. COLLINS, *Listowel.*



The Wise Men.

(A CHRISTMAS REVERIE.)

A thought which each Christmas I
love to let play
Thro' my mind, is of three who rode far away,
Star guided by night, faith guided by day,
In quest of the place where the Christ-child lay.
Ten thousand sages have lived since then,
Great monarchs have ruled, great teachers have
taught,
Great painters have painted, great sculptors have
wrought,
Great poets have chanted divine truths to men ;
Yet the three whom the world calls "the wise men" are they
Who journeyed afar by a devious way,
Star-guided by night, faith-guided by day,
Till they knelt in the place where the Christ-child lay

VERNON P. SQUIRES.