THE

CANADIAN HORTICULTURIST

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FRUIT GROWERS' ASSOCIATION OF ONTARIO

VOLUME XXIV

EDITOR, . . LINUS WOOLVERTON, M. A.

OFFICE AT GRIMSBY.

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Index to Volume XXIV

ILLUSTRATIONS

CONTRIBUTORS

FIG. 1972. DIRECTORS AND OTHERS AT HAMILTON IN 1892.

THE CANADIAN HORTICULTURIST

VOL 24 — 1901 — No 1

** JANUARY **

OUR ASSOCIATION.

AWAY back in the year 1859, a few gentlemen interested in fruit growing, met in the Board of Trade Rooms, Hamilton, and formed the Fruit Growers' Association of Upper Canada, with the Hon. Judge Logie, President, George Leslie, Esq., Toronto, 1st Vice-President, Chas. Arnold, Paris, 2nd Vice-President. and Delos W. Beadle, St. Catharines, as Secretary and Treasurer.

Nine years later, in 1868, at a meeting held in the Court House, Hamilton, a Constitution and By-laws were adopted, under the provision of the Agricultural and Arts' Act, with the title of the Fruit Growers' Association of Ontario. The membership then was 242.

In October, 1877, the question of publishing a monthly magazine devoted to the objects of the association was discussed at great length, and the whole question left in hands of a committee consisting of Messrs. Burnet, Saunders, Leslie and Beadle, to inquire into the cost and report. This committee reported favorably, advising the publication, and estimating the cost of a sixteen page monthly at $860 per annum. The report was adopted and it was ordered that the journal be published on the 15th of each month, beginning with the January number and as soon as possible to catch up with the date.

For ten years the journal was ably edited by Mr. D. W. Beadle, one of the foremost horticulturists in Ontario, and in 1887, he was succeeded by the present Secretary and Editor. The growth of our association as a result of this publication has been phenomenal. In 1886, the number was 1652; in 1900, the paid members numbered 4500, with promise of considerable increase in 1901; while the little sixteen page monthly of 2000 copies, published for $860 per annum, has grown to be a 48-page monthly, of 5500 copies, published at a cost of $2,500 per annum, and given free of charge to each member.

In the year 1889, at a meeting of our Association in the Court House, Hamilton, a photograph was taken showing the Directors and others as they came out of the meeting at noon. This will be of especial interest to some of our friends of to-day,

FIG. 1973. D. W. BEADLE.
Elected Life Member in 1900.

for it shows the faces of some of our highly esteemed and prominent Directors and patrons now passed away.

In the front row, beginning from the left, we notice Messrs. W. E. Wellington, J. A. Morton, M. Pettit, A. M. Smith, A. McD. Allan, Thos. Beall, *P. C. Dempsey, and *J. M. Denton; in the second row, T. H. Race, *John Croil, *Prof. Panton, Dr. Saunders, the Secretary, J. K. McMichael, G. C. Caston, A. H. Pettit, and further in the rear, W. M. Orr, Jas. Goldie, E. Morden, L. P. Rice, P. E. Bucke, W. W. Hillborn, E. D. Smith, and *Warren Holton.

In 1894, we formed a plan for the establishment of Fruit Experiment Stations, to be governed by us in conjunction with the O. A. C. at Guelph, which, while it increases our official work, largely increases our usefulness, and from the reports from these stations, publications of permanent value will soon result.

In 189-, Mr. Thos. Beall, of Lindsay, read a paper before our association in which he advocated the formation of Horticultural Societies more in accordance with the true intent of the Act than those already existing, most of which seem only to aim at the division of the legislative grant among a few professional exhibitors, while the membership as a whole get little or no benefit. The Act contemplates five objects, as follows :— (1) The holding of meetings for discussion and for hearing lectures on subjects connected with the theory and practice of improved horticulture. (2) The promotion of the circulation of horticultural periodicals. (3) The importation and otherwise procuring seeds and plants of new and valuable kinds. (4) The offering of prizes for essays and questions of scientific enquiry relating to horticulture. (5) The awarding of premiums for the invention or improvement of horticultural implements and machinery for the production of all kinds of vegetables, plants, flowers and fruit, and generally for excellence in any horticultural production in operation.

Of these objects, most of the old style horticultural societies choose out a portion of the fifth object only and totally disregard the other and more important objects. To remedy this evil, our directorate appointed Mr. Thos. Beall organizing director of (affiliated) horticultural societies, whose by-laws are so modified as to give greater attention to the other and more important objects and less to the mere holding of an annual show of flowers. The scheme has met with the approval of the leading horticultural people, and already we have fifty such affiliated societies, with over fifty members each, all receiving our journal and report and plant distribution free, and an annual visit from some able lecturer sent out by our association. We hope it may not be very long before every horticultural society in the Province will fall in line and thus reach a place of wider usefulness.

This constant enlargement of our work

*Deceased.

rapidly increases the official labors of our association, until in 1899, the executive, recognizing the needs of the work, engaged a regular assistant in the person of Miss Wilena Brodie, who had already been for ten years engaged as private assistant at the expense of the Secretary. And since this young lady is now officially connected with our work, and is so intimately connected with every department of it, we have secured a photograph of her to be engraved for the the readers of our journal. Miss Brodie is the daughter of Mr. Jas. Brodie of Grimsby, a son of the late Rev. Geo. Brodie, of Trinidad. Her education at high school and business college, united with great natural business capacity, admirably qualify her for the work of bookkeeper and stenographer for our association. Added to this, she has become an expert in photography, and the larger part of the illustrations used in this journal are her work, though not often credited. By this means we are able to give originality to our illustrations, which could not be had without such able assistance.

FIG. 1974. MISS WILENA BRODIE.

WINDOW DRESSING AT A GLANCE.

WHETHER a fruiterer does a good business or not depends much upon his stock and his method of dealing with it. A tastefully dressed window does much to draw customers. There is little doubt that the best results are obtained by using show baskets and punnets. In these one can make a very effective display of fruit, and at the same time save much labor and trouble over ordinary methods of window dressing, as the baskets can be easily placed in and removed from the window as required. As we have said before, photography gives an inadequate

idea and unsatisfactory representation of the real article, which, if reproduced, would hardly be distinguishable. By manipulating the blocks and punnets which we have had engraved for this purpose, we hope to give on paper a skeleton key, so to speak, of some of the most attractive and best methods of window dressing. All the fruiterer will have to do is to take the illustrations and work by them according to the few simple instructions given with each illustration.

For this purpose the window board should be the whole length of window, and wide enough to allow of taking show baskets and punnets. Fruit to be placed in these baskets appears in type. The window board should be covered with white paper each time the window is dressed. Some soft packing material should also be placed in the bottom of the baskets, the whole to be covered with a sheet of tissue paper. Choice dessert fruits should also be packed about the base in tissue, thus forming a nest or cup for the fruit to rest in.

-Journal of Greengrocery.

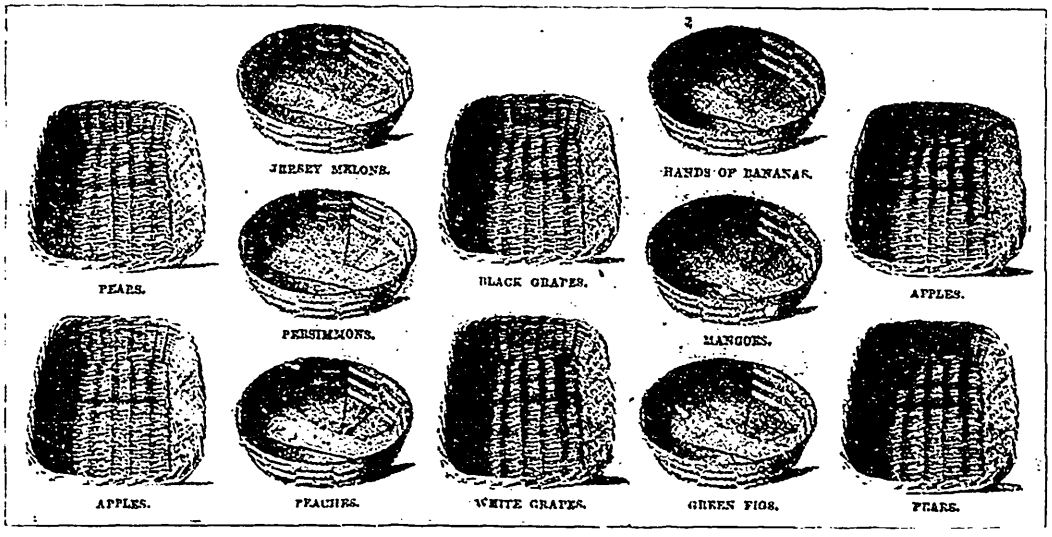


FIG. 1975. A FRUIT WINDOW.

NOTE. The show or baby baskets and punnets, as set out in our illustration, are sufficient to cover a window-board 5ft. 6in. wide. Each basket to be filled with fruit, the names of which appear in type. For larger shops the window-boards may be increased in length, but not in width, as 3ft. 4in. will be found quite wide enough if the fruit is to be got at easily. The baskets will be increased in number accordingly. As regards punnets, those shown are large sized ones so much in use now in window dressing for exhibiting selected fruits. It will be seen we have introduced two of the newest fruits, viz., the Persimmon and Mango. Even if the fruiterer has no sale for these they should have a place in the window, as one of the most important points to be remembered in window dressing is to cause attraction, and this these fruits are doing wherever they are exhibited.

BETTER GARDENS—HOW ARE WE TO GET THEM?

A REVIVAL of gardening would bring health, happiness and profit to Canadian homes. Let us see what is the best way to reach this end so that the first summer suns of the country may see a blossoming forth of our neglected home grounds. Much would be gained if the officers of horticultural societies, who may happen to read this, would make it a duty to rouse their members to make efforts in this direction. We will try to make some useful suggestions as to principles, which, if followed, will give better results in gardening than we now have. First of all, gardening is varied, and we must have individuality and variety in it. As a picture is better if it be an expression of some phase of mind of the painter, so a garden is far more pleasing and interesting if it shows the tastes of the owner. Let us not grow any kind of flower because our neighbors cultivate it, but let us grow the plants of which we ourselves are the fondest, or which have old associations to us. Let those who are fond of quiet and seclusion have their gardens closely hedged or fenced, and let those who wish to make a display have ground with no fences, such as one sees in American towns. Few people have a faint idea of the number of desirable features that can be used in garden-making. We give some illustrations of great gardens of the world, from which we may learn what means people in other times and countries have used to enrich their pleasure grounds. First, let the first cut show a garden of ancient Rome. The embellishments are chiefly architectural, pillars and such like. Such ornamentation would be out of place in this climate, but the architectural enrichment of rustic bridges, summer houses and seats is something of which we might have more. Sundials are a very appropriate garden ornament. The next cut is of the garden of the Generalife in Spain, and illustrates the beauty that may be gained by a large use of greenery and water. Water is an ornamental feature which is very seldom used in Canadian gardens, but there is hardly anything gives more charm to the landscape. One way in which it may be introduced is to have reservoir supplied with water by a windmill. Many farms have such windmills, and could not be any very great trouble to use them for this. These basins might be very quickly planted with hyacinths and other quiet plants. In many places the lands might be drained so as to form a pond near the house. This, if stocked fish, would be very profitable as well as ornamental. The Government has been making efforts to encourage the raising of fish in ponds, but the farmers seem very slow to take it up. A pond at the Agricultural Col-

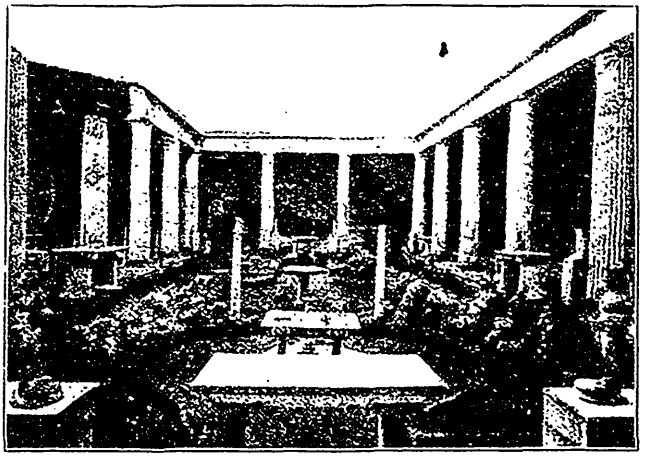


FIG. 1976. ARCHITECTURE IN THE GARDEN. "GARDEN OF POMPEII."

lege is one of the prettiest features of the grounds. If the owner has fears of its causing malaria, a plot of sunflowers would be a safeguard, for these plants are a sure preventitive of malaria. In city gardens fountains are very nice features. Then as to greenery hedges, they might be much more employed in our gardens than they are at present. The white spruce, the high to cut, are cheap and servicable hedges. Somewhat more expensive but more pleasing are the white cedar or privet hedges. Flowering hedges, such as the Japanese Quince, or the Spireas, are very effective. Then the lawn might be much more beautiful than it now is. No one who has not travelled can realize what a thing of beauty it becomes with great care. Cutting, raking, watering and rolling, will do wonders. Bare spaces under trees may be made green by using a shady nook mixture sold by our principal seedsman. In sandy plots at summer resorts a nice show of verdure may be had by the use of squash and melon plants. It may sound rather commonplace, but we have been pleased with the nice change it seemed to make in contrast with the surrounding desolation of sand. Vines of all sorts are another form of greenery useful in beautifying yards. They may cover unsightly fences and sheds.

Our third cut is of a garden of the villa D' Este in Italy, and shows the advantages of terracing in a hilly situation. Terraces are about the only means by which the side of a ravine can be made use of. They should be connected, as in the picture, by steps. Where the ground is level terraces should never be made. They are an utter waste of money, and a nice well kept lawn should take their place. Our next cut represents a garden at Hampton Court, England. It is a formal garden of the best style. In this kind of garden everything is stiff and regular. All the lines are straight. Flower beds are in the shape of mathametical figures ; the trees and shrubs are clipped into various shapes. This style of gardening is very suitable for plots in the squares of towns. It goes very well with the buildings, and seems more in place than the usual uninteresting stretch of grass and trees. We would like also to see two or three private gardens in each town designed in this style. It has a quaintness and charm that it would be a pity to loose. The clipping of the trees might be dispensed with to a large extent.

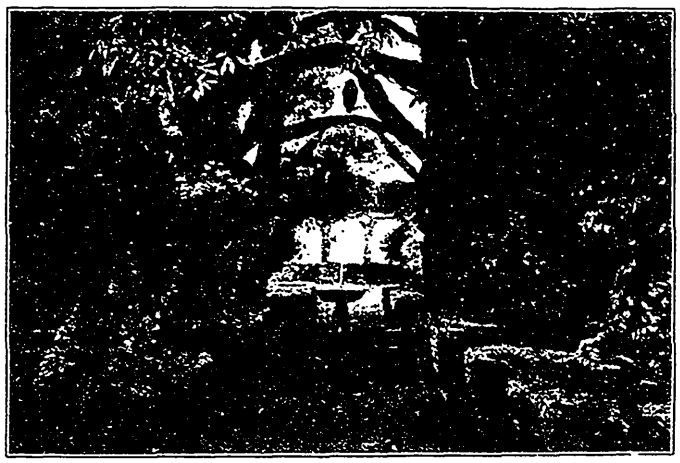


FIG. 1977. "GREENERY AND WATER."
"GARDEN OF THE GENERALIFE," GRANADA, SPAIN.

A second principle with which we might work in improving our gardens is that of combining use with ornament. Some valuable timber trees such as the white ash or walnut, or such fruit trees as the cherry or mulberry are quite as ornamental as most of the trees usually planted on the home ground.. Of smaller trees, members of the vegetable kingdom, some are both useful and beautiful. The artichoke is a plant that we would like to see much more widely

FIG. 1978. "TERRACES AND STAIRWAYS." ITALIAN GARDEN NEAR ROME.

grown. It has a nice yellow flower, very like the sunflower, and its roots make one of the best vegetable products that we have. Once put them in and they are so prolific that you will never be able to get rid of them should you want to do so. Freezing does them no harm, and if cooked for a long while their flavor is almost unsurpassed. Used raw they are an exceedingly economical food for hogs. The asparagus will be most ornamental if the stalks are allowed to grow the latter part of the season, though the yield of the bed next year will not be as good. Grape vines are a very taking ornament for the walls of a house.

Another line along which we might work is that of economy of labor. Let us not go on planting annuals year after year where perennials will do. Nor let us buy foreign novelties where native trees and plants would be better. The catalpa tree is being widely planted now, but although its leaves and blossoms are beautiful, it is until the beginning of July an unsightly stick in the garden. Our native elm has much more graceful lines, and the scarlet maple and the mountain ash give finer color effects. The most satisfactory shrubs for the garden are the old favorites. The Forsythias are especially desirable on account of their early bloom. The Japan quince, Tartarian honeysuckle, Thunburg's barberry, are all good shrubs. We would call attention to the variegated elder, with its white and green leaves, as being perhaps the most elegant of all our shrubs. It is hardy, and can be had at a very low price. Wild flowers can be obtained by any one, and coming into flower a little earlier in the garden than they do in the woods, give pleasure in the first spring days. Large clumps of red and white trilliums are very effective if grown side by side.

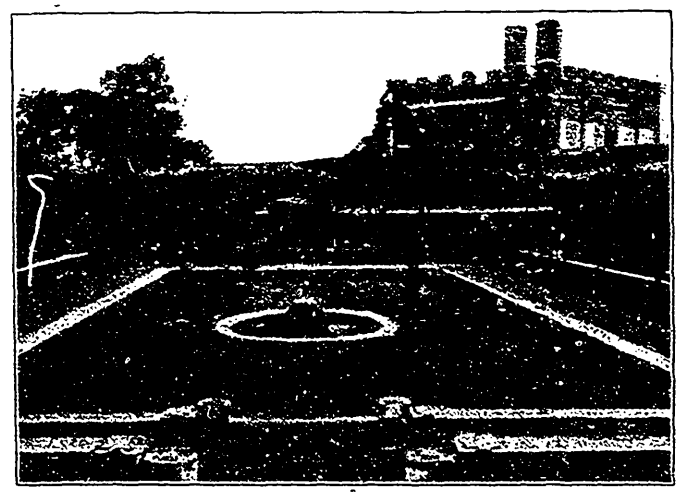


FIG. 1979. "FORMAL GARDEN." GARDEN AT HAMPTON COURT, ENGLAND.

The crown imperial is very handsome also if grown in clumps. Of roses we think rosa rugosa the most satisfactory for general culture.

Another way in which we might have better gardens is to have gardens planted with evergreens, and trees with ornamental bark or berries to make the place bright in winter. This subject we dealt with fully in the January number of the Horticulturist for 1900, and we refer our readers to it.

We hope all members of Horticultural Societies will try to rouse the interest of their friends and neighbors in gardening, so that the home grounds throughout the country may become a much greater source of pleasure and profit to their owners.

Toronto. A. E. MICKLE.

CENTRAL EXPERIMENTAL FARM NOTES—XII.

WHEN four inches of snow fell on November 14th, it was thought that it would soon go away again as that date was much earlier than winter is usually expected at Ottawa. The snow, however, kept increasing, and by Christmas there was fully a foot and a half on the level. The snow which fell in December had fallen on unfrozen ground, and the former kept it in this condition until December 17th, and even up to Christmas there was only about three inches of frost there. There has been very little soft weather since the first snow fell and December has been quite cold. The coldest day was of December 10th, when the temperature fell to 18.8 Fahr. below zero.

There have been some very fine winter scenes this year at the Central Experimental Farm, there being more hoar frost and snow which clings to the trees than usual. The winter scene shown in this number is from a photo taken by Mr. F. T. Shutt, and gives some idea of the beauty of the landscape. The bright fruit of the high-bush cranberry, of which reference was made in the last notes, looked fine this month in contrast with the fresh snow.

The question of cover crops is an important one for the fruit grower to think about during the winter, and the following quotation from my report for 1899, giving the results of our experiments, should prove both helpful to those who propose planting a cover crop next year, and suggestive to those who have not yet decided to do so :—

"Since 1895, orchard cover crops have received much attention at the Central Experimental Farm, and in the reports of the Horticulturist for 1896, 1897 and 1898, considerable space has been devoted to this subject ; but the importance of cover crops in the orchard cannot be too often nor too strongly impressed upon the fruit growers of Canada. After the disastrous effects of the winter of 1898-99 on fruit trees in some parts of Ontario, the fruit growers living in those districts must realize more than ever before, perhaps, how necessary it is to have some protection for the roots of their trees.

"It is now quite generally conceded that cultivation should cease in orchards in Eastern Canada about the middle of July. At this time the season's growth is well advanced and the ripening of the wood soon begins. The seed which is to produce the future cover crop should now be sown. In Eastern Ontario, the common red or mammoth red clover, sown broadcast at the rate of twelve pounds to the acre, will probably make the most satisfactory cover crop. It will reach a height of from ten to twelve inches by winter, and will form a dense mat of foliage which will make a thick mulch, thus

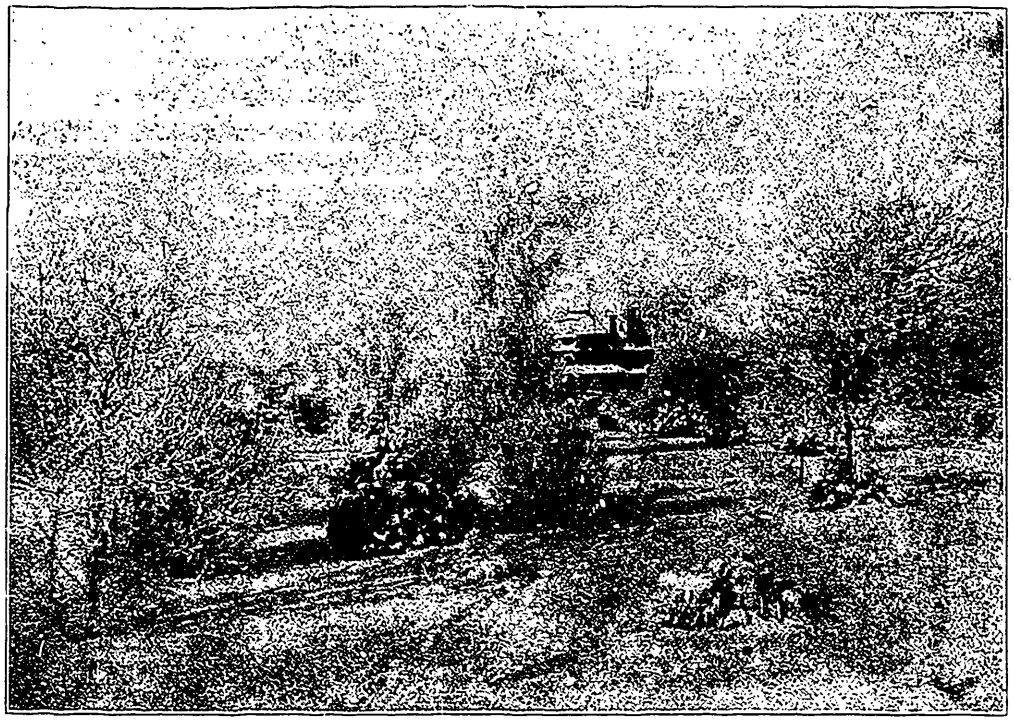


FIG. 1980. WINTER AT CENTRAL EXPERIMENTAL FARM, OTTAWA. *(Shutt.)*

preventing the alternate freezing and thawing of the ground which occurs in late winter or early spring, and which often proves so disastrous to trees. After the seed is sown, the soil should be rolled with a heavy land roller, which will cause the moisture to rise to the surface of the soil and assist the germination of the seed. This rolling is very important, as should the seed lie in the ground for any length of time without germinating, there will not be time for a good cover crop to be formed before winter. No nurse crop, is, as a rule, necessary. In places where the soil is very dry, lucerne or alfalfa might be sown with advantage, as the seed of this clover appears to germinate more readily than that of the common red clover. Cow peas and crimson clover may be used in the warmer parts of the country. The hairy vetch (vica villosa), has been used with very satisfactory results by Mr. J. Tweedle, Fruitland, Ontario.

"Another advantage of clover growing in an orchard in autumn, is that much of the plant food in the soil which has been liberated and made more easily available by the constant cultivation during the early part of the summer, is prevented from leaching by being used by the growing plants, the clover thus becoming a 'catch crop,' as well as a cover crop.

"Where soils suffer from lack of moisture in a dry time, the clover should be ploughed under as early in the spring as the land can be worked, and cultivation begun at once. This will conserve much of the moisture which would otherwise be transpired through the leaves of the growing plants until they were ploughed under towards the end of May, which is the usual time. If the soil, however, contains plenty of moisture, it would be better to let the clover grow until

about the third week of May, as there would be additional humus and nitrogen to be obtained by this method.

"The great improvement made in the soil by the annual plowing under of [illegible] crops is clearly shown in figures given by Mr. G. T. Powell, Ghent, N. Y., U. S., at the annual meeting of the Ontario Fruit Growers' Assoeiation held at Whitby in 1899. After crimson clover, which had been used as a cover crop—had been ploughed under in an orchard for three years, the soil was analyzed and the following differences were found between that where the clover had and had not been ploughed in :

	Clover ploughed under for three years. Per cent.	No clover ploughed under for three years. Per cent.
Water....	15·00	8·75
Nitrogen..	·21	12
Humus...	2·94	1·91
Phos. acid.	·015	·008

The gain per acre would be :

Water.....6·25 per cent=46,875 tons.
Nitrogen ..... ·09 " = 1,350 lbs.
Phos. acid ..... ·007 " = 105 lbs.

"Although such good results might possibly not be secured by the use of red clover, still the improvement in the land by such treatment would be very great.

"For the reasons mentioned in my report for 1898, the methods which are recommended above have not been adopted at the Central Experimental Farm since the spring of that year. Clover is used for a cover crop, but it is only ploughed under every two years. As the soil here is light and lacking in humus, but apparently contains plenty of moisture, a system of cutting the clover with a field mower and leaving it to rot in the orchard, has been followed. In 1898 five cuttings were obtained, the clover being from eighteen to twenty inches high at each cutting and just coming into bloom. It was estimated that from the first four cuttings 25 tons per acre of green crop were left lying on the field. Clover sown in 1898 was cut four times in 1899, and the crop from each cutting appeared fully as good as that of 1898. It can easily be imagined that this is improving the soil rapidly.

"Common red clover was sown in the orchards in 1899 on May 10, 17, 25 and 31 ; July 4, 11, 18 and 25. There was a good cover crop obtained from all of these sowings, with the exception of that on May 31, which did not germinate well, and from those of August 2, 9 and 16 at which time the weather was very dry and the seed did not germinate until September, and then but thinly. Clover sown on May 17 and 25, was nearly smothered by purslane, but eventually overtopped it and came on well and formed a good cover crop by autumn.

"In a part of the apple orchard where the soil is very poor, two green crops were ploughed under in the summer of 1899. On June 10, clover which had formed a cover crop the previous winter was ploughed under and the land was then re-sown with buckwheat, soja beans, English horse beans and field pease, with the following results :—

"Buckwheat sown broadcast on June 17th, at the rate of 2 bushels per acre, came up on June 23. Ploughed under on July 25th. Average height, 27 inches. Estimated yield, per acre of green crop, 8 tons, 335 pounds.

"Soja Beans :—Sown in drills 6 inches apart on June 17, at the rate of 3 bushels per acre, came up June 24. Ploughed under on August 7. Average height 14 inches. Estimated yield per acre of green crop, 3 tons 466 pounds.

"English Horse Beans :—Sown in drills 6 inches apart on June 17, at the rate of 4 bushels per acre, came up on June 27. Plonghed under on August 7. Average height 18 inches. Estimated yield per acre of green crop, 6 tons 592 pounds.

"Field Pease :—Sown in drills 6 inches apart on June 17, at the rate of 3 bushels per acre, came up on June 24. Ploughed

FIG. 1981. HIGH BUSH CRANBERRY AT CENTRAL EXPERIMENTAL FARM, OTTAWA.

under on July 29. Average height 26 inches. Estimated yield per acre of green crop, 5 tons 1,191 pounds.

"After these crops were ploughed under the land was re-seeded with clover on August 2, 9 and 16, in the hope of getting a cover crop by winter, but owing to nearly six weeks of very dry weather about that time, the seed did not germinate until September and a cover crop was not formed. The trees in this part of the orchard were mulched with manure.

"On July 6, English horse beans were sown in a part of the orchard where the soil was light and where the snow does not lie well in winter. On July 16, after the beans were up, common red clover was sown among them at the rate of 12 pounds per acre. The beans reached a height of 18 inches by autumn and helped very much to hold the snow while they must have gathered much nitrogen during the growing season. There is also a good stand of common red clover.

"On July 25, Lucerne clover was sown in a part of the orchard where the soil was very light, It reached a height of from 7 to 12 inches by autumn, and although there was a large number of plants destroyed by a storm carrying away the surface soil, there was a fairly good cover crop.

The advantage of using leguminous plants, such as clover, pease, beans, and vetch, is that by means of the nodules or tubercles on their roots they assimilate free nitrogen from the air, and hence much of this expensive plant food is obtained without other expense than the price of the seed. Buckwheat and rye do not belong to this class of plants, and while useful in the orchard, are not as valuable as the others, as they do not gather nitrogene from the air.

W. T. MACOUN,
Horticulturist, Cent. Expl. Farm,
Ottawa.

OUR BRANTFORD MEETING.

FIG. 1982. W. M. ORR, PRESIDENT FOR 1901.

ONE of the best meetings we have ever held in point of real work and valuable addresses was held in Brantford the 19th, 20th and 21st of December last. Not that many members showed up in attendance from the locality, but a fine attendance of our best fruit growers, shippers and representatives of societies and colleges, and all combined to lend importance to the occasion.

After the report of our experimental shipments was presented by the secretary, which was given our readers in the December number, the Hon. John Dryden gave an address containing much encouragement to fruit growers. He dealt chiefly with the San Jose scale and his efforts to perfect a system of continuous cold storage transporta ion of tender fruits to England. Among all the branches of agriculture, he said, there was none of more importance than fruit growing, and he instanced the success of the Ontario exhibits at Chicago and Paris. Their results had been achieved by time and effort. The fruit farmers, he said, have had to learn that fruit trees could not be used as forest trees, and that they had to be continually tended, that fruit suitable to one section was not suitable to another. In that work the Government experimental stations had aided. Insect pests, he urged, had to be fought by the farmers unitedly. Some people were apt to place too great reliance upon law. It was necessary, but it could only be enforced when backed by public opinion. They could not drive the people generally, and they could not drive farmers especially. When he established the travelling dairy to educate the farmers and farmers' wives to right methods in the home, he was asked why he did not start cheese factories and creameries. They came, as he expected, from the education afforded from the travelling dairy. He was sure that within five years those who had opposed his San Jose scale legislation would say he had been right. He would be the proudest man in Ontario if for twice $100,000 he could have stamped out the scale. Even with the methods being adopted it was found that the pest was getting ahead of the inspectors, and that $300,000 would be required to annihilate it. That was more than the legislature would vote. It remained, and would for some time to come. The work done had stamped out the scale in at least 100 districts. The nurseries, he believed, were the chief danger, and he would enforce the proper fumigation of stock. No treatment yet adopted have absolutely killed the scale, but he knew no better way of meeting the difficulty than by continuing the present method of spraying.

COLD STORAGE TRANSPORTATION.

Turning his attention to cold storage transportation to England, he said the individual could not work out his salvation without help. The only thing discovered yet to ensure delivery of tender foreign fruits in England was cold storage. There was variance between himself and the Dominion Government on two points. He wanted lower temperature and circulation. He wanted it remembered that if fruit was decayed no cold storage would put it in condition again, for which reason it was absolutely essential that it should be put up in cold storage as soon as picked, and kept in cold storage until and after it reached Liverpool. He had had much labor and anxiety all summer over the question. The Dominion authorities had said Canadian peaches and grapes could not be shipped to England successfully, so he had started to work. If fruit could be held in cold storage on land he was convinced it could at sea. The cold storage should be provided, and they wanted boats leaving every week. He had met with opposition, but to ensure what he wanted he had built in the ship Trader a cold storage department. The results were shown in Mr. Woolverton's report. Mr. Dryden emphasized very strongly the need for continuous cold storage, and said if the fruit dealers wanted it they would have to have it. What, he asked, would that trade be worth to Ontario? Would it not be worth spending $3,000 a year for several years to obtain? It would, a hundred times over, he believed. The Ontario Government would aid in building cold storage houses here, and had provided a proper car—the car which had carried fruit successfully in South Africa. He had the lecturers to farmers' institutes to explain the cold storage problem. He believed it one of the greatest questions before the Province to-day. It might be termed class legislation, but it benefited every class, and for his efforts on behalf of the farmers, Mr. Dryden said he sometimes had more appreciation from financiers and bankers than from farmers themselves. He urged the association to continue its work energetically in aid of one of the greatest of the country's industries.

FIG. 1983. MR. M. PETTIT.

Mr. M. Pettit, of Winona, read the report of the San Jose Scale Committee, which recommended that the system of general inspection be continued, and that, as the scale cannot now be exterminated, instead of wholesale destruction of the trees, an endeavor should be made to control, and that such treatment be made compulsory upon individual growers, under supervision of the Department of Agriculture, both as to material and the carrying it out. It was recommended also that the department be urged to relax no effort in the matter, and that a committee be appointed to confer with the Minister as to the methods to be put in operation during the coming season. "Your committee believe," the report concluded, "that a serious mistake was made by the large number of owners of infested orchards who offered determined opposition

to the carrying out of the original intention of the act, and that if public opinion had supported the Minister in his efforts the scale to-day would be almost if not entirely exterminated. We desire also to place on record our appreciation of the efforts of Hon. John Dryden in behalf of the fruit industry of this Province." The report was adopted.

The Hon. F. R. Latchford was in attendance and ably addressed the association upon cold storage, explaining in particular the principles upon which the Hanrahan Cold Storage Car was constructed. After explaining that for years he had taken a keen interest in the question, and was a fruit and flower grower, he spoke briefly on the unscientific and therefore unsuccessful methods hitherto attempted, and treated of the nature of decay. For twenty years decay in animal life had been studied and had resulted in greatly ameliorating the condition of the human race. Decay in vegetable matter resulted from three causes -moulds, yeasts and bacteria. On one bunch of grapes Pasteur had discovered twelve different moulds. The action of moulds and yeast was facilitated by dampness. Yeasts and moulds could not grow in low temperature, say 40 degrees and under, and bacteria could not propagate. That was why low temperature preserved fruits. It had long been known how to develop low temperatures, but the application had been neglected. It had been proven that putrification would not go on in pure air, and pure air was possible of attainment. Cold storage to be practicable had to be economical. The speaker went on to show that scientific cold storage demanded pure, cold air. The material in storage gave off odors which had to be removed. The disadvantage of bringing in hot air from outside to be purified and cooled was pointed out, and it was shown how instead the cold air of the car could be constantly purified. This is the principle of the Hanrahan method, and from the model of the car Mr. Latchford illustrated what he meant. The ice is held in a compartment which divides the car into two sections. The air at the ice box being colder, and therefore heavier, falls and travels along the floor of the car to the end, where its temperature will increase, and it will rise and flow back to the ice box. Then the moisture disolves the gases and odors gathered from the contents of the department, and there go off in water by a waste pipe, while the air purified goes on another journey through the car. Mr. Latchford pointed out that fruit might just as well be cooling in the car on its way to the market as standing to cool in a cold storage house at the place of shipment. He spoke of the importance of the fruit industry, and declared that the Government would aid them in every way possible.

THE FRUIT MARKS ACT.

This is the new title given by our association to the Apple and Pear Marks Act, which at our request was presented before the House of Commons last winter, but which was so strongly opposed by the apple speculators, who buy in large quantities, that it was withdrawn. Only as late as Thursday, the 13th inst., just before our meeting, a large body of apple packers at a banquet to Mr. G. H. Fowler, at Brighton, passed a resolution expressing "disapproval of the same, believing that it would be impracticable and unworkable, and not in the interests of the apple export trade. While deprecating the practice of 'topping' resorted to by some shippers, the prevention of which this bill aims at, we are of the opinion that the bill interferes with private rights and cannot be made to accomplish the purpose for which it was intended."

In view of the opposition, we appointed a large committee of both apple growers and apple buyers, including Mr. J. H. Shuttleworth of Brantford, well known in the trade, and Mr. Elmer Lick, an extensive apple

grower at Whitby, and the whole question was fought out with great ardor in committee before an agreement was reached which would satisfy both grower and buyer. The changes were such as to give perfect freedom to anyone as to whether he would use the specified grade marks, but if he did use them, his packages were subject to inspection, and a fine if found fraudulent. As this bill is an important one and means everything to the future of our apple trade, we give the text of the proposed act in full, as revised by our committee and accepted by our association.

1. This act may be cited as Fruit Mark Act, 1901.

2. This act shall come into operation on the first day of July, 1901.

3. Every person who, by himself or through the agency of another person, packs fruit in a closed package intended for sale, shall cause the package to be marked in a plain and indelible manner before it is taken from the premises where it is packed,—

(*a*). With the initials of the christian name and the full surname and address of the packer.

(*b*). With the name of the variety, and

(*c*) With the designation of the grade of fruit.

4. No person shall sell, offer, expose or have in his possession for sale any fruit in a closed package unless the name and address of the packer is marked upon the package in a plain and indelible manner.

5. No person shall sell, offer, expose, or have in his possession for sale any apples or pears packed in a closed package upon which is marked the grade "A No. 1 Canadian," unless such fruit consists of well-grown specimens of one variety, of normal shape and not less than ninety per cent. in each package free from scab worm holes bruises and other defects, and properly packed and marked in a plain and indelible manner with the minimum size of the fruit in inches or fractions thereof across the core of the apples or pears as the case may be.

6. No person shall sell, offer, expose, or have in his possession for sale any apples or pears packed in a closed package upon which is marked the grade "No. 1 Canadian," unless such fruit consists of specimens of one variety, sound, of fairly uniform size, and not less than eighty per cent. in each package free from scab, worm holes, bruises and other defects, and properly packed and marked in a plain and indelible manner with the minimum size of the fruit in inches or fractions thereof, across the core of the apples or pears as the case may be.

8 No person shall sell, offer, expose, or have in his possession for sale any fruit packed in any package upon which is marked any designation of size, grade or variety which falsely represents such fruit; or in which the faced or shown end gives false representation of the contents of said package; and it shall be considered a false representation when more than 15 per cent. of such fruit are substantially smaller in size than, or inferior in grade to, or different in variety from the marks on such package, or from the faced or shown ends of such package

9, 10, 11, to remain as at present.

12 Strike out "apples or pears are," and substitute "fruit is."

13, 14, 15, 16, 17, to remain as at present.

A clause to be added as follows,—the word "packer" when used in this act shall be construed as the person on whose behalf any fruit is packed.

The phrase "closed package," shall be construed as one in which the fruit is invisible and which cannot be readily opened without injury to the package.

In our next number we hope to give further extracts from the report of our meeting which we hope will be of especial interest to our readers.

THE CONSTRUCTION OF ROADS.

THE construction of park roads is like the construction of all other things largely a matter of local conditions. There are however, some principles common to all conditions which must be made factors in the work or the results will not be at all satisfactory. The character of the earth upon which road materials are to be laid largely controls the method of construction and the materials to be used. Sand, of course, is the best, but it should be properly underdrained or in wet springs there is likely to be so much water accumulated in places that, as the frost breaks the bond of the road surfacing, the road will become wavy and the wheels will break through if much used. This is only likely to happen when sand is supported and surrounded with earth impervious to water. Clay is the worst material, but it is by no means to be feared if properly drained and the road surfacing is not thin. The underdraining of clay is not necessary. If provision be made for at once carrying off the water which reaches the surface of the clay under the road material the disturbance of

the road by frost will be as little as on foundations of other material.

The thickness of the road material depends entirely upon the traffic to which the road is to be subjected. The lightest of all roads in parks, some little turn outs to hitching places or the like, might be five inches in thickness if resting on confined sand and constructed of sound stone or good gravel. This thickness should never be less than seven inches on clay. The road material in the ordinary park road shonld not be less than nine inches in thickness after rolling. Not because that much material is required to hold up the traffic, but because the surface will probably be worn down at least two or three inches before it is resurfaced. At its thinnest it should be capable of holding up heavy sprinkling wagons and coaches or any vehicles which may come upon it.

A well built nine-inch road of good material is amply heavy for ordinary park uses. For boulevard roads the material should be somewhat thicker. If properly cared for in any boulevard twelve inches is ample. In some of the outer boulevards nine inches will be sufficient. The question might be asked why if a nine-inch road will hold up a traffic in the parks when frequently very heavy vehicles pass over it, is it necessary to have a heavier road in a boulevard? It is the matter of wear again. Take a busy avenue, for instance, in the busiest part, where 12,000 vehicles have frequently passed over the road in 24 hours and the traffic is always very heavy even in wet weather. The wear is, of course, great. Suppose the road to have gone two years without surfacing; nearly three inches is worn off the surface. Suppose the following winter to be a severe one on roads, that is to say a wet one, then if the road was nine inches thick to start with there would be perhaps only five or six inches of material remaining with its bond broken, utterly incapable of holding up the traffic. With a twenty-inch road there would still be eight or nine inches of material, which would be sufficient.

The kind of material to use? There are several things to consider in determining this. Principally it must be durable and of two grades. The upper three inches should be material that will best resist abrasion, which means a hard, tough uniform granite or trap rock. The under six or nine inches as required may be any hard stone that will preserve its integrity when subjected to frost. The upper three inches should be stone broken into pieces closely approximating one and one-quarter inches in their largest dimensions, as nearly cubical as possibie; the under layer into two and one-half inch pieces. The granite or trap rock as was said should be used for the upper three inches. For the much used boulevard drives this is almost imperative, but for the outer boulevards and the park roads a softer and less expensive material may be economically and satisfactorily substituted, limestone or good bank gravel.

For the roads in the park color of surface is a consideration. The glaring white surface of a limestone road is very painful during the bright days and at all times its great contrast with the surrounding dark greens is anything but pleasant or desirable. The sienna of the bank gravel is much better, but the gravel road is more difficult to keep clean and is much more liable to be muddy after the summer shower or if as frequently happens, the sprinkling is too heavy. The determination of this matter must be largely affected by the local conditions in each case as to the cost and materials found at hand. To darken the surface of limestone roads a dressing of crushed granite or trap rock, say one-half an inch thick, has been applied, but it is expensive because of the frequent renewal necessary to keep the color at all even. If it is thought necessary to darken the surface it would be economy in the end to make the upper three inches of the road of the

more expensive material to begin with. The result will certainly be more satisfactory as to maintenance ; for, of course, the harder material does not wear as rapidly, therefore does not have to be cleared as often, is not as dusty in dry weather, nor as muddy in wet weather.

FRANK FOSTER, C. E.

Before American Park and Out-Door Association.

AWARDS OF MEDALS FOR CANADIAN FRUIT AT THE PARIS EXPOSITION.

ALL OUR provinces have a noble record of fruit exhibits at the Paris Exposition, and we shall await the full and complete report of the prizes awarded when the Commission has completed their labors.

In the meantime Mr. Robert Hamilton of Grenville, P. Q., who was at Paris during a great part of the season, sends on an incomplete list of our awards, from memory, explaining at the same time that he could give far more information only for the unfortunate loss of all his papers, photos, &c., on shipboard. Mr. Hamilton promises to give us several papers on French horticulture early next year.

The following is Mr. Hamilton's list :

Awards of Medals, &c., for Canadian fruit at the Paris Exposition, 1900.

Dates of the concours and awards :

June 27. Awards for Natural Fruit—Old Apples. A Gold Medal to each of the following : Dominion of Canada, British Columbia, Ontario, Quebec, Nova Scotia ; a Silver Medal to New Brunswick ; a Bronze Medal to Prince Edward Island.

July 11. Natural Fruit disallowed on this occasion. Fruit Preserved, Non Edible : a Gold Medal and Grand Prix to the Dominion of Canada ; a Gold Medal to each : British Columbia, Ontario, Quebec, and Nova Scotia. A Gold Medal to the North-West Territory of Canada. A Gold Medal to the Experimental Farms of Canada.

July 25. Natural Fruit, 1899. Awards to Fruit Growers' Associations : a Gold Medal and Grand Prix to the Dominion of Canada ; a Gold Medal each to British Columbia, Ontario, Quebec, Nova Scotia. A Silver Medal to New Brunswick and a Bronze Medal to Prince Edward Island.

August 8. Natural Fruit, Old, 1899. Awards to Local Fruit Growers' Associations. To Grimsby, Ont., Burlington, Ont., Montreal, Que., L'Islet, Que., Abbotsford, Que., Nova Scotia, and to British Columbia, a Gold Medal to each.

August 22. Natural Fruit, Old, 1899. Awards to Provinces : a Gold Medal each to British Columbia, Ontario, Quebec, Nova Scotia, New Brunswick ; a Silver Medal to Prince Edward Island.

September 5. Natural Fruit, Old, 1899. A Gold Medal was again awarded to each of the Provinces: British Columbia, Ontario, Quebec, Nova Scotia, New Brunswick.

September 22. Natural Fruit, New (a few old). The fruit arrived late, but a committee of the jury made the award on arrival of the fruit. A Gold Medal was awarded to Ontario, to Quebec, to Nova Scotia, and to Linus Woolverton ; a Silver Medal was awarded to Robt. Brodie, St. Henri, Montreal, and to J. W. Bigelow, Wolfville, N. S.

October 10. Natural Fruit, New, 1900, and also of 1899. A Gold Medal was again awarded the Provinces of Ontario, Quebec, and Nova Scotia.

October 31. New Fruit, 1900. Other awards were made but I had left before this date.

NOTES FROM THE BIOLOGICAL DEPARTMENT OF THE ONTARIO AGRICULTURAL COLLEGE.

1. Crude Petroleum Experiments against the San Jose Scale.

Prof. J. B. Smith, of New Jersey, has recently published a bulletin (number 146), dealing with the action of crude petroleum as insecticide. The results secured by Dr. Smith are interesting, and should be known to all the fruit-growers of the sections infested by the San Jose Scale, for his successes and failures depend largely on the quality of the crude petroleum used and on the mode of application.

Crude petroleum varies widely in its composition, and has no definite meaning in the trade. Crude petroleum as it comes from the well, Dr. Smith says, does comparatively little injury to vegetation unless the application is very excessive or long continued, but crude oil composed of mixed crude and distillate is decidedly harmful. For orchard spraying the crude petroleum should have a specific gravity of 43° on the Beaume oil scale at a temperature of and any oil which registers less should not be used, for injury will be done to the trees. If these conclusions are correct, then Dr. Smith has done a real service to fruit-growers who purpose using the crude oil against the scale.

The Bulletin also records cases of decided injury to trees by the application of crude petroleum, but such results are accounted for by the use of oil registering lower than 43 degrees.

Regarding the action of crude oil, Dr. Smith says that the tree should be dry when the oil is applied, though it may be cloudy and rain immediately thereafter. "The best time to spray peach trees is while the buds are fully dormant, not when they are about to waken into life and growth. Apple buds are very well protected, and are rarely hurt unless the oil is in excessive quantity."

Spraying is best done with a vermorel nozzle adjusted so as to give a fine mist, and no more oil should be used than sufficient to moisten the surface thoroughly. Half a pint will be enough for an average size peach tree. The oil may be applied undiluted, or in a mechanical mixture with water by means of an emulsion sprayer. Dr. Smith "prefers the undiluted form because it is then known exactly what has been done." Spraying should be done on mild days, for the oil when cold "becomes less fluid, is not so readily sprayed, does not penetrate well and is less effective."

2. Recent Books on Mushrooms and Toadstools.

During the past few years great activity has been shown in the collection and study of mushrooms and toadstools, usually called fleshy fungi. As a result of some of these studies three important works have been published lately all of which will tend greatly to a better and more satisfactory knowledge of these very interesting plant forms.

The first work which deserves mention is Underwood's Moulds, Mildews, and Mushrooms, a small book published by Henry Holt & Co., New York, 1899. The fleshy fungi are treated concisely, and tables are given for the purpose of identification of the edible, suspicious and poisonous species. Illustrations are absent, a feature of decided demerit. The book serves as a good introduction to fungi in general, and to fleshy forms in particular.

The next work McIlvaine's One Thousand American Fungi, published by Bowen-Merrill, the present year, 1900, is a more pretentious book, containing beautiful illustrations of the common fleshy forms, and carefully prepared botanical descriptions of the various species. Several pages are devoted to the

best modes of selecting and cooking the edible forms. The volume is a bulky one of 704 pages, but in spite of its size may be regarded as one of the best books of the kind. The amateur is seldom at a loss to identify his specimens with its aid. The book should be in every public library in the province.

The latest publication dealing with Fleshy Fungi is one by Professor Atkinson of Cornell University, entitled Mushrooms Edible, Poisonous, etc. The publishers are Andrews & Church, Ithaca, N. Y. The price, $3.00, is within the range of all enthusiastic amateurs and is specially low when one considers the admirable illustrations of over 200 photographs.

The writer had the pleasure of attending Professor Atkinson's class in Fleshy Fungi, the past summer, and can therefore, speak candidly with regard to the very extensive knowledge possessed by the author on these plants. The photographs were made with extreme care from fresh specimens, and on account of the great care employed they often bring out individual, specific or generic characters, better than the common colored illustrations.

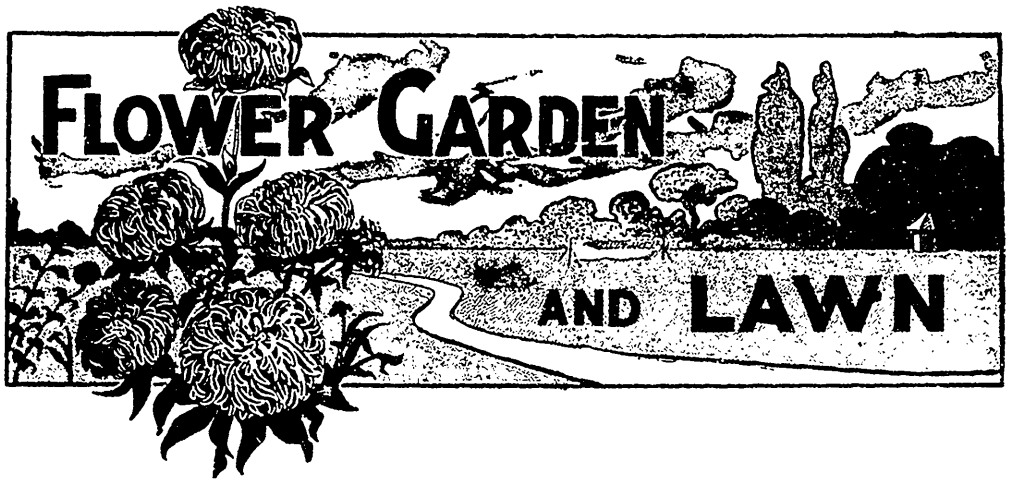
Besides descriptions of the common forms, there are chapters on the "Collection and Preservation of the Fleshy Fungi," "Receipts for Cooking Mushrooms," by Mrs. Rorer, "Chemistry and Toxicology of the Fungi," by J. F. Clark, "Analytical Keys," and a full "index to generic and species described."

This work of Professor Atkinson's will, the writer is sure, be highly appreciated by every lover of mushrooms and toadstools, for it is a book of convenient size, dealing with forms which are found in Ontario, and is thoroughly reliable, coming as it does from an acknowledged authority.

W. LOCHHEAD.

Ontario Agricultural College,
Guelph, Dec., 1, 1900.

A SUCCESSFUL SHIPMENT.—"The announcement that Canadian grapes have been sold at Manchester will meet with approval from a large circle of buyers in that centre," says the London Fruit Grower. "It is pretty clear that this market has been chosen for one or two reasons. In the first place, it is just the spot for distributing large quantities of cheap grapes to the industrial populations in the Midlands, who are large consumers of f ruit, and secondly, because the Canadian grapes can be sent into Manchester by the ship canal. From all accounts these grapes have come to hand in perfect condition. The fruit is of a good size, the berries are black and carry a fair amount of bloom, and the flavor of the fruit is excellent. When such a shipment as 12,844 pounds of fresh grapes can be sent all the way from Canada, and be put upon the English markets in perfectly fresh condition, it is clear that the system of transit has been brought to a pretty perfect condition. Certainly the promoters of this industry are to be congratulated upon the success that has been assured to these fruits. They have been packed in fancy little packages, such packages as must commend them to the retail trade."



TIMELY TOPICS FOR THE AMATEUR.—XI.

IN the issue of the journal for December, 1900, several suggestions were offered that I considered would, if adopted by our horticultural societies, have a tendency to increase the interest, more especially of our young people, in the culture and care of plants and flowers.

This being the initial number of the "Horticulturist," not only for a new year, but also for a new century, and as there is very little routine work to occupy the attention of our readers in the flower garden or on the lawn during the winter season, the time is I think very opportune to offer a few suggestions more particularly regarding floral exhibits, that may perhaps be of interest to readers of the journal.

The schedules or prize lists of exhibits of plants and flowers, held ten or twelve years ago, were almost without exception compiled and arranged to meet the requirements of professional and commercial plant and flower growers only. Even at the present time the prize lists of most of the large industrial shows, as well as the smaller township shows, that generally include an exhibit of plants and flowers, often entirely ignore the amateur plant grower; making no distinction between the professional and amateur in this respect.

This method is manifestly unfair to the amateur, who has perhaps a small collection of window and garden plants, and who is often deterred from exhibiting these from the fact that they are almost certain to be placed in competition with products that have perhaps been cultivated in a greenhouse, or that have had professional skill and care bestowed on their culture. With the rapid advance and more general practice of floriculture, it has become necessary to remedy this unsatisfactory state of affairs, and I feel sure that it is only necessary to call the attention of our readers to this matter, especially those who take an interest in industrial exhibitions, so that it can be to some extent remedied. Our affiliated horticultural societies have in some instances very wisely adopted the plan of a separate class for amateurs and professionals, and have still further sub-divided the amateur class of exhibitors, so as to distinguish between those possessing a greenhouse, and those who have not the advantage of this useful adjunct to floriculture. The late issuing of the schedule also often proves a great drawback to the success of an exhibit, giving very little time to prepare the plants, etc., necessary to comply with its conditions. In compiling the schedule, opportunity

should be given for as many exhibits of individual varieties of plants as possible, as this gives every one interested an opportunity to contribute something to the exhibit. The idea of interesting all classes of our people in the several branches of horticulture, and more especially floriculture, being one of the main objects of our horticultural societies, the arranging of the schedule or entry list with this end in view, will help very materially in securing a thoroughly complete and representative exhibit.

A paper on "How to make our Exhibitions More Popular" might be compiled and read by some member at a winter meetings. The paper, besides introducing perhaps some new features, would certainly form the basis for a discussion that would probably bring out many strong points of detail matter that might contribute greatly to the success of an exhibit.

As an illustration however, one exception to this almost general rule may be mentioned, viz., that of the exhibit of plants and flowers shown recently at the Southern Fair, Brantford. The schedule for this section of the show, was a most comprehensive one, the amateur and professional classes being quite distinct the one from the other, and both being well represented. The lists for each class were very similar, with the exception that the amateur list invited more exhibits of individual specimen plants; an additional feature of this class being that of prizes for window boxes, a commendable feature to introduce in a schedule or prize list This system has been in operation for two years, possibly longer, and having had the honor of awarding the prizes on the two occasions quoted, I feel justified in mentioning this as an illustration, for the exhibit in both classes were of a very high order, and would do credit to a city double the size of the city of Brantford.

The remarks made in the December issue of the journal, regarding the distribution of plants to scholars might be still further commented on. There is nothing to prevent this plan of distributing plants, etc., to the senior scholars in our township schools as well as to those in town or city schools. Many of our readers who are residing outside the scope of influence of an horticultural society, but who are interested in floriculture, and are perhaps trustees of a township school, or interested in the nearest agricultural show, might take up this matter, and thereby not only enhance and encourage the love of floriculture amongst our young people, but also help to brighten up the surroundings of many a home, as well as to furnish an exhibit that would prove an interesting and attractive feature of the annual autumn exhibition of the township or village. The distribution need not necessarily be of plants, as seeds or bulbs could be distributed early in the season, so that the flowers from them could be procured for exhibition at the time required. The amount of labor and the expense necessary to carry this plan into operation would be very small, and would be more than compensated for by the pleasure that would be derived in the cultivation of the seeds and plants, and the interest they would excite both in old and young people wherever they were exhibited.

For the purpose mentioned there is no better plant than the ever popular geranium, as it could be cultivated very easily. Some remarks regarding the culture of this plant have already appeared in this journal that would give sufficient information for the above purpose, the plants might however be allowed to come into flower a little earlier than advised in the article referred to, so that they would be well developed for the date of the exhibition. The varieties of the flower seeds, if these were distributed, might consist of a small packet of mignonette, asters, cosmos, zinnias, marigolds, and larkspurs. These

could all be had in flower during September and October, and do not require any great skill in cultivation. The best kind of bulbs for fall flowering for this purpose, would be the gladiolus. All the plants, seeds, etc., should be as nearly alike as possible, so that there would be no cause for complaint in that respect. A few simple directions as to how to sow the seed and plant the bulbs, could easily be given at the time of the distribution.

The first day of May (May-Day) would be a good time to make the distribution, as it is not only about the right season for sowing flower seeds, etc., but it would probably revive and perpetuate in the memory of many of our readers of mature age, the pleasing floral and festive seenes of an old-fashioned May-Day celebration, that perhaps they may have taken part in in the old land in days gone by. These remarks may be thought to be too sentimental in an article of this kind in this practical, go-ahead age; but sentimental though it may be, there is a magnetic influence that prevades these and similar old associations, that has perhaps been more instrumental than we give them credit for, in causing the recent outburst of patriotism from Britain's colonies, and that has startled the old-world, and appraised it of the fact that the children of the motherland the world over, are prepared to stand by her, and by each other, in the time of difficulty and trouble. And none of us are able to estimate the good effect the encouragement of the ennobling pursuit of the culture and love for the many beautiful plants and flowers to be found in the floral world, and the influence they may have in moulding the character and principles of our children, so that they will be able to look back in years to come at the many happy hours spent in these and other pleasing pursuits, when perhaps they are far away from the scenes of their childhood.

Hamilton. HORTUS.

CACTUS LORE.

OUR Canadian winter being now upon us, the most of the Cacti family are having their season of rest, and it is during this resting season that care must be taken to allow these odd plants their natural treatment. In their native climate this resting season means a long drought, and at such times the plant shrinks into itself, and presents a half dead appearance. The spiny, globular sorts, look to be still more closely covered with their porcupine-like protection, and give a very decided warning that growth has ceased for that season. To the inexperienced they may look about dead, and a mistaken idea of forcing them back to their freshness and growing condition, will be usually followed by the loss of the plant entirely.

The best treatment is to allow the rest nature demands, by withholding water almost entirely. Set the plants, if convenient, in a dry cool place, where they will have light. They will winter in a dark room, but the bloom will be much less in the spring, than if light has been supplied to them while resting.

Another advantage of the light corner or window, is that when the sun commences to get strong in the spring, and growth begins, it will not be puny and white, but will be the natural growth of the plant, improving the specimen instead of detracting from its

value. Then, when there is good light, growth can readily be seen and water gradually given until in a surprisingly short time the plant has swelled to its former size, assumed a fine healthy appearance and a vigorous growth set in.

or even at any time if drainage is not perfect.

But there are exceptions to this rule, for some cacti are very fine winter bloomers. Among these are the Epiphyllum Ruspelianum (crab cactus), called by some Christ-

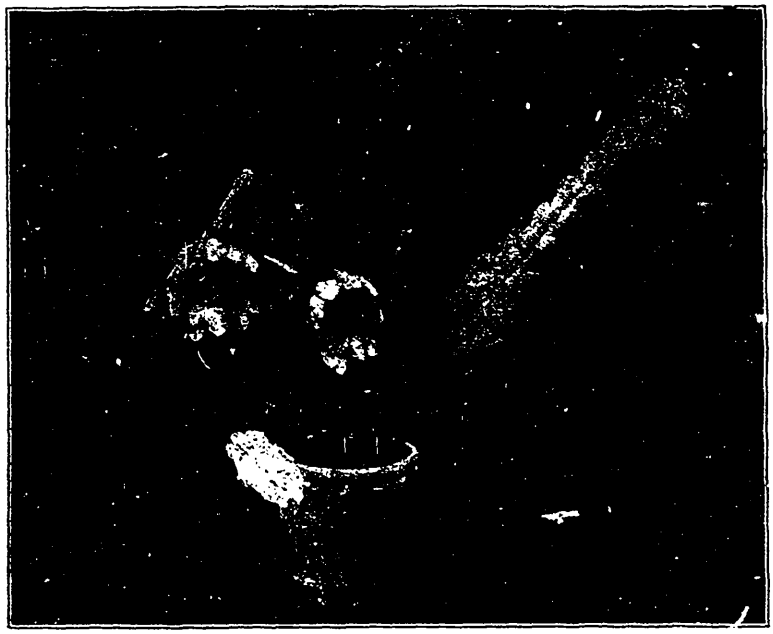


FIG. 1984. PHYLLOCACTUS.

This is when blooming commences, and what cactus fancier is not proud to display to a friend the beautiful flowers, as if by magic from the sides, ridges or centers of of these the oddest plants in nature?

The penalty for disregarding the plants' demand for rest is very suddenly discovered some day, and the surprise is great. The centre of the plant will send out a new and splendid appearance of young growth, and all will look well for a time. Then it will take a change of color, perhaps slight, and an examination will reveal the fact that there is nothing left but a shell, covering a rotten mass of jelly. This is what so often follows when too much water is given at this season,

mas cactus, also Phyllocactus Anguliger, one of the flat leaved varieties which is a grand winter bloomer, bearing on its heavy stems, magnificent white flowers which have the advantage over so many other white flowered varieties, of being day bloomers, and lasting several days. The crab cactus is well known and its fine drooping habit and generous quantity of crimson flowers, open at Christmas time, are much appreciated. The Phyllocactus Anguliger is not so generally known, but where its beauties are once shown, it is ever after, a much valued specimen in any collection.

J. H. CALLENDER.

Woodstock, Ont.

GREENHOUSE AND WINDOW.

THE increasing power of the sun's rays as the end of January approaches will brighten up the outlook for a better supply of blossom than has existed during the early part of the winter. From now until spring there should be a succession of the showy, welcome, and one might almost say "anticipating blossoms" of the natural spring flowering bulbs, such as daffodils, narcissi, hyacinths, etc., as these always seem by their bright attractive blossoms to bring prospective spring nearer to us than it would otherwise seem to be without them. Bulbs are indispensable for greenhouse and window effect in winter. Stevias, Eupatoriums, Epiphyllum truncatum (lobster cactus), and similar plants will also make a variety of blossom at this season of the year. The last named plant, of which there are several varieties, makes a grand addition to a few greenhouse or window plants in winter. The Epiphyllums succeed best when grafted on the Pereskia stock. The grafting process is not a difficult operation to accomplish, the best time to secure cuttings or growth with which to propagate being probably after the plants are out of flower in spring. A small piece of the cactus can be broken off at a joint, inserted in a cleft made in the stock, and secured there by a sharp piece of stick being run through the stock and graft. If the atmosphere is at all moist, nothing further will be needed to ensure success. Tying with a piece of string will answer the same purpose as the small pointed piece of stick, to secure the graft in position. Cuttings of these plants will also root readily in sand, but are better suited to furnish hanging pots, brackets, etc., than for growing in the ordinary way. A light sandy loam, not very rich, with plenty of drainage, and not too much water at the roots, are conditions that suit Epiphyllums the best. The bright colored, odd looking flowers of these plants, protruding as they do from the extreme tips of their peculiar flat, crenate growth, give them a unique appearance, and making a plant or two of them a striking feature amongst a general collection of greenhouse plants. In summer plants of the Epiphyllum can be stood outside in partial shade until early autumn, and require very little care and attention. The Epiphyllums make good plants also for the window. Calla lilies will require plenty of water at the roots and an occasional syringing of the foliage. These plants are very subject to aphis or green fly, and sponging the parts affected with weak tobacco water, or a light fumigation from burning damp tobacco stems, will keep down these little pests that multiply so fast on greenhouse plants generally.

Amaryllis bulbs that have been dormant or semi-dormant during winter, will soon show signs of active growth. These should be potted at once on showing signs of growth. A fairly rich loamy soil, and about an inch of broken pots for drainage, suits most of the numerous varieties and types of the Amaryllis family.

Late flowering cinerarias must be repotted into large pots before the pots they are in are filled with roots. The earlier sown Cinerarias will soon be showing flower, and a little weak liquid cow manure once a week will help to produce large flowers. Overhead syringing, almost daily, helps these plants and also assits in keeping down green fly; the latter are very partial to cinerarias. Tepid, clear water, should be used for the latter purpose.

All autumn struck geranium cuttings should be potted into small pots. Any old plants of these that were cut back, and have been kept in sand, can be potted into as

small pots as the roots will nicely go into. Over potting into too large pots in winter time is a mistake, especially for plants just starting root and top growth. Use nearly half sand mixed with the loam, for these and the cuttings before mentioned. In fact these remarks regarding newly rooted, or newly started plants, will apply to almost every class and type of plant, to a greater or less extent.

Cyclamen bulbs will soon be showing flowering buds, and will require plenty of water at the roots at this period. A little liquid manure once or twice a week will help to produce large flowers, and intensify their color, as well as the pretty markings of the foliage, so attractive a feature of the cyclamen. A cool temperature and an occasional syringing is necessary to have the best results possible with cyclamens.

Roses should be syringed with tepid water two or three times a week if at all practicable to do so. Sprinkling the hot-water pipes on very cold nights, when there is a good circulation of heat in them, will raise a cloud of vapor that will serve the double purpose of making the insidious little red spider very uncomfortable, as well as helping to seal up any open joints there may be in the glass roof. Steaming the house is a good plan on cold, windy nights, but must not be attempted unless the temperature of the house can be kept at least above 50° during the night.

Cuttings of lobelia, double alyssum, cupheas, and similar plants required for hanging baskets, vases, etc., should be taken now. This will give them a chance to make nice plants by the time they are required in spring. Old plants of festuca glauca and Isolepsis gracilis, can be cut into small sections and repotted into sandy soil in small pots. These grass-like plants are pretty and useful for hanging baskets, window boxes, etc. Ventilate the greenhouse or conservatory very cautiously, if it is done at all, and be sure and close the ventilators early in the day.

WINDOW PLANTS.—The principal plants in flower in the window will probably be a plant or two of begonia incarnata, calla lilies, and some pots of early flowering bulbs, Roman hyacinths, with some of the earlier flowering varieties of narcissi. Dotted here and there, these will make an attractive window display, placed amongst a few ferns

FIG. 1985. GERANIUM, "PETER HENDERSON."

and other plants, whose foliage alone is acceptable at this season of the year. A few trusses of geranium blossom will also be seen, if the window has a sunny aspect, and the directions given in the May number of journal regarding the culture of geraniums during the summer for the express purpose of producing flower in winter, have been followed up. The accompanying photo of a plant (taken in October) shows the result of the summer culture as before mentioned.

The plant shown is one of the semi-double varieties, and is named after the late eminent plant-grower, "Peter Henderson,"

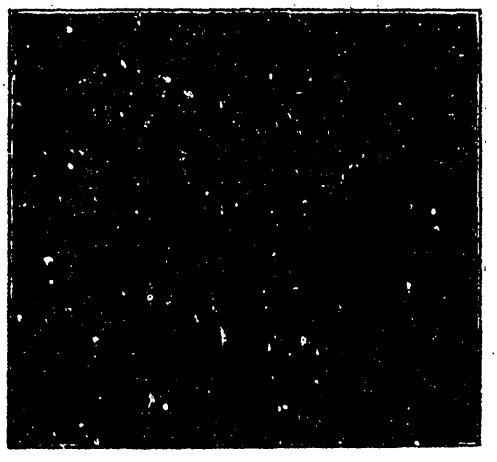


FIG. 1986. FLOWERS ON SIDEBOARD.

one of the most enthusiastic and energetic florists of this continent up to the time of his demise a few years since. The flower of the geranium noticed is of a bright cerise-scarlet color. Its robust habit of growth, together with its free-flowering propensities, and its adaptability as a bedding variety in summer, or as a forcing variety in winter, have tended to make it a general favorite, especially with amateurs. There are several more varieties of geraniums of various colors, suited particularly for winter flowering, that were noticed in the article referred to previously, besides others of more recent introduction that can be easily obtained.

Plants are very susceptible to cold draughts of zero weather, and these must be prevented from striking directly on the plants by placing sheets of newspaper, or something similar, between them and the window on very cold nights.

If the plants are standing on a table it is easy to remove table and all a foot or two into the room from the window on very cold nights. This will often prevent a collection of window plants from being frozen and irretrievably ruined.

I have had handed to me a photo of a small collection of plants that are evidently ready for an extra severe visit of winter weather. They also make a very pretty floral display on the sideboard for evening visitors to admire. It is to be hoped the plants as shown were removed back to the window as soon as possible, so as to give them the light and sun so necessary for the well-being of plant life in general. Those who succeed best with window-plants are those who endeavor to give them as nearly as possible the same surroundings that are supplied them naturally in their native haunts.

In the centre of the photograph at the back is seen a fine plant of begonia sanguinea with the last of several fine cymes of its delicate pale pink blossoms still showing. This is one of the most satisfactory varieties of the many numerous and beautiful types of begonias, specially adapted for window culture. Its thick heavy leaves, the upper surface of which is of a bright glossy olive green color, while the underneath side of the leaf is of a bright blood-red color,—hence its specific name "sanguinea"—seem able to withstand the dry heated atmosphere of a dwelling house, better perhaps than any of the begonia family, although there are several kinds, such as B. manicata and B. manicata aurea, that are good varieties for house or window (besides others of more recent introduction).

The cyclamen in the centre, and the pot of Von Sion and Orange Phœnix narcissi on either side, and the small plants at the extreme ends of the side-board had a very pretty effect altogether when the room was lighted up for the evening. A hanging pot or two of tradescantia or a trailing plant of German ivy or smilax would have completed a very pretty picture.

With increased fire-heat, insect pests will develop quickly. Green fly and red spider are the foes most to be dreaded. Sponging

as recommended for greenhouse plants is probably the safest method of disposing of green fly on window plants.

Spraying and syringing the foliage, especially the underneath side, as often as possible, at least two or three times a week, is not only the safest remedy, but the best preventive of the destructive attacks of the dry-air pest, viz., the red spider. Keep as moist an atmosphere as possible around the plants, and spray or syringe the foliage on fine sunny days. Ventilate the rooms also on fine warm days when possible. This should be done by lowering the top sash of the window; this avoids chilling the plants. The bottom sash should be raised for ventilation only when the thermometer registers several degrees above freezing, 45° to 50° being safe figures to act on, if the wind is not cold and biting. Water the plants thoroughly at the roots, but only as often as it is needed. The latter point can only be determined by close observation of the needs and requirements of each individual plant. Bulbs while forming flower buds and when in flower require plenty of water, as well as soft-wooded plants, such as geraniums, stevias, spireas, etc. Freesias require plenty of water for a time after they have done flowering, and even a little liquid manure to help develop the new bulbs for next season.

Hamilton. HORTUS.

GLADIOLI AFTER FLOWERING.—I watch my Gladiolus beds very carefully, and as some sorts are earlier than others, I take them up as they ripen-off, and put them into the house. In the back kitchen there is a copper close to a patent kitchener, where there is considerable heat, and there I place them. They remain for a couple of weeks until they are quite dry, when I put them in paper bags and lay them by. That they will bear some considerable drying-off I have proved, for a small box of mixtures was forgotten for some weeks, and when taken out I did not think they were good for much. I, however, planted them in an out-of-the-way place under the shade of trees, and there they have grown and bloomed most vigorously. The Gladiolus disease seems in some way to be connected with climatic influences, and results, probably, from exceptional causes. These may be removed, and the bulb itself acquire more hardiness. Hollyhock growers will remember that some years ago the same thing took place in that plant. Collections were cut up, and the attempt to grow the flowers pronounced hopeless. It, however, after some years of much heart-burning to growers, wore itself out, and the plant is now being grown again. So with the Gladiolus, I believe. Those who have seen a collection of them as cut blooms will desire to see them extensively grown. As cut flowers they have few rivals. They bloom so well in water, daily expanding their flowers, and are so vivid and varied in their color, that they must be great favorites. My ideas on their cultivation would be, Dry the roots well, keep them in a cool place to prevent their growing too early, manure highly in the autumn, again give a slight coating in spring, and do not plant too early.—*Garden Work.*

The Canadian Horticulturist

COPY for journal should reach the editor as early in the month as possible, never later than the 15th.

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.

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ADVERTISING RATES quoted on application. Circulation, 5,500 copies per month. Copy received up to 20th.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc., but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists January, if possible otherwise we take it for granted that all will continue members.

NOTES AND COMMENTS.

ERRATA. The word "successful" on page 526, December number, should read "succession," and "Fuchsia" in second column, page 527, should read "Freesias."

BRECKON'S SEEDLING.—Mr. R. Breckon, 956 Dundas St., Toronto, sends us two beautiful apples, with the following note:—

SIR:—"I send you two apples that I cannot name, and I have had them before two of the best judges in Toronto and they cannot name them. I would be very thankful if you would name them for me.

The two were grown by an old man who is now dead. He was very fond of growing trees from the seed of all the best apples that he could get, and also fond of grafting. This tree is about 10 or 12 years old by the appearance of it, and it grows upright like the Spy tree. The tree is in an orchard, or at least on one side of the orchard, where there are only Spy and Blenheim orange trees growing.

The tree bears a good heavy crop every year, and the man told me that he keeps them until the middle of May and they retain the flavour better than the Spy. The sample that I sent you has been in a warm room in my house for over three weeks, so it does not give you a chance to judge its keeping qualities."

This apple is surely a seedling, but one well deserving farther attention from our Committee. Form oblate, 2⅝ x 3¼ inches in diameter; color, light yellow, beautifully shaded and striped with bright red, with numerous obscure yellowish dots; stem, ⅜, very short and stout, in a deep cavity, and calyx nearly closed in a moderately deep wrinkled cavity; flesh fine grained, moderately juicy, of excellent quality. Season probably January or March.

APPLES have been advancing in price almost constantly, proving the correctness of our views of the crop and the markets as expressed in previous numbers. Many predicted a glut like that of 1896, but instead prices for No. 1 fruit have been better than

usual. Mr. J. M. Shuttleworth, of Brantford, sends us the following cables of Dec. 12th :—Messrs. Simons, Shuttleworth & Co., Liverpool, cable :—There is a steady demand for good sound fruit. The market is active and prices have advanced from our last quotations.

GALLING TO OUR YANKEE COUSINS.—The advancement we in Ontario are making in the way of extending our fruit markets, especially since the Provincial Department of Agriculture has moved in the matter, and the fruit is landing in Great Britain in such admirable condition, is a bitter pill for our Yankee cousins, who may never move in such an enterprise except at each man's own private risk and loss. The following extract from Cold Storage proves our statement :—

It must be galling to patriotic Americans who gloat over the vast strides we have made for foreign trade to learn that we are playing second fiddle to Canada in the matter of exports of perishable fruit products. It certainly moves us to wrath. That there is no sense in such a situation is apparent, except that Canadians are beating us in the game of progressiveness. That exception is just doing the trick. If our producers must get along without any governmental aid they ought to be the first ones to interest their fellow partners in the trade, and start a concerted movement for pushing exports of perishable products. Canada now sends more butter, cheese and eggs abroad than this vast Republic, and its fruit business is rapidly overhauling ours.

With less than one-quarter of our territory, and with a vastly larger percentage against that country in the matter of production, Canada has managed by ceaseless energy, to approach and pass us in sending abroad those products which this country is paramount in. Here is something for Americans to ponder over. Refrigeration is doing for Canada what it has done for Australia and New Zealand, and what it ought to do for this country. We know as much about the science as Canadians, but are not applying it to develop foreign business. We simply seem satisfied to work within our shell. Here is one sort of expansion that will meet with approval on all sides.

THE NOVEMBER FRUIT SHIPMENT.—On the 18th of November, the "Trader" sailed from Montreal, carrying a shipment of Grapes, Pears, Quinces and Apples, which we had forwarded from Grimsby a few days previously. A letter has just been received from Mr. Peter Byrne, Government Agent, at Liverpool, dated Dec. 8th, in which he says :

The last shipment by the "Manchester Trader," which left Quebec on the 19th November, was discharged on the dock at Manchester on the afternoon of the 5th inst. I inspected it immediately on being landed and found the apples, pears and quinces all sound. But the grapes, though fairly dry and sound were in several instances wet and decayed. Since then I learn that they deteriorated after being landed and I fear a heavy loss on them was inevitable. The cold storage arrangements seemed to have been all right, but the fruit must have been too long picked at the time of shipment. The public here are slow to take up with anything new, but a good step has been taken in impressing them favorably with our grapes. I have had three exhibits at Liverpool, and a great many people have tasted them and pronounced them excellent.

Messrs. Potter & Co. write under the same date: The "Trader" has arrived and we hasten to inform you of the condition of the fruit sent by her. We understand that while she was loading at Montreal, the temperature was 15° F., and from the engineer's report that it took six days for the chamber to reach 39° F., no brine being pumped in the meantime, we judge that the fruit had been pretty well frozen. The result is that the pears rapidly rotted, almost immediately they were discharged they went off in color, and we fear it will be difficult to dispose of them at anything like a price. Of course you cannot expect them to stand such cold, and we should say it would not be wise to try to ship them so late another time.

This emphasises what we have all along advocated that in order to have perfect success, we must have weekly steamers. Last season we had only the space on one steamer engaged, and that after October 5th, it was November 18th before the next sailing, and fruit harvested in October had to be kept all the time waiting.

Let us have a steamer every week properly fitted as the "Trader" is, and this kind of a difficulty will not again occur. This kind of accommodation ought to be provided for us by the Government, and if our local associations would express their wishes either by letter or resolution to the Hon. John Dryden, we have no doubt he will make such provision as shall enable any company of growers willing to make up weekly shipments, with railway and steamship accommodation for the same.

QUESTION DRAWER.

Salt for Asparagus.

1198. SIR,—What amount of salt should be applied per square rod to an Asparagus bed, or what is the greatest amount which can be applied without injury to the plants. Is it possible to apply enough to keep down weeds without injuring the Asparagus.

GEORGE WOOD.

Erasmus, Ont.

Salt may be applied quite heavily to an asparagus bed without injury to the asparagus, indeed heavily enough to keep down weeds and grass. Some advise sowing one bushel to the square rod, as a fertilizer; but whether it has other than a mechanical effect upon plant growth is a disputed question. In addition to the salt we would recommend an annual top dressing of Nitrate of Soda, say two hundred pounds per acre, in March or April, as a specific for the encouragement of plant growth.

Apples for Ottawa Valley.

1199. I would like very much to have your advice as to which of the following varieties of apples you would consider the most profitable to plant:—Ontario, Northern Spy or Canada Red. I am planting an apple orchard in the Ottawa Valley and have set out some McMahon's White to be top grafted with either one or two of the above sorts. The Canada Red is proving quite hardy in that section, but it is not a strong grower nor a heavy bearer. Would top working it on a strong grower overcome these defects? Is the Ontario of as good color as the Spy? Does the Canada Red sell as well as the N. Spy? I have never seen market quotations of this sort.

J. F. MORROW.

Kelton, Ont.

In our opinion the Spy is the best apple of the three. It has a name in the Chicago market, and Canadian Spys are in considerable demand; and it is constantly rising in favor in the English market.

The Ontario so much resembles the Spy that it might sell as a substitute for it, and it has the advantage of being an earlier and more regular bearer. On this account, if planting young trees, we would choose the Ontario as the one most certain of giving returns within the first fifteen or twenty years.

But for the Ottawa Valley we question whether either one is hardy enough. If our correspondent can satisfy himself in this point, he cannot go wrong with either variety.

Canada Red is not productive enough, as a rule, to be selected for a commercial orchard, although it is a fine color, and a good packer. Very often too, it is undersize, and these days no apple is wanted under 2½ inches in diameter.

1200. In an article on "The Boston Fern" which appeared in the Horticulturist a short time ago, it stated that for treating scale on the leaves, washing was the best cure. Would you recommend anything but clear water to do this or is there any preparation which would be best to use? Kindly answer the above and you will confer a favor on,

F. DAVEY DIAMOND.

Answer by Mr. W Hunt, Hamilton.

The safest and most effectual method for the removal of "scale" from ferns and plants of a similar delicate texture, is to wash them with water in which a very small quantity of common soap has been dissolved. Apply the soapy water carefully with a small piece of sponge. By rubbing slightly, the scale can be removed without injury to the plant. Rinse or syringe the plant with clear water at once, so as to prevent any of the soapy water from clinging to the foliage. Whale oil soap and similar preparations are dangerous to use on ferns for the removal of scale.

1201. What is the best and most convenient fertilizer for a lawn? When and in what quantity should it be applied?

GEORGE WOOD.

Erasmus.

Clean stable manure, fine and rotten, is

about the best all around fertilizer for the lawn, and the effect in the rich dark green growth is very soon observable. If this is not convenient, excellent results may be obtained by sowing the lawn (1) with wood ashes, at the rate of from 25 to 50 bushels to the acre, to furnish potash, an important element in the formation of the stems and woody portions of vegetation; (2) with nitrate of soda, say 75 lbs. to the acre, to promote vigorous growth; (3) with bone meal, about 200 lbs. per acre, which aids the nutrition of the plant.

The best time to apply these fertilizers is in May when the growth is starting.

Open Letters.

The Edible Fungi.

SIR,—Referring to the very valuable contribution of Dr. Hare in your November issue at page 454 on (let us say) "Edible Fungi," I hope the learned Dr. will give us some practical hints whereby we may distinguish the poisonous varieties.

It would be very useful if some one competent would give some hints as to how mushrooms may be *naturally* or *quasi* naturally produced in fields, etc. We find them on old pasture fields and places where cattle, etc., have been *salted*. In this neighborhood we have had phenomenal crops even where roots were being grown on land originally known as black ash and water elm "swails," first heavily *salted*.

Is there any connection between the *salt* and the *mushrooms*, or between the *salt* on that *particular class of land* and *mushrooms?* The matter is worth exploiting. W.

Birds and Berries.

SIR:—"As you have kindly helped me very much by your answers to my questions, I take the liberty to ask another, viz:—'If you have much trouble in growing Black Cap Raspberries from the birds eating them.' Through the kindness of the Society, I have some very fine kinds and bought one or two more. I did not grow any for some time after starting gardening here, thinking the winters too cold, but tried those you sent out and the first year or two after they began to bear I had very good crops, but the rust troubled me, and when I had overcome that, the birds stripped them off, although the red raspberries close by were hardly troubled. Do the birds make a dead set on yours? I wish to note my experience with the Codling moth. As my garden is small, I only grow one apple tree, which is large enough to bear 2 to 3 barrels of fruit every other year. It is a winter variety without a name, large greenish with red markings, a good deal like a spy. Four or five years ago it was infested with the worm so as to be almost worthless, and I then made a point to destroy or feed all apples that dropped; also tied a piece of sacking around trunk, and destroying the larvæ every two or three weeks, and this year I had scarcely a wormy apple in the whole lot, not more than were sprayed. I dug the ground late in the fall, as I grow black currants near it. I have a neighbor who has several trees and takes no particular care of them and they are badly affected.

I noted in the December number of Horticultuist, page 509, you speak in great praise of the high bush cranberry, and while speaking of it so highly, omit to mention one great advantage it possesses, viz; that the berries make an excellent jelly, which with meats we find to be generally preferred to any other.

Listowel, Ont. A. J. COLLINS.

OUR BOOK TABLE.

CATALOGUE OF FRUIT TREES, under test at Experimental Farm at Agassiz, B. C., Ottawa, 1900.

This is bulletin 3 second series, which is to include such as may be too scientific and technical for the common reader.

This catalogue, however, is one that is of interest to every fruit dealer in the Dominion, containing as it does such an extended list of fruits, largely descriptive. It includes 1,217 varieties of apples, 36 crabs, 557 pears, 311 plums, 154 cherries, 213 peaches, 53 apricots, 25 nectarines, 12 quince, 7 medlar and 6 mulbery trees.

REPORTS, Experimental Farm, for 1899. The work done at the Central Experimental Farm, Ottawa, does great credit to the Director, Dr. Wm. Saunders, and his able staff. Copies of the Report may be had on application.

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The plants I supply to customers cannot be excelled in United States or Canada.

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Box 3, Cummings Bridge, "near Ottawa," Ontario.

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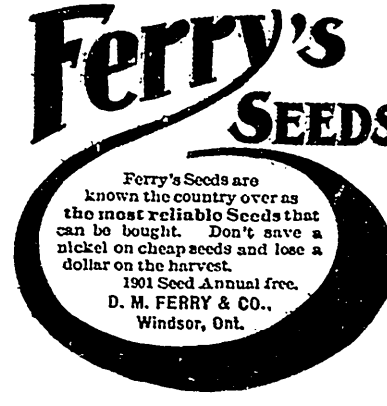

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AND HOW TO GROW THEM.

The author has grown the largest crops of fancy fruit ever produced on an acre. In his experimental grounds are **single plants which yield over FOUR QUARTS** each of fine large berries. His customers have done as well. This has been accomplished by **SCIENTIFICALLY BREEDING up plants** to a high fruiting vigor so they throw their energies to the development of fruit instead of useless runners. **The profit comes from a big crop of big berries** that sells at sight to regular customers. This book tells you about how it is done. **THE CHEAPEST PLANT** is the one that will give you the best fruit and most of it. You can't afford to play **second fiddle** on the market by using scrub plants. The only stock of scientifically grown thoroughbred plants in the country for spring planting. Send your address **at once** and get a copy of this book and a revised edition for three years **FREE.** *Address* **R. M. KELLOGG, Three Rivers, Mich.**