


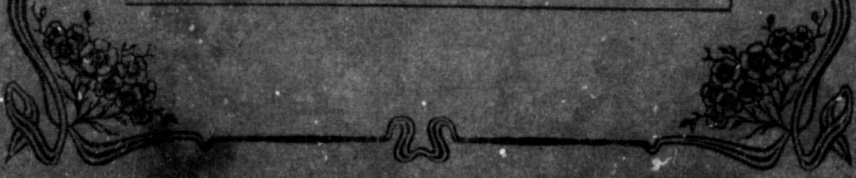
J. M. Wilkinson



The City Beautiful

COMPLIMENTS
OF THE
Calgary
Horticultural
Society

SEASON 1911



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CALGARY HORTICULTURAL SOCIETY

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SEASON 1911
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INTRODUCTION



It has been the aim of the Horticultural Society since its inception, four years ago, to give instruction in practical gardening. One of the methods by which this instruction has been imparted is through the medium of a series of lectures. As many requests have been made, from time to time, for printed copies of these lectures, the Society decided to issue this publication, thereby meeting this request, and also reaching a larger audience than was possible in the lecture room.

The great aim of this Association is, with the co-operation of the public, to make Calgary a city beautiful, not only in name, but in fact. We desire all citizens to actively identify themselves with the work of the Society, and will welcome all suggestions with this aim in view.

The value of this publication to those who are not fully acquainted with local conditions will be incalculable. Conditions, as they exist in Calgary, are very different from other places, and the reason so many people, especially newcomers, do not meet with the success they anticipated, in their attempts at home beautifying, is the failure to recognize this fact.

If the practical suggestions here offered, coming, as they do, from practical and experienced men, are followed, success is assured.

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TOWN PLANNING AND HOUSING

*Address by Mr. Henry Vivian, M. P. for Birkenhead, England
Delivered before The Canadian Club and Horticultural
Society, on Tuesday, September 27, 1910.*

Mr. President, Ladies and Gentlemen:—

First, may I thank the Calgary Canadian Club for the privilege they have given me to-day of speaking to them on the subject of Town Planning and the kindred subject of Housing. Secondly, may I congratulate Calgary itself and all its inhabitants on the magnificent progress which as a visitor I have observed your city is making, and may I wish it all possible prosperity and progress in the future. Mr. President, my visit here on this occasion is mainly the result of the interest taken in this subject by your present Governor-General, Lord Grey. Lord Grey is an old friend of mine. We have known each other in this kind of movement for nearly twenty years, and he is an enthusiast on all questions that tend to improve character and help the well-being of the people connected with the British Empire. His interest in the subject of Town Planning and Housing has caused him to suggest that our experience in the old land might be of some use to those responsible for the development of your rapidly-growing cities in the Dominion of Canada, and he suggested some two years ago that I should come across and talk to the Canadian Clubs on the subject, knowing that on the other side I had taken some little part in this work. Unfortunately I was unable to accept this invitation until Mr. Asquith, the Prime Minister, announced that Parliament would not meet until the end of October, and hence, ladies and gentlemen, I am privileged to be here to-day. (Applause.)

We in England—in that old country—have during the past few years made rapid progress so far as public opinion is concerned on this question of the housing of our people and the planning of our cities and towns. I do not think it is an exaggeration to say that what within ten years was really regarded as merely the opinion of a few cranks, has now become the opinion and has the support of the majority of the enlightened and thoughtful people of the country from one end to the other. (Applause.) Gradually this question of the planning of our towns and the housing of our people has moved in the first place.

Indeed, since I left England, I have read through the press that a remarkable development is going to take place very shortly, namely, the calling of an International Congress, so that the whole of the nations of the world may put their ideas together to see if they can advance the cause of town planning and the housing of the people. That is the rate of progress that the idea is making. Well, ladies and gentlemen, we were, in that old country, brought to see the importance of this question by a series of reports of the condition of the people in large numbers of our great cities. We have had reports brought out by various authorities and by various committees. We have had a Physical Deterioration Committee appointed by the House of Commons. We have had separate committees sitting, on food, in different towns and cities, such as Edinburgh, Liverpool and Birmingham, and showing, as the result of their enquiries, the close relation between this question and the character and physical and mental condition of the people. We had an important committee appointed by the House of Commons called a Select Committee on Housing, of which I was a member. We enquired, took evidence from witnesses all over the country, and issued a report on the subject. It is upon that report that our Town Planning and Housing Act has been passed. Now, these reports, this information, stirred public opinion in our country in such a way no other subject has done for many years, because we were brought to realize that, by the absence of forethought in dealing with our town life, we were slowly destroying the fitness of large masses of our fellow-countrymen, and above all preventing the children from becoming decent men and women by reason of the surroundings in which they found themselves, through no fault of their own. I will not weary the Club with a large number of facts, but one or two, indicating the kind of evidence we brought back, may not be without interest. For instance, the Liverpool Officer of Health made an enquiry into the physical condition of large numbers of children within the area of the City of Liverpool. He divided the children for that purpose into three classes—The children who lived in the unhealthily housed areas, the children who lived in the fairly healthy districts, where the artisans lived; and the children in the fairly well-to-do districts, the middle class. He weighed and measured these children and made a careful record. A similar enquiry was also made into the condition of a large number of children attending the schools of Port Sunlight, that famous industrial village which has been built up by the Lever Brothers, the soap manufacturers. Messrs. Lever Brothers have built there an industrial village which is probably not exceeded for beauty and brightness, and in its regard for the well-being of

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those who live there, is not exceeded by any other place in the world. The people in this village are the workers in the famous soap works, and the children are the children of the workers. The contrast I have referred to was made between the children attending these schools at Port Sunlight and the children attending the three grades of schools in Liverpool. And in most cases it may be said that the workers and the children in the homes of Port Sunlight had merely moved out of the City of Liverpool, so that there was no great difference between the classes of persons in connection with which this enquiry was held. The enquiry related to the average ages of 7, 11 and 14. At the age of fourteen years it was found that the children attending the Port Sunlight schools were no less than five inches taller than the children coming from the badly housed districts of Liverpool, and not only so, but they were thirty pounds heavier in weight. Now, ladies and gentlemen, a long range of facts of that kind showed the committee and the nation at large the tremendous responsibility that was upon us for the public life in that land, and the close relation between this question of housing and the development of the individual, both physical and in character, because I think you will see very clearly, if you will allow your imagination a little play, that if these unhealthy conditions produce such an effect upon the physical make-up of the individual, what must be the effect on his mental capacity and upon his moral qualities. You may depend upon it that the conditions to which I have referred produce results as serious as any physical results can be, even though we cannot measure them by a tape line or a foot rule. We said, therefore, that steps must be taken to modify these conditions. But not only is this enquiry that took place in Liverpool of vital importance; there were other enquiries being made that were sources of information confirming the results obtained and the conclusions reached in our Liverpool enquiry. A few facts concerning London, and then I will pass from that phase of the subject. Dr. Newman, one of our public-spirited Health Officers, held an enquiry into the effect of living in one room, two rooms, three rooms, and so forth, upon the lives of the people under his jurisdiction in the borough of Finsbury, London. He found that in the homes of one room there were forty deaths per thousand, in the homes of two rooms there were twenty deaths per thousand, and in the homes of three rooms there were fifteen deaths per thousand. Where they had the magnificent luxury of a four-roomed house to live in, the slaughter of human life was cut down to three and four deaths per thousand, as the result of this modest improvement. In the infantile death-rate the same facts apply. The other rate I have given is general. In the case of the slaughter of the innocents, the four-roomed house cut down the

death-rate two-thirds. I think the death-rate among such homes is the brightest side of the whole matter, for if such children die it will be better for them. The worst side of the case is seen in those who do not die, but merely hang on to life, unfit to fulfil their duties as citizens or to do a proper day's work. I say that the death-rate in this connection is the brightest side of the whole question. If you realize, as we do in the old land, that according to the facts brought to light a few years ago, there were over half a million people living in one-roomed homes, and over two millions boasting of two rooms, you can easily realize what effect these kind of homes had upon the health of our people, and you can understand how it impressed us with the need for immediate action if we were to prevent the destruction of a large part of the nation's life. These are the facts that have really stirred us to action in many directions.

Not only were we stirred to action by such facts as I have given you, but we were provided with examples of what had been done in Port Sunlight, as I have already intimated. Then we were shown the same results in the magnificent village built by Messrs. Cadbury—the village of Bournville. Rowntree's of York also provided us with an object lesson in their splendid village outside of York. People went to see these villages, and there they had the joy of seeing what we had seen. Each head of a family had his garden for the growing of vegetables, and in this a distinct monetary advantage. On the other hand, if he did not require that advantage, it blossomed as a flower garden. Those who visited these places and saw for themselves came away impressed with the immense importance of the subject so far as the national life was concerned. These voluntary efforts and this popular interest took a step forward in connection with the setting up of a village called Letchmont, some thirty miles north of London. There we are engaged in building a sample city for thirty thousand people. Four thousand acres of land were bought for this purpose, and it is being laid out with a view of meeting the ultimate needs of about thirty thousand people, providing every practical accommodation for the people, and especially providing an opportunity for every man, woman and child to play. There is provision for tennis courts, bowling greens, parks, and for public buildings of all kinds, and the whole is laid out, so far as width of streets is concerned, so that all the needs of the future may be adequately met. That is one step we took to demonstrate the value of this kind of change in the building of our big towns. But we soon came to see that we could not make the progress we desired without some legislation, and not only that, we found that if it was to be tackled on any large scale it must be tackled in the suburbs of the existing cities. Whereas

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this model city had its advantages in the rural parts of England, the opportunities in the suburbs were greater and more numerous. We were helped in this copartnership movement by the copartnership tenants' movement, which takes hold of estates in the suburbs of the big cities and produces a sample of what a suburb estate should be. We have a suburb on the west side of London, another out at Hampstead, where we are building a model suburb for about fifteen thousand people, providing on the average not more than eight houses to the acre. We do not propose to build it for one class alone. You will find the home of the working man, renting for one and a half dollars a week, and you will find the home of the well-to-do, renting at from one hundred to one hundred and fifty pounds a year. We have provided a garden for each house. Provision is made for public buildings such as churches of various kinds and other public institutions. All these are laid out with a view to meeting the needs of the future and securing that the suburb when completed shall have a complete architectural effect. We are attempting to approach this problem of the town as it should be, as a complete architectural whole. Hitherto architecture has in the main confined itself to the designing of a building. The architect has looked upon the building as complete in itself and as embodying in itself the art or science of architecture; whereas we consider that architecture will not have completed its mission of service to humanity until it regards the city as a whole as well as each individual thing. We must not look upon each public building or street merely in itself in the city or town that is to be, but upon the completed whole, and the architect must have the requisite vision to see the whole as a complete architectural effect. This is the kind of public opinion that we are endeavoring to create, with a view to expert response to that public opinion in practice. And, as I indicated just now, we soon felt that if we were to make a move we required legislation, and we have had passed, in order to help our municipalities, our Housing and Town Planning Act. Our municipalities, after the passing of this Act, will be able to lay out the areas around the existing towns on the lines on which it ought to develop, and make provision for everything, arranging the streets and avenues so that the population may move from the centre to the circumference with the minimum amount of waste in time and money. During the last ten years we have spent over two millions of money in moving buildings for the purpose of facilitating the movement of tram traffic—all of these buildings having been built during the ten years previous. You will see from this how little thought we have been putting into the question of the building of our towns. What could have been done before with pence, cost us pounds. Now, you have the opportunity to avoid most of the

mistakes we have made in the cities of the old land. This Act will now give our municipal authorities power to create in each town a sort of committee of council, which will be engaged in laying out plans for the future growth of that particular town, taking into their view all the probable future needs of the town—future needs from the point of view of the movement of passengers and traffic, factory accommodation and so on, and playing places for the children as well as for the adults, because we realize in the old land that in most cases in the thickly-populated district the only place the child can get often is the gutter, which spreads disease. You can make provision in advance for these things. Not only can every town secure these advantages, but our Act provides that groups of towns can be formed for this purpose. We realize that in many cases a big municipality will not be able to solve this problem alone, so they are given power to unite with other municipalities. They have power to move and to prepare a plan for the zone beyond their own district, inviting other municipalities or authorities to come into co-operation with them. And if these refuse to come into co-operation, the principal city can go forward without them. We have created at headquarters in London, under the Local Government Board, an expert department to act on differences of opinion with regard to the laying out of these joint districts, and these experts will adjudicate upon any differences of opinion. Take London as an example, and if you look back you can realize that we have every reason to expect that the problem will be no less in the future than in the past. If you look at the great cities of the old land you will realize what it means, for we have rapid growth in the old country in our cities. A hundred years ago, Liverpool had only forty thousand people, and to-day the population is about seven hundred thousand. The same is true of Birmingham, which has a population of seven or eight hundred thousand people. London, everyone knows, adds a city every year to its population. It is spreading enormously. Only one hundred and fifty years ago London was a village compared with the London of to-day, and we hold, therefore, that the problem of the future of London fifty years hence has to be solved, not within the present county area, but has to be settled fifteen, sixteen, and even twenty miles beyond Charing Cross, over which the present Council has no control. Therefore, our Act has provided for authority over all these zones so that we shall be able to have main roads which will pass the motor traffic down as far as Seven Oaks, Norwood, and places of that sort, by way of a central road, so that it will be able to move out rapidly from the centre to the circumference, and with the greatest safety to the people. And may I say that this kind of traffic—motor traffic—is still in its infancy. If you could wake up in fifty

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years' time and see the use to which motoring is put, you would see a very different city in any part of Canada from that which you see to-day. The time will come when the motor will be used on an enormous scale for the movement of raw material. If our towns are really to be tolerable for the pedestrian, we must have some complete scheme for dealing with this traffic. Life will be intolerable for the man who wants to walk the streets in peace and safety; I am sure I am not exaggerating in the least when I say that, to the ordinary man, woman, and child of twenty-five years hence, even in our cities in Canada, life will be intolerable unless some bold thought is applied to this traffic in its use of the main arteries of these rapidly-growing cities. We have only to go to Toronto, or to Montreal, which is worse still, for examples. It is extraordinary the way tram traffic is allowed to ruin the nerve of every individual in cities like these in your Dominion. What would they give to-day if their forefathers had exercised forethought in looking to the needs of the future of Montreal and made proper arrangements for this traffic, so that it could have been handled without injury to the life and nerve of the people. Ladies and gentlemen, I am here to-day that you in this new land shall take steps first to create public opinion, and second to provide machinery that may be requisite to make sure that your towns grow up on some scientific principle, with the needs of fifty years hence in view as far as possible. Ladies and gentlemen, I want to appeal to your imaginations for a moment; I will suppose that in twenty years from now Calgary has a population of two hundred thousand. I do not believe that any thoughtful man here regards that as extreme or unreasonable. Now, ladies and gentlemen, am I unreasonable in asking that your Town Council, and those responsible for the development of this City of Calgary should have twenty years of forethought with regard to the principal needs of the two hundred thousand or two hundred and fifty thousand people who are to be its population? Unless you begin thinking on this subject, what would cost you cents now in twenty years' time will probably cost you pounds to put right. And I do not believe that I am any more unreasonable in my suggestion of the trouble that will arise in the future, from neglect of forethought now, than you are in your expectation of the number of people you will have to care for in this great city with its rapid growth and marvellous possibilities. You can do it now without the clashing of interests. If you allow vested interests to grow up before you make the necessary provision, you will have to buy them out and at a good price. On the other hand, make the provision now and no one will be injured. If those engaged in building—and I understand the builder's position, for I am chairman of one of the largest building companies in the old land—if

those who are in the building trade understand the rules of the game as you lay them down in advance, so that every builder and real estate dealer will know them, you will injure no interest concerned with real estate or building. I will go further and say, not only will you not injure anyone, but the real estate of your city will advance by your making a more beautiful and attractive town for the people who want to come and live here. It will be an asset of good-will to the town itself. That is my belief. Germany has been ahead of us in this matter—not ahead of us in housing, for I do not like the German idea of housing; I do not like the idea of a barracks in which the people have to live; but her boldness in laying out her main thoroughfares is worthy of being followed everywhere. You can go now to Frankfort-on-the-Main—and I have seen what I speak of—and see a plan of Frankfort for a hundred years to come. There it is, you can take a copy of it and go out into the zone beyond and see the asparagus and potatoes growing where they have planned the city of the future. If Frankfort is to grow it must grow according to the plan. Surely we are not going to be behind the Germans in this matter. I am very friendly disposed to every nationality on the face of the earth, but I am anxious that just as our old race has led in so many things, it shall lead in this. May I say, ladies and gentlemen, that the race of the future, the race that is going to control the civilization of the future, is the race which is able to work out in its towns the advantages that will make for the development of the highest efficiency in the unit. We are inclined to think in lumps. We speak of millions of people. The time has come when you have got to realize that you can never have a healthy lump except by having healthy units. And we have to provide the conditions necessary to produce these healthy units. I trust that the British race, in Canada and in Australia, as well as at home, will be alert on this question. It is only along these lines that we shall be able to hold our own in the great international struggle. I apologise, ladies and gentlemen, for the time I have taken in presenting my thoughts to you, but I would make an appeal to those of you who have the future of Calgary in your hands, I would appeal to you to realize the importance of this question, the importance of preserving home life before all else. I trust that Canada will not become Americanized in this matter. We can only get a healthy, alert, vigorous race by having children come from homes, not from barracks. You may be healthy in spite of such an evil for a generation, but if your family life is piled block upon block, thirteen and fourteen stories high, and all the children have to play in is the gutter, and if the only garden the family knows is the window ledge, believe me, sooner or later the race that lives under these conditions is going to take

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a back seat in the race of life. Your healthy man and woman of the future comes from the healthy home. I plead for the preservation of that ideal of the home in which the family shall dwell, as distinguished from the barracks and the tenement. With these thoughts, ladies and gentlemen, I leave the matter in your hands, and trust that Canada will not be behind the rest of the empire in setting an example in this very important matter. (Applause.)



LECTURE

By President A. G. Wolley-Dod, January 11, 1911.

Ladies and Gentlemen:—

It is my intention to-night to give you a lecture, on "What to grow and how to grow it."

The first thing to be considered is the preparation of the soil. I have always advocated cultivating in the fall and leaving the ground as rough as possible, as then all the snow that falls during the winter will soak into the soil as it thaws, and does not run off as it would if the surface were smooth and compact. If, however, water is available, give the ground a thorough soaking before it freezes up, as by this means you will find, no matter how dry the Spring is, you will have ample moisture in your garden to start all your seeds.

This is a far better method than watering in the Spring, as if the water is taken straight from the pipes it is so cold that it retards growth rather than assists it. If, however, the ground has been soaked in the fall, the moisture in it becomes naturally warm, and will do infinitely more good than any amount of cold water applied on the surface in the Spring.

The first work to be done in the Spring is to make up a hotbed, although seeding plants of all kinds can be procured very cheaply from the florists. It is far better to have your own frame, as it can be utilized not only for starting cauliflowers, cabbages and bedding-out plants, but also for raising a few early radishes and lettuces, and after the plants and flowers so grown are all planted out, a few cucumber seeds should be sown, which with proper care will give the grower all the cucumbers he will require until late in the fall.

The hotbed should be started about the 20th of March. Those who have a stable will probably have enough manure of their own, but it will well repay those who have not, to procure a few loads and make up a hot bed, which will take up very little room, and the frame can be made quite cheaply with a few boards and storm sashes. The size required is the next consideration. It costs very little more to make frame a moderate size than a small one, and I find that one with 3 windows is a very convenient size, as it gives plenty of room for the seedlings, and

also when the time comes for the cucumber plants, as these latter require a good deal of room. A frame of this size will require from 8 to 10 loads of manure.

In choosing the manure for your bed, be careful to choose good fresh horse dung, which has not too much litter mixed with it. If there is a small percentage of cow dung mixed with it, it will do no harm, but for choice horse dung alone is preferable.

In choosing the site for the frame, if possible, pick one so that you can have the slope of the glass either to the west or north, as then rays of the sun will not strike directly on the glass. Also, leave room to turn your pile of manure over.

Having now chosen your site, have your manure piled loosely in a conical heap and leave it for a week or ten days. If you find in hauling this manure that it is very dry, wet it as you pile it, about an ordinary sized water can of water to a load of manure will be quite enough; this can be applied to the top of the pile after each load has been put on. It is not often necessary to add any water, as, as a rule, there is sufficient snow mixed with the manure to make it moist enough; if, however, it is too dry, it will not only not heat properly, but will not retain the heat as long as it would if it were damper. After about ten days this pile should be turned over, making a second pile beside the first. In making up this second pile, shake it up well and leave it loose. It is during the process of turning and shaking up that you will find whether water must be added.

If it is too dry the inside of the pile will have a white appearance and will feel dry to the touch. If this is the case add water as before stated. This pile must remain another week or ten days, when it should have heated sufficiently to make up into the bed. Measure the length and width of your frame and put some small pegs in the ground where your frame is to be built a foot bigger than the frame each way; for instance, if the frame is 6 feet by 10 feet, your foundation must be 8 feet by 12 feet.

Now turn your pile back to where it originally stood, but this time, instead of making a loose conical heap, make it the size required for the frame and stamp it down as firmly as possible, taking care to keep the sides as square as possible or you will find that the top will be too small for the frame.

In finally building this up add a little more water if necessary, as before. Having made this bed up, you can now put the frame in position, but do not put your lights on yet, as it will have to be left some days yet for the heat to cool off; probably another week or ten days.

After this lapse of time put about 6 inches of soil inside and tread it down firmly. If your manure has heated nicely and has not been left too long between the turnings, your frame will be

ready for seeding about the 20th of April, which is about the right time for sowing, as then your seedlings will not be too big for transplanting when the time comes, which will be from the 24th of May to the 15th of June.

Those who are handy with a hammer and saw can make their own frames, but those who are unfortunate enough not to be able to make their own, will find any carpenter will make them one very cheaply.

For the information of those who have never had a frame let me state, that care should be taken to have the frame deep enough, and deeper at the back than at the front, so as to let the water drain off the lights. Eighteen inches is not too high for the front end, as you should have six inches of soil and at least a foot between the soil and the glass. The frame is best made so that it can be screwed together, when it can be taken to pieces in the fall and stored away until the following spring.

Having prepared your frame the next question is what to sow. This will depend a good deal on the size of the garden and whether the grower requires flowers as well as vegetables. I will assume, however, that he or she is going to grow both. It is always advisable to procure all your seeds from some reliable seed merchant early in the year, as if left too late one will have to buy from the nearest store, and this often leads to disappointment, as the sort required may not be obtainable, and one has either to wait till one can get what one wants or else take some inferior variety. Every garden, no matter how small, should contain a few cauliflowers and cabbage, and a few tomatoes will always help to make a good salad. But as one must be guided by the size of the garden in what to grow, I will give details for a family large garden, and those who only have a small one must be guided by circumstances, and if space will not permit their growing a large selection, they must be content with a few of the choicest kinds.

For cauliflower I would choose Early Snowball and Extra Early Erfurt. A small packet of each of these varieties can be obtained for about 25c., which will be more than most people will require, but it is quite easy for one or two friends to club together and divide the seeds when they arrive.

For cabbage, Early Jersey Wakefield and Flat Dutch are good, the former for summer use and the latter for winter use, as it is a good keeper.

A pinch of celery sown very thin will give enough plants for most growers. Paris Golden Yellow will be found a very excellent variety.

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For radish, French Breakfast is about as good as any for sowing in a frame, and a pinch of lettuce will give an early salad before anything in the open is fit for use.

Having obtained your seed, the next question is the method of sowing. Do not have the soil in your frame too moist; it must be well pulverized and packed tight. Put on your biggest boots and tramp the soil down thoroughly in the frame. Then get a short piece of stick or a piece of shingle and smooth it over again. Then with the end of the stick draw parallel lines down the length of the frame, about 8 inches apart and half an inch deep for the bigger seeds, but only just a scratch for fine seeds, such as celery. Then take a saucer and empty what seeds you are about to sow into it, and take a small pinch between your thumb and finger and sow thinly in the rows according to the amount required; rake your soil lightly over the seed with the stick you used to make your rows and pat them down with the flat of your hand, and then give a good watering with a sprinkler and put on your lights, but open a little in the daytime—more or less, according to the temperature. If your frame is at the right heat most of the seeds will germinate in a few days, but the celery will take from two to three weeks. As the plants grow and strengthen, more air must be given, or your plants will be drawn and weak; give plenty of water, never allowing the soil to become dry, as growth will be checked and probably irreparable damage done to the young plants. As soon as your cabbage and cauliflower plants have grown about four or five inches high, the soil round the roots should be carefully loosened with a kitchen fork, and then they should be pulled up and transplanted again in the frame about four or five inches apart, care being taken, however, to see that the soil is good and damp before doing so, as if too dry it will all fall away from the roots. Make a hole with a blunt stick and press each plant firmly into the soil slightly deeper than it was before, and give a good soaking of water.

You may find that all your plants will not be ready to transplant at the same time, as some will be bigger than others, but pull out the biggest all the time, so as not to let them get too crowded, or they grow weak and spindly. Cabbages transplanted in this way will very rarely wilt when finally put out in the garden if the same care is used in having the soil round the roots good and moist.

If the weather is very hot when doing this transplanting it is a good plan to whitewash the glass, so that the sun will not wilt the plants. A handful of lime mixed with a little glue or size in a basin is enough for this, and it is best to whitewash inside the glass, as if done on the outside it will get washed off in heavy rains.

Your radishes should be fit for use in about three weeks' time, but the lettuce will be longer before it is ready to use. If your frame is big enough, sow some more radish seed at intervals of a fortnight, as then you will have a succession for the table.

When your celery plants are big enough, prick them out in the frame about four or five inches apart, or they may be pricked out in shallow boxes, and when they are ready to transplant outside dig a trench about a foot or eighteen inches deep, leave the soil in the bottom loose, put about three inches of well-rotted manure in the bottom, and cover this with about three inches of soil and tread down firm. Now transplant your celery and apply plenty of water. As the plants grow draw the soil round the stalks, taking care not to cover the tips of the leaves; when doing this hold the tops well together with one hand and draw the soil well round the plants with a small hoe or other suitable instrument; continue this operation at intervals as long as they continue to grow, banking up the plants after the trench is filled. Some people plant out their celery on the flat, but by planting in a trench and banking up in this way one will find that the celery is much more crisp and tender.

In planting out your cabbages if possible choose a dull day, and press them firmly down again, slightly lower than before, and leaving a small hollow round the stem so that the water will drain down to the roots. After planting give a good soaking of water, even if it is raining at the time.

The ground to be planted should have been previously marked out and holes dug with a trowel about eighteen inches apart.

I find a good way to do the final planting out is to get an old baking tin and lift each plant separately with a kitchen fork, with as much soil adhering to the roots as possible, place carefully in the tin and carry to where they are to be planted.

The time to transplant cabbage and cauliflowers is from the 24th of May to the middle of June. As soon as the cabbages have been planted out, plant a few seeds of cucumber in different parts of the frame and shut the frame up, or very nearly so, as in the first stage of growth cucumbers want plenty of heat, and never let them get too dry.

As soon as the plants have made two or three leaves, thin the mout to not more than two plants together, but it does not matter if the seeds have not all come up, as one in a place and four in a frame is quite enough, if you have chosen a good frame variety, such as Telegraph, you should have all the cucumbers you will require after they begin to bear. Those, however, who have room for a separate frame from the start, will obtain cucumbers much earlier by sowing in April.

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To obtain cucumbers it is necessary to propagate the flowers or the young cucumbers will not set. I have often been told by people that their cucumber vines have plenty of flowers, but that they never can get any cucumbers. This is owing to the fact that they produce two distinct kinds of flowers; one which will never produce a cucumber at all and the other, which will grow into a cucumber if properly propagated. These flowers are easily distinguished, as one grows on a thin stalk and the other grows out of the end of a very small cucumber.

In order to make these latter grow, get a small camel's hair brush and insert it in the flower with a long stalk, and twist it round, this will collect all the pollen. Now insert the brush in the centre of the flower with the small cucumber on it, and twist it round again. The pollen from the first flower will adhere to the second and a few days later it will begin to grow.

These flowers should be gone over every day, as they soon die if not propagated. One will often find that the first flowers that come out are the barren ones, and sometimes these continue for a week or more before any of the others appear.

I always like to make my frame in two distinct sections, as I use one for vegetables and one for starting a few flower seeds. By making your frame in sections in this way you can keep the flower side closed more or less, according to the weather; whereas the cabbage side will require as much ventilation as possible or the plants will become too spindly. These flower plants will want transplanting in the frame in the same way as the cabbages in order that they may make stronger plants for finally planting in the garden. This section of the frame may also be used as a cucumber frame after the plants are all transplanted.

We now come to the question of what to grow in the way of flowers for bedding out. Of course, a great deal will depend upon the tastes of the individual grower. There are a great many annuals that must have an early start in moderate heat, as if sown in the open border they take too long before they reach the flowering stage, and by utilizing a frame one is enabled to sow them so much earlier.

I should recommend a few seeds of the following, the choice of the variety being left to the grower:—

Aster, Dianthus, Lobelia, Pansy, Snapdragon, Hibiscus, Tobacco plant, Petunia, Phlox, Stocks, Verbena, Zinnia.

These should all be started in a frame. There are, of course, many others, but these are all favorites and comparatively hardy, the last on the list being perhaps the most tender. These will all require plenty of room when transplanted to give the plants an opportunity of spreading. The Lobelia, however, is the exception in this case, as being an edging plant it can be planted fairly close together.

Having now disposed of our frame, we will see what we are to grow in the open ground. It is quite surprising to find how comparatively few people know what a lot of useful vegetables and pretty flowers can be grown here.

Every garden should contain broad beans, string beans, carrots, lettuce, onions, parsley, parsnips, peas, salsify, spinach, sweet corn, turnips and vegetable marrows, of course not forgetting a few herbs and some rhubarb plants, and for those that have room I would recommend an asparagus bed. I made an asparagus bed in my garden in the country quite twenty years ago, and that bed still produces an abundance of asparagus in spring, and is ready for use long before any other vegetable.

If the grower intends to grow for exhibition, he will, of course in buying his seed select more varieties of each kind than I am now doing, but I am only giving those which I have found most productive and useful for domestic use. The first thing I should sow would be broad beans and onions, as they are both hardy and take longer to mature than anything else. Of the former I prefer Broad Windsor. In sowing take a piece of string and peg out your row, then with a hoe open a trench from three to four inches deep, and drop a bean on alternate edges of the trench six inches apart. Then fill in your trench and tread it down. During the growing season keep the soil well cultivated and free from weeds; in fact, this applies to all your vegetables. When your plants are nicely in flower nip off the top of each plant, either with the thumb and finger or a pair of shears. This encourages the pods to form and the beans to grow bigger, as it retards the growth of the plant, which is thereby enabled to devote more energy to producing seed.

One must be guided a good deal in the dates of sowing by the season, but from the 1st to the 20th of April is a good time. Allow about three feet between the beans and the next seed sown, but a row of lettuce and radishes may be sown closer, as these will be fit to use before the beans crowd them out.

The next on the list for sowing is onions. I have always been a very successful grower of these most useful bulbs and always prefer to grow from seed, as I find bulbs so grown will keep so much better than those grown from sets. Before sowing tramp your ground well, the more solid the better; then mark out parallel rows with a sharp stick about one inch deep, and sow the seed thinly. Cover lightly with a rake and walk over the rows placing the heel of the front foot against the toe of the other, so that the whole row is tramped. As soon as the plants are big enough, thin out by degrees, so that at the final thinning the plants are about five or six inches apart. Unless the spaces between the rows are very weedy, it is best not to use a hoe at all, but to pull

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the weeds by hand, as the less the soil is disturbed the better the onions will grow. A very light hoeing, however, may occasionally be given to prevent the soil from baking. About the beginning of September the tops should all be broken down with the foot, as this will assist the bulbs to ripen. Then in about three weeks pull them all and place them in double rows, stalks outward, and leave them to dry. If the ground is dry they will not require turning, but if the ground is wet or there is any rain, it may be necessary to turn them. On frosty nights a few sacks should be thrown over them to protect them from frost. These should be removed in the day time. As soon as the tops are dry sort out all those with thin necks and tie them in bunches and hang them up in a cool, dry place. If care be taken only to hang up those with thin necks they will keep in good condition all winter. It will be found that there will be a good many bulbs with big necks. These should be cut off and the onions laid on a rack in heaps to dry a little longer, and then stored on a dry floor, not too thickly, or they will heat. These big-necked ones will not keep very long, and should be used as soon as possible. If stored in a cool, dry place, however, they will keep for some time.

The best varieties to sow are Yellow Globe Danvers and Red Wethersfield, and the seed should be sown not later than the 21st of April to get the best results.

The rest of your vegetable seeds should be sown from the 20th of April to the 15th of May, but if you are going to grow tender things such as string beans, corn and vegetable marrows, do not sow them till the end of May.

For carrots sow Early Scarlet Horn, Altringham and Improved Nantes.

Beets—Egyptian, Half Long, and Long Smooth Blood.

Of peas I prefer the dwarf varieties, as they do not require sticks. They are not quite so easy to pick, but sticks are hard to procure, and unless well staked they are apt to blow over.

Tom Thumb or Dwarf Marrowfat are both good peas to grow.

For lettuce choose Aos Trianon and Neapolitan.

Parsnips—Hollow Crown.

Radish—French Breakfast and Olive Scarlet.

Spinach—Long Standing.

Turnip—White Milan or Orange Jelly for early use, but Purple Top Swedes for late use and keeping over.

Parsley—Moss-leaved Curled.

All these should be sown in rows about 9 inches apart, kept free from weeds, and the soil between the rows constantly stirred with a hoe, but allow plenty of room between your rows of peas and beans and the next row of vegetables.

As soon as the young plants are big enough to handle, thin them out gradually, so that they have room to expand. The peas, of course, will not require thinning. Parsnips should be thinned to the proper distance at the first thinning, as when small they are no use for the table. About six inches between the plants. But it is better not to thin out beets or carrots too much at first, as at the second thinning they will be found big enough for the table. Leave the former about three or four inches apart at the first thinning and about eight inches at the final one. Carrots should be thinned to about one and a half inches the first time over and about three at the final one. The early turnips are best left a little close together, as then they do not grow so coarse. Six inches at the final thinning is ample, but Swedes require more room, and should have at least ten inches.

Having now disposed of the hardier vegetables, we come to the more tender ones, which, as before stated, should not be planted before the end of May. Of these I should choose Wardell's Kidney Wax, Squaw Corn and vegetable marrow, but if you have a fence a row of scarlet runners will prove very successful. The latter will require strings to climb up, as they are very rapid growers and will attain a height of seven or eight feet.

If you have room plant your beans and corn in hills about three feet apart and about two inches deep. Those who are fond of marrows will find them very easy to grow in a warm, sheltered corner, but they require a good deal of room. Plant about three seeds in a place, and when the plants are big enough thin them out to one plant. As soon as the flowers appear they will require to be treated in the same way as I have already told you to treat the cucumber flowers, or you will obtain no marrows. Look the plants over every morning, and if you find any with small marrows on them, take one of the flowers with a long stalk and break off all the outside petals, taking care not to brush off the pollen from the pistle or centre of the flower. Now brush over the centre of the flower with the small marrow on it, and in a few days, if sufficient pollen has been used, the marrow so treated will begin to grow. If, however, it has not been properly fertilized, the small bulb will turn yellow and drop off. The marrow flowers are very short lived, and must be attended to daily between 8 and 11, as after the later hour the flowers will be found to have wilted. This may be a very inconvenient time for a good many people, but the operation is very simple and any small child can perform it successfully when once shown how.

Having told you how to grow your vegetables, I will now give you a few hints as to harvesting and storing.

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Carrots one can usually pull, but if very firm in the ground it may be necessary to loosen them up first with a digging fork. Take as big a bunch as you can hold in your hand and cut off the leaves with a sharp knife close to the crown; if you happen to cut the carrot in doing this it will not do any harm, as it will keep just as well. The roots may now be piled in a cool, dry place, where, if they are not too warm they will keep well into next summer; if kept too hot or in too light a place, however, they will sprout and spoil. A little frost will not hurt them, as they are better kept too cold than too warm.

Beets want handling with more care. Cut off all the leaves, but do not trim the roots, and be careful not to cut into the crown or they will bleed and become soft. Store them in a cool place, but they must not be allowed to freeze.

Parsnips are about the hardest vegetable to pull, as their roots go very deep. I find a good plan is to dig a trench with a spade as close to the crown as possible, and then bend them over towards the trench, when pulling using both hands. Pull a good many at once, and lay each one on the ground until you have enough to collect in bunches. Then take a bunch in one hand and cut the leaves off in the same way as the carrots. The roots should be piled and covered with sand or they will soon become limp and useless. If preferred they may be left in the ground all winter, as no amount of frost will hurt them, and they will be found in much better condition in the spring than those that have been stored.

I would not attempt to store ordinary turnips, as they never keep well, but Swedes can be kept a long time in a cool place. These should have all the small roots trimmed off with a sharp knife and the leaves removed. Close trimming the roots does not damage them in the least, as they will not bleed like beets do.

Celery is better not trimmed at all, and should be stacked heads and tails and each row covered with sand, which will keep it from wilting. These vegetables should all be stored before any danger of severe frost, with the exception of the parsnips, which may be left out all winter as stated. If your corn and marrows are all picked before they freeze, they will keep several weeks in a cool place.

I have not said anything about potatoes, for as a rule there is not much room in a town garden; but most people know how to grow these. There are so many varieties on the market—some good and some bad—that it is rather hard to make a choice, but for those who like experiments, I would say, get a box of eyes of several varieties, and choose the best for keeping over for sets for the next year. It by no means follows that best yielding varieties are the best for table use. If you want to grow a few potatoes,

however, I would recommend sprouting the sets. To do this spread the potatoes out thinly on a warm floor in a light place about three weeks before they are required, and when they have made good strong shoots cut off each shoot with as much potato adhering as possible and bury just deep enough to cover the shoot. If, however, you have a large plot to seed, it will take too long to cut them to shoots, in which case they may be cut in half lengthways, and if there are too many sprouts on the half to be planted cut off the big end, as in this way you destroy more eyes and make the crop of tubers better. One can often raise a heavier crop from a single eye in this way than by planting half a potato with several eyes in it.

Having told you how to grow and treat your vegetable garden, I will now tell you some of the easiest things to grow in the way of flowers.

There are so many beautiful flowers which can be easily grown here, not only in annuals, but also in biennials and perennials, that it would take too long to treat with them all, but I will mention a few of the hardiest and best. Of annuals something from the following might be selected:—

Abronia, Alyssum, Antirrhinum, Asperula, Aster, Bartonia, Brachycome, Cacalia, Calendula, Calliopsis, Candytuft, Centaurea, Chrysanthemum, Delphinium, Eschscholtzia, Godetia, Gypsophila, Helianthus, Hibiscus, Leptosyihon, Leptosyne, Linaria, Linum, Lupins, Malope, Nasturtiums, Nemophila, Nigella, Phlox, Portulaca, Poppies, Salpiglossis, Schizanthus, Stocks, Verbena, Whitlavia, Zinnia, Sweet Peas, not forgetting such sweet-scented things as Mignonette and Mathiola Bicornis. This latter I have seen very little out here, but it can be sown in any odd corner, and has a very sweet scent. It only flowers at night, and a good bed of it will scent the whole house in the evening after the sun has gone down.

Some of these seeds should be sown in the hot-bed and transplanted when all danger of frost has gone, but most of them may be sown in the open ground and are perfectly hardy.

Of course, these seeds are all different sizes, and want to be sown at different depths, from several inches to barely covered. As they all grow to different heights the tall ones should be sown at the back of the border and the dwarf ones at the front. By referring to the catalogue you will easily find which are which. In planting the seeds rake a hole with a flat stick to the required depth, and cover over again and pat down with the palm of the hand. Keep well watered and free from weeds, and as soon as the plants are big enough thin them out, allowing plenty of room, as no plants do well when overcrowded. Of course, the bigger the variety the more room they require. These may nearly all be

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sown the first week in May, but a few of the more tender ones, such as Nasturtiums, should not be sown till the end of the month. Sweet peas should, however, be sown about the middle of April, and should be sown in a trench about six inches deep, and covered about one and a half inches, and as they grow gradually pull the soil round them till the trench is full again, taking care, however, not to cover the young plants in so doing. By sowing in trenches in this way it ensures the roots being good and deep, and the plants will not only be stronger and produce more flowers, but they will withstand a good deal more drouth. The more the flowers are picked the longer they will continue to flower. This also applies to most annuals.

For biennials and perennials I would choose from the following:—Achillea, Dielytra, Columbine, Campanula, Centaurea, Larkspurs, Poppies (both Iceland and Oriental), Phlox, Rudbeckia, Shasta Daisy, Lychnis and Pinks.

Whilst amongst bulbs, Chionodoxa, Bulicodium Vernum, Tulips, Peony and Iris will be found to do very well, but the tulips will want renewing every few years, as they exhaust themselves in time and will not flower properly.

Of small fruits, white grape currant and raspberries are very hardy, though the latter needs protection in winter.

I have not gone into the subject of lawns and trees and shrubs, as both of these should be treated in a separate lecture. If, however, anyone wishes to know anything either about these or any other matter pertaining to horticulture, I shall be only too glad to tell him what I know, and, if necessary, to come to their gardens and show them what to do.

I have by no means exhausted my subject, but I think I have explained sufficiently and clearly to enable even the merest novice to grow a few of the simplest things; and if they will follow my instructions I feel sure they will meet with success, and not only make their homes and surroundings more beautiful, but they will find gardening a very enjoyable occupation.



A YEAR'S WORK IN A CALGARY GARDEN.

Paper Read by W. R. Reader Before the Calgary Horticultural Society on April 16th, 1910.

Mr. President, Ladies and Gentlemen:—

The paper I propose reading to you to-night is by no means extraordinary as a literary effort, but is merely a record of my successes and failures, my experiences and impressions during last season in gardening work under what were, to me, new conditions, and will, I am afraid, be of little interest except to those who wish to know something of the practical side of horticultural work, for what I have to say will be decidedly plain and practical.

I had been better advised, perhaps, to have called it "A Season's Work in a Calgary Garden," for, as you all know, there is nothing but greenhouse work to be done during the winter months, and that class of work being of interest to only a small section of my audience, I shall not touch on it more than is absolutely necessary.

I will begin with the flower garden. Mr. Burrows, in his excellent lecture of the 30th ultimo, gave us reasons why we should grow flowers. I will give the method of growing them as practiced by myself.

Amongst annuals I depended mainly for my display on those old and well-tried favorites, which invariably give satisfaction here—Asters, stocks, verbenas, petunias and phlox. The varieties of asters I grew were "Queen of the Market" and "Comet," in various colors. These were sown under glass the last week in March, transplanted once inside, and into the open borders the first week in June. Queen of the Market came into flower two weeks earlier than the Comet, but was altogether inferior both as regards size of bloom, intensity and clearness of color and decorative value generally. It is six or nine inches shorter than the other variety, and should therefore be kept nearer the front of the border. As the seeds of verbenas, petunias and phlox germinate more slowly, I sowed these the second week in March. I grew two varieties of petunias, the ordinary fringed variety and "Giant of California." The latter produces enormous blooms, but is not nearly so floriferous as the commoner kind. If I desired to secure a brilliant display of color in my garden, and was confined to one

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kind of flower, I think I should select the petunia. For vigor and flowering qualities it is by far the best annual I have grown in Calgary.

The ordinary double German ten-week stock was the kind I grew, and this was raised under glass in the same manner, but owing to the fact that it germinates and grows more rapidly, I did not sow this till the second week in April. At our last lecture there was some difference of opinion expressed as to whether the amateur without a greenhouse should raise his own flowers by sowing in the open, or purchase plants from the florist. With regard to all the flowers I have already mentioned, and also many others, I would strongly advise the purchasing of plants, by which means the garden will be bright by the beginning of July. By sowing in the open, without taking into consideration the risk of late frost, etc., destroying the seedlings, one cannot reasonably expect to see much flower till the end of that month.

One gentleman remarked that it was a spirit of emulation or rivalry, the desire to be in front of their neighbors, that caused people to run to the florist. I do not think that it is so much a desire to be in front of one's neighbors as a desire to be in front of the frost. As everybody present knows, we are liable to get heavy frost any time after the first week in September, and it is most important to have your annuals in flower as early in the season as possible, if you desire to have a display for any length of time. Of course there are many kinds of rapid growing annuals, as, for instance, Shirley and California poppies, godetia, candytuft, cornflowers, mignonette, eutoca, etc., that are quite satisfactory if sown directly outside. This is the method I adopted with these last season, sowing the seed the first week in May, and the kinds mentioned were entirely satisfactory.

Other annuals that I grew were *Ageratum*, sown under glass in the middle of April. *Antirrhinum* or Snapdragon, "Tom Thumb," the ordinary tall variety, and Queen of the North. The two former varieties were not satisfactory, flowering too late to be of much service. Queen of the North is a white intermediate strain, and was most satisfactory, flowering very early, and continuing a mass of bloom till destroyed by frost. It grows about nine inches high, and makes a good second-row plant, but is a little too tall as an edging plant.

Anchusa succeeded well sown directly in the open the first week in May. It is one of the purest blue annuals we have; height, eighteen inches.

Bellis Perennis, the common English double daisy, though really a perennial, is like the Snapdragon, for all practical purposes an annual in this country. This I did not find very satisfactory. It seemed to suffer badly from the heat and lack of

atmospheric moisture, and the flowers became very poor and open-eyed as the season advanced. It might be more satisfactory, perhaps, if planted in shade.

The common Marigold succeeded from sowings made in the open, but this annual is not, to my mind, worth growing when there are so many better things.

The annual Marguerite Carnations, though not so desirable perhaps as the perennial species, produced an abundance of exquisitely scented flowers in many shades of color.

Annual Chrysanthemums proved valuable both as bedders and for window boxes. They were, however, somewhat rank and weedy, and possibly would have been more satisfactory in poorer soil.

Clarkia I sowed in the open, but for some unknown reason this failed to come. This year I am sowing under glass.

Coreopsis Tinctoria grew luxuriantly, but did not flower till late in the season, though sown inside in March.

Coreopsis Drummondii, however, under the same treatment produced a profusion of its rich golden yellow flowers during the whole of the summer months, and was exceptionally useful for cutting.

Collinsia Bicolor, annual with lilac and white pea-shaped flowers, was very satisfactory from sowings made in the open.

I tried Convolvulus or Morning Glory, but the blossoms faded almost immediately on opening, owing to the bright sunshine.

The Indian and Japanese Pinks were a great success, and are, in my opinion, worthy of more general culture here than they at present receive. They vary in color from pure white to richest crimson, while many are beautifully laced and striped. They remain in full beauty over a long period, and are not so quickly affected by dryness at the root as are many other annuals.

I suppose it is hardly necessary for me to mention the Californian Poppy, for, as everybody knows, this succeeds in almost every garden. I grew a variety last year called "Rosy Queen," the flowers of which exhibited two very pleasing shades of pink.

The variety of Golden Feather known as Sutton's Golden Ball, made an excellent edging plant. This variety has an exceedingly compact habit with finely-cut moss-like foliage, its great recommendation being that it does not require pinching. Jacobea proved a really beautiful free flowering annual, producing dense heads of double flowers in white, rose, purple and crimson shades for a long period. It succeeded in both sunny and shady situations.

We heard something about Lobelia at our last lecture, so I shall not have much to say regarding this, except that I had much

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better results from cuttings taken from old plants wintered in the greenhouse than from seedlings.

The African Marigolds grew vigorously and flowered profusely, but the French varieties were not so satisfactory. I did not sow these till the end of April, as they germinate quickly and grow rapidly. They were, of course, sown inside, as they are exceedingly tender, the least touch of frost destroying them. I found a small single-flowered kind known as "Legion of Honour" very useful as an edging plant.

Malva Rosea was excellent as a dot plant, growing into a compact bush two feet high and covered with large pink flowers.

The white Tobacco Plants were very miserable looking objects during the daytime, the flowers closing and the plant putting on a drooping, dejected and woe-begone appearance generally. This was compensated for, however, by the delicious fragrance they diffused during the evening and night.

I tried Nemesia, a well-known and popular annual in England, but it did not prove very satisfactory.

I think I need say nothing about pansies, for everybody that has a garden knows how well they succeed here.

I sowed Sweet Peas in the open border the first week in April. I also sowed under glass about the same date in long boxes three inches wide and three inches deep made of ordinary laths. When ready for planting out, I prepared drills as for sowing, removed the laths from the bottom of the box and deposited the whole contents of the box in the prepared trench. In this way there was no root disturbance, and the peas treated in this manner flowered much earlier and were altogether better than those sown directly in the ground. In fact, a large proportion of the seed of some varieties failed to germinate when sown outside, though there was no trouble on this score with those raised under glass. The varieties grown were Dorothy Eckford with large white flowers; Golden Gleam, pale yellow; Dora Breadmore, creamy buff tinged with pink; Countess Spencer, beautiful pale pink with wavy standard; Miss Wilmot, very large flowers of salmon pink color; King Edward VII., scarlet crimson; Queen Alexandra, scarlet; Mrs. Walter Wright, a very fine mauve flower; Countess of Radnor, delicate mauve; Lord Nelson, deep blue; Dorothy Tennant, rosy mauve; and several other varieties.

Dahlias gave good results by starting the tubers in heat and transplanting to the open after danger of frost was over. Heliotrope made a satisfactory bedding plant in a partially shady situation. I experimented with Geraniums for bedding, but they made too much wood and leaf at the expense of flower to be satisfactory. I was told, when I first came to Calgary, that, with a very few exceptions, perennials—that is plants of a permanent nature that

do not require replacing annually—were not a success, but I find this to be quite an erroneous notion. I have found that Colombines, Peonies, Pyrethrum, Larkspur, Monkshood, Lychnis and many others thrive splendidly and prove quite hardy.

The perennials have this advantage, that in many instances they flower much earlier in the season than annuals, and thus make it possible to have a longer display in the flower garden.

Before leaving the subject of pleasure grounds, I would like to give my experience with reference to the lawn. Mr. Macnaughton, in the paper he read before this Society last winter, was opposed to the practice of covering the lawn during the winter months. At the time I agreed with him, for this reason, that the lawn of which I had charge had not been covered for two winters, and yet appeared to be in as good shape as others that had been regularly covered. Since then, however, I have had good occasion to very much modify my ideas on this point. The same lawn was again left bare during the winter of 1908-9, with the result that the whole of the white clover was killed out, and the grass rendered thin and poor. The exposure, however, had no deleterious effect on the dandelions, which grew most luxuriantly, and, unrestricted for space, were able to display themselves in all their glory on the bare patches where the grass and clover had been killed. Mr. Smith asked me on one occasion if I could say if dandelions could be made use of in any way. I am now in a position to answer that question. They are excellent, owing to their rapid and luxuriant growth for covering bare spots on lawns. If any person present would like to try them in this way, I shall be happy to supply seed gratis during the coming summer. To leave the dandelions (which many would be glad to do) and return to the lawn, I would advise thoroughly watering late in October, then covering with about three inches of manure, if obtainable. Water again in the early spring, and remove the mulch when the grass begins to grow, soon enough to prevent yellowing.

And now I will turn to the vegetable garden. Of peas I grew American Wonder, Chelsea Gem, Eureka, Alaska, Gradus and Autocrat. These were all sown April 5th. Alaska came in first, the first dish being picked on July 16th. Chelsea Gem and American Wonder followed a week later, the former proving the better variety in regard to both cropping qualities and flavor. Eureka was the latest of all, and by far the best pea of the bunch, producing fine long-pointed pods filled with large peas of excellent flavor. It continued in bearing for some weeks. From a sowing of this variety, made early in May, I was able to gather peas till the end of September.

I sowed Broad Beans on April 17th. The first flowers on these, namely those on the lower portion of the stems, failed to

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set. The blossoms that were produced later, however, developed into pods, but a proportion of these contained no beans, so that the crop was below the average. The only reason I can assign for this is lack of fertilizing agents in the shape of insects early in the season. I grew Exhibition Longpod and Green Windsor.

Scarlet Runner Beans were sown on May 18th. Sutton's Exhibition and Steele Brigg's Painted Lady were sown side by side. The former were slightly the earliest, and much the better variety. This is a crop that requires very liberal watering during the whole of the flowering and cropping period, for if it becomes at all dry at the root the flowers fall off without forming pods. The humming birds are much attracted by the runner beans, and several of these beautiful creatures spent the whole of the day hovering around the blossoms during the short time they remained with us, sipping the honey, and as I would suppose, fertilizing the flowers. I am disposed to think that we largely depend on these little birds for this crop.

Of Dwarf Beans I grew Canadian Wonder and Golden Wax Pod. Quite a number of people have told me that they do not succeed with the green podded dwarf beans, but I had nothing to complain of on this score. They cropped equally as well as the yellow-podded variety. As regards flavor, I prefer the green variety, but I think this is largely a matter of individual taste. I sowed beets on May 10th in drills fifteen inches apart. The varieties were Blood Red Turnip, Long Smooth, Crimson Globe and Dewar's Half-long Blood. Long Smooth was the best of the long varieties, but I find the turnip-rooted kinds the most serviceable for table. Crimson Globe was a splendid variety of a very rich color. It was ready for use by July 16th. We have heard quite a lot at different times about the need for liberal thinning of beets and other root crops, but I find it quite as easy to over-thin as to under-thin this and other crops on this soil, which grows roots so well. I think everybody likes medium-sized roots, whether it be beets, carrots or turnips, for the table, in preference to large ones, which are invariably coarse and lacking in color and flavor. I find that if root crops are given plenty of space they have that tendency to become large and coarse, and my practice here is to thin them to about half the extent I used to in England. Visiting a garden for the first time in Calgary, the first thing that struck my eye was a bed of radishes which had, in gardeners' parlance, been sown as thick as hairs on a cat's back, and yet there was a good crop, the roots actually squeezing and lifting each other out of the soil. My mental remark was, "If we sowed as thickly as that in England we should get all top and no bottom."

I made a sowing of Cauliflower under glass March 18th, but owing to the lateness of the spring and the continuous heavy frost,

I had to destroy these plants, as it was not safe to plant them out till they had become too forward. I sowed again April 5th, inside, planting out from this sowing the first week in May. By covering the plants with flower pots each night I was able to weather this batch through, and I cut the first head on July 3rd. The variety was Earliest Snowball. For succession I grew Walcheren, but there was a break of several weeks between the first and second crops, and I should have grown a variety intermediate between the two.

Brussels Sprouts received the same treatment as Cauliflowers as regards time of sowing and planting, and I had a very fair crop. As many sprouts still remained on the stalks in October, when there was prospect of severe frost, I lifted the plants intact and placed them in the root store, thereby securing a supply for several weeks after they might otherwise have been spoilt.

I grew a small quantity of Curled Kale, and though of course we cannot have this as winter vegetable, as in England, it proved a useful summer one, and was much appreciated. Cabbages I sowed on the hot-bed early in April, pricked off into cold frames when large enough to handle, and planted in their permanent quarters the second week in June. I cut the first cabbage on July 27th, the variety being Early Jersey Wakefield. Other varieties grown were Early Summer, Autumn King, Sutton's Tender and True and Chester Savoy. They all proved satisfactory for storing with the exception of Tender and True, which was too early. Chester Savoy should be largely grown. It is very superior in flavor to the plain-leaved cabbages and is equally as good in every other way.

I sowed Carrots on April 17th, the varieties being Oxheart, Half-long Danvers, Scarlet Intermediate and Long Scarlet Altrincham, but none of them are equal, in my estimation, to Chantany, which is a long carrot with a stump root, a very desirable shape from the housewife's point of view, as there is less waste than with the tapering rooted kinds. I intend to sow this variety largely this year.

I might say that during the first months of my residence in Calgary I heard terrible tales of the ravages of the cut worm, and was recommended to sow soot in the seed drills for all garden crops. This I did, and I certainly had no trouble with cut worm, but whether it was the soot that kept them at bay, or whether the garden was already free from the pest I could not say.

I sowed Celery on March 13th, under glass, transplanting once inside and planting in the trenches the second week in June. I made a practice of flooding the trenches once a week till it was moulded up for bleaching in September. It was lifted and stored on October 6th. Giant Pascal was an absolute failure, every head

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running to seed. White Plume was a good celery for early use, of a very delicate flavor, but did not store well. London Prize Red and Ivory White were excellent. Paris Golden Yellow was fairly good but small.

By way of experiment I grew some Celeriac or Turnip-rooted Celery. This is raised under glass, giving the same treatment as the ordinary celery, but planted on the flat instead of in trenches. It was an unqualified success, and I would urge everybody to give this most delicious vegetable a trial.

Chicory has proved an exceedingly useful winter salad. I sowed seed in the open ground in May, thinned to six inches, and lifted and stored the roots in October. During the winter at frequent intervals I have removed batches of these to the greenhouse and started them into growth, covering them, of course, with boxes or pots to bleach. The leaves are bitter if at all green. I might say that a greenhouse is not necessary to grow this salad. Any person with a dark cellar can have a supply all winter. All that is necessary is sufficient heat and moisture to start growth, and darkness to prevent the leaves becoming green. And here is another use for the dandelion. If grown under the same conditions as I have recommended for chicory, it cannot be distinguished from that plant, and is certainly equal or superior to lettuce for winter salad.

Some Khol Rabi that I exhibited at the Annual Show attracted considerable attention on that occasion. Some thought them a new kind of tomato; others a special sort of turnip. There were frequent inquiries as to what they were and how to grow them. Their culture is very simple. Sow them as you would turnips, treat them in the same way, and you are bound to secure a crop. They have a distinct flavor all their own, and most people soon acquire a liking for them. They are of special value here, where we get rather hot, dry summers, and where for this reason the ordinary white turnips are difficult to grow, for they make an excellent substitute for that vegetable.

I grew a few Leeks on the same system adopted in England, but they were by no means a success. I have evidently not hit on the right plan with these, or else they are unsuited to the climate.

I grew Onions both from sets and seeds. I had had no previous experience with sets, as we always grow them from seed in the Old Country. My crop was an absolute failure, and as I find that it is possible to grow them from seed here and obtain onions altogether superior in size and keeping qualities, I am not likely to enlarge my experience.

My method with sets was the same as for shallots, namely— I drew shallow drills, pressed the bulbs firmly into these about six inches apart, and slightly covered. As I said before, the crop

was a failure. I sowed seed under glass early in April, pricked off and planted in the open early in June. By this method I obtained individual onions weighing one and a quarter pounds, and measuring fourteen inches in circumference. These have kept in good condition in the root store till the present time. The variety grown was Ailsa Craig.

Parsnips I sowed April 5th. This is a crop that required a deep root run, and the ground should be double dug or trenched if really good roots are required.

Spinach is a very useful vegetable here where green vegetables are so scarce in the spring and early summer. By sowing early in April I was able to cut by early June.

I grew a few Snowball Turnips, but this is a crop that quickly spoils here, and it is necessary to use it in quite a young state. I did not find it desirable, therefore, to sow in any quantity. I grew a large quantity, however, of Swede Turnips—"Ruta Baca" of the Americans—as this is one of the most useful winter vegetables.

Marrows were sown in pots in the greenhouse first week in May, and planted on mounds of soil on old hot-beds middle of June. It is necessary with this crop to fertilize the flowers artificially in this country, owing to lack of natural fertilizing agents. I set the first blooms on July 16th, and marrows were ready for table by the end of that month.

I planted potatoes on May 14th, and here I am afraid Mr. Wells will consider me at fault. He recommended planting much earlier than this, and said that if the tops were frozen off, very little harm was done. I cannot agree with him on this point, for it is well known by all horticulturists that it is exceedingly weakening to a potato to have its growth frozen, and certainly has a deleterious effect on the crop. My plan was to start the tubers by placing them in a single layer on wooden trays, largest or sprout end upward, in a light, airy, or frost-proof shed. The trays may be placed one upon another, providing a certain amount of light and air reaches them.

In this way strong sprouts are developed from the eyes, and the potatoes are making as good or better progress than when planted in the ground, and there is no risk from frost. The tubers I treated in this way were through the soil in two weeks from date of planting, and excellent crops resulted, which, with the exception of some late varieties, fully ripened before lifting, which operation was performed on September 20th. "Early Ohio" gave the best results. "Manitoba Wonder" cropped well, but did not ripen so early as the former variety. "Up-to-date" is too late a variety for this country. "Eureka" is a fair cropper, but takes the scab badly.

Well, Ladies and Gentlemen, I think I have said enough to start a pretty lively discussion amongst the practical gardeners who may be present, sufficient also to thoroughly bore the remainder of my audience, so I will now take my place as a listener, hoping that I may hear many points from those with a lengthier experience than myself, by which I may improve my methods for the coming season.



A SERIES OF ARTICLES WRITTEN DURING SEASON 1910.

By *Wm. R. Reader*, and Published in "*Calgary Daily Herald*."

APRIL 23rd 1910

Those who intend having a hotbed this season, and have not already started operations, should get to work at once. When properly managed the hotbed is extremely useful in the spring-time, especially to those without glass structures, in supplying a moist genial heat, in which to raise seedlings of vegetable and flowering plants; also early salading in the form of lettuce and radishes. The best material to use is fresh litter from a stable. If leaves are obtainable (though they are a scarce commodity in the city at the present time) they may be added to the extent of about one-third to two-thirds manure. They will render the heating steadier and more lasting. The mixture should be thoroughly watered if at all dry, and the whole heap turned over every alternate day for a week.

The hotbed may then be built up, making it about 18 inches or 2 feet wider all round than the frame, and at least 3 feet in depth. As it is built up it is important to consolidate it as much as possible by treading or beating each layer of manure as it is added. After placing the frame in position, put in enough good soil to bring the surface within 9 inches or 1 foot of the glass. Pack more manure round the outside of the frame to break the cold winds.

All rank steam should be allowed to pass off before any seeds are sown, and for this purpose allow a little ventilation at top of frame night and day for a short time after the hotbed is made up. It is also a good plan to apply a thin shading to the glass. A good way of knowing when the hotbed is in exactly the right condition is to place a thermometer in the frame. You will find that this will steadily rise for several days. When the maximum temperature has been reached, and the mercury begins to recede, you may immediately sow your seeds. Keep the frame quite dark, by covering with bags or mats till the seedlings begin to show through the soil. The covering may then be removed, but do not expose to bright sunlight. As the seedlings

advance, give more and more ventilation on warm days to keep them sturdy, and also to harden. If the nights are frosty, cover the glass with some protecting material, but, of course, remove this in the daytime, or the plants will be drawn and weak. Water whenever the surface appears in the least dry, with luke-warm water.

At the present time the hotbed can be used for raising such plants as cabbages and cauliflowers, also tender annuals such as stocks, asters, verbenas, petunias, etc. After these have been removed, cucumbers or melons may be planted.

The Lawn.

If the covering of manure put on in the fall has not been removed, this should be done without further delay. Rake this off, but do not sweep, as the fine material left by the rake will form a top dressing, and be very beneficial, covering the roots of the grass, which the constant watering of the previous season may have washed bare. A good watering with the sprinkler should be given both before and after removing the mulch, but this operation should be performed in the morning at this season, so that the surface becomes dry again before night.

Trees and Shrubs.

It is somewhat early for the planting of these, but preparations may be made by preparing the pits in which to plant them, so that there be no delay when the proper time arrives, and the work can be carried out expeditiously. Remember that it is fatal for the roots of a tree to become dry. If it is found when preparing the pits that the soil is poor in quality, have some good black loam in readiness with which to fill in. Fresh manure should never be placed in contact with the roots of trees.

The Flower Garden.

Sweet Peas should be sown without delay. To grow these to perfection, a rich soil must be provided, and if this is not so naturally it must be made so by the incorporation of thoroughly rotten manure. These flowers may often be utilized to cover an unsightly object in the form of an ugly fence or building, or they may be sown in clumps in distinct colors on the flower borders—a most effective method. To do this use a large inverted pot, press this into the soil, and sow the seeds round the impression made by the rim. Do not sow thickly. If you have good seed, three inches apart is a good distance, and you will have more and better flowers than by sowing thicker. Some

of the hardier kinds of annuals may now be sown in the open, as, for instance, Poppies of various kinds, Cornflowers and Godetias. It is wiser, however, to delay sowing the tenderer kinds, as Nasturtiums, Sunflowers and Mignonette, a few weeks longer. Perennial plants, such as Colombines, Rudbeckia (Golden Glow), Gypsophylla (Infant's Breath), Pyrethrum, etc., may now be planted.

If new flower borders are to be made, this work must be pushed along with all speed, though it would have been better done in the Fall, and the soil exposed to the frost during the Winter. Do not make your borders too narrow. Give your flowers lots of room to develop.

Vegetable Garden.

The time has arrived to sow peas, English broad beans, parsnips, onions, carrots, spinach, parsley, lettuce and radishes. A little mustard and cress may be sown once a week from now on in some odd corner of the garden. Do not sow seeds when the ground is in a wet condition. If it has been watered, wait till the surface is dry. It is a good plan to sprinkle a little soot in the drills in which the seed is sown. This keeps cut worms, wire worms and other pests away, and acts as a fertilizer.

For parsnips, choose a position where the good soil is deep, as they require a deep rootrun. Sow the seed thinly in shallow drills 18 inches apart. Choose a calm day for sowing this seed, as it is very light and easily blown away. Onions and carrots should be 14 inches from row to row. This distance allows for easy cultivation with the hoe. Onions like a very rich soil. Manure from a poultry run is excellent for onions, but this should have been added to the ground some time previous to sowing the seed. The ground should be quite firm for this crop; therefore roll or tread the bed before sowing the seed. Onions grown from seed keep better for winter use than those grown from sets. For pickling onions choose a place where the ground is poor, make very firm, sow thickly and do not thin. For carrots do not use freshly manured soil, as this often causes the roots to be forked instead of straight.

It is too early yet to sow string beans or beets. These are tender, and if sown too early are liable to be destroyed by late frosts.

Lettuce or radish may be sown broadcast or in drills, but if economy of labor is a desideratum the latter is the better method, for it is much easier and quicker to destroy weeds with the hoe than by hand weeding.

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Drills for peas should be made flat at the bottom, and rather wide, about $2\frac{1}{2}$ or 3 inches deep. Do not sow too thickly. Late kinds should be sown thinner than the early sorts, as they are usually more branching in habit. A pint of seed will sow from 12 to 20 yards, according to the variety used. The rows should be as far from each other as the peas will attain to in height. This, to the amateur, may seem an extravagant allowance of space, especially with the taller growing kinds. It is, nevertheless, a good rule to follow, as it gives the peas full exposure to sun and light during the cropping period. The intervening space may be utilized by sowing a row of spinach, or later on, by planting a line of cauliflowers which will appreciate the shade and shelter afforded by the peas. Sow several kinds of peas at the same time, and you will have a succession. After covering the seed, tread along the row and rake the whole surface smooth. A finely broken surface conserves the moisture.

To sow broad beans, mark out two rows nine inches apart, leave a space of 30 inches, then another two rows, and so on, or, if preferred, sow in single rows 18 inches apart. If the double row system is adopted arrange the seeds diagonally.



APRIL 30th 1910.

The Lawn.

The present dry weather makes it necessary to have the sprinklers frequently playing on the lawn. It is, however, advisable to do the watering early in the day, as the nights are still frosty, and it is better under these circumstances to have the grass dry by the evening. Cutting of the grass may now be commenced, for even though there may not be much growth, yet this will improve the appearance of the lawn. New lawns may now be seeded and old ones renovated where necessary by putting on a thin surface of black loam and then sprinkling with grass seed. It is not necessary, of course, to sow so thickly as in the case of a new site. A well made and properly kept lawn is always one of the most important features in connection with a garden surrounding a residence. Where it is improperly levelled and made in the first instance the defects in the surface caused by holes, or subsidence of the soil, in one place more than another are a source of continual annoyance. If a new lawn is to be made it is always the wisest course to employ an expert, even though the initial cost is more, for it will prove the cheapest in the end. Of course, an expert cannot prevent subsidences occurring on a site that has been recently graded up. In fact

the levelling of the site should be done a year before the lawn is actually seeded if that is possible. If the soil is poor in quality, have a surfacing several inches deep of good black loam spread on. The seed should be purchased from a reliable source, even though the price be higher than that usually paid. Spurious stocks are worse than useless. Nothing is gained by sowing early. Grass seed sown now will germinate and progress as rapidly as though sown a month ago. After sowing, rake the seed in and roll frequently, but not when the soil is in a wet condition.

The Flower Garden.

All annuals that are to be sown directly in the open may now be put in. Nasturtiums both tall and dwarf, canary creeper, mignonette, nightscented stock, nemophylla, blue and white, are all very desirable. The two latter being very dwarf make first-rate bordering plants. Canary creeper and tall nasturtiums are excellent against a wall. They must have support of some kind, either wire netting or string. Some of the hardiest of the plants raised under glass, as, for instance, pansies, may be planted out, if these have been thoroughly hardened by being kept in a cold frame for a week or two, but under no circumstances must they be planted direct from the greenhouse or hotbed to the open at the present time, or the night frosts will ruin them.

Vegetable Gardens.

If the earliest sown peas are showing through the soil tread the soil on each side of the row. The act of germination will have tended to loosen it considerably, and, by consolidating it again in this way, the moisture will be retained better and growth will be more rapid. Peas, like most plants, like a moderately firm rooting medium.

Potatoes may now be planted. The rows should be from two feet to two feet six inches apart, the distance varying according to the variety used, some kinds making more top growth than others and therefore requiring more space. The sets should be a foot apart in the rows. Potatoes for planting should be about the size of an hen's egg. If larger cut to that size, being careful to see that there are good eyes in each portion. Dust with soot when newly cut and allow to dry before planting. If it is intended to plant with a spade set your line for the first row, take out pits about 6 inches deep and a foot apart and throw this soil into a wheelbarrow. Place a potato in each hole, set your line for the next row, and use the soil this time to cover in the first row. Continue this process till the end of the plot is reached.

The soil that is in the wheelbarrow can then be used to cover in the last row.

Trees and Shrubs.

This being an early season the deciduous trees, namely those that are bare during the winter, should now be planted before they are too advanced in growth. Cut off the ends of all bruised and damaged roots with a sharp knife before planting. It requires two men to plant a tree properly, one to hold it in position while the other fills the hole. Gently shake the tree with an up and down motion while the soil is being thrown in. This will settle the soil about the roots and fill in the interstices. When the hole is nearly full, tread or tramp firmly as possible, but be careful not to bruise the roots; thoroughly water and then fill level to the surface. Support with a stake if the tree is a large one to prevent rocking by the wind, and put a mulch of littery manure on the surface to prevent rapid drying out. Spruce and other conifers may now be planted if necessary, but there is not the urgency with these that there is with deciduous trees. In purchasing trees see that you get them with a good ball of soil attached to the roots and that they are in a moist condition. It is a good plan to spray the tops of newly planted trees frequently with water on hot days.



MAY 7th, 1910

Vegetable Garden.

Asparagus beds may now be made. The ground for these should have been prepared in the fall by digging to a good depth. A heavy dressing of decayed manure must now be applied and forked in. If one part of the garden is moister than another, this should be chosen as the site, but there should be efficient drainage—it must not be in a waterlogged condition. In this dry climate it is not necessary to make raised beds; keep them level with the surrounding surface. Remember that this is a crop of a permanent nature—it will occupy the same site for a number of years, therefore careful and thorough preparation is necessary. Make the beds 4 feet wide, planting three rows at a distance of one foot from each other, and allow 18 inch alleys between the beds. Use two-year-old plants if obtainable, and on no account must the roots be exposed to the sun or become in the least dry, or they will be ruined. In planting, make a wide drill with a hoe four inches deep, place the plants 18 inches from each other in the row, placing them in alternate order with

the next row. Spread the roots out all round, carefully shake the soil in amongst the roots, press firm and thoroughly water the beds. At intervals as necessary give further waterings throughout the summer. Keep the beds free from weeds, removing them by hand to prevent injury to the crowns.

The bed must not be cut over for use the first season; give it a chance to get strengthened and thoroughly established.

Asparagus may be raised from seed, but it is better for the amateur and small grower to purchase plants, as by this means he obtains produce a year sooner.

Old established beds will be greatly helped by the application of liquid manure at this season. Asparagus is a gross feeding plant, and there is practically no limit to the quantity of manure that may be applied if it is not used in too strong a condition. The more liberal the treatment the better the "grass." A moderate dressing of common salt should also be applied at this time. It is best scattered on by the hand and then watered in. Salt, besides acting as a manure, has also the properties of keeping the bed moist and cool during the hot dry weather and of destroying the weeds.

The time has arrived to sow beets. Previous to sowing, if the ground was well dug in the fall, as it should have been, hoe or lightly fork over to destroy the weed seedlings that are now making their appearance in large quantities, and when the surface has dried tread or roll. Make your drills two inches deep and 15 inches apart. Sow the seed rather thinly, cover in with the feet, tread along the row to make firm, and rake the whole surface smoothly and evenly in the same direction as the rows.

Cover your rhubarb with old barrels or boxes. You will thus have earlier and better produce. This crop will hardly need watering at the present time. It is a deep rooting plant and its roots are, in all probability, away down in the moister layers of soil. Watering will keep the ground cold and retard growth very considerably.

The Flower Garden.

Hollyhocks. These stately old-fashioned flowers make a fine feature in a garden if planted in a suitable position. Seed may now be sown in the hotbed or greenhouse and later on the little plants transplanted to the open. They will flower rather late the first season, but the roots can be lifted after the tops have been frozen down, and stored in a cool cellar. These should be planted on the borders about this season the following year and a fine display will be secured.

They may be planted with good effect at the back of the flower borders, or in open positions amongst trees and shrubs, but ample room must be afforded them to ensure success. Remove offsets from the base of the plants to concentrate all energy in the main shoots. Mulch the roots and give liquid manure occasionally as well as copious supplies of water at all times.

The present is a suitable time to plant gladioli. Select good ground for these. Cover the corms to the depth of 4 or 5 inches, planting 5 or 6 corms in a group. Mark the position of each group with a small stake. *Gladiolus brenchleyensis*, with bold scarlet flowers, is one of the best varieties for ordinary use.

Dahlias that have been stored away may now be started into growth in a warm place. Do not coddle in excessive heat, but grow in full sunlight and give all the ventilation possible on warm days. The growth will thus be sturdy and stocky when the time arrives for planting out.



MAY 14th 1910

House Plants.

Aspidistras, sometimes known as "parlor palms," (though as a matter of fact they are not palms at all, but belong to the lily tribe), are perhaps the best of green plants for the house. They are not in the least fastidious as to soil or position, and keep in condition under adverse circumstances better than any plant I know. They are best accommodated in a shady situation, and therefore should not be placed in a sunny window, a position more suited to some of the flowering plants. I have known these plants to thrive in almost semi-darkness. If it is desired to increase the stock of these plants, they may now be removed from the pots, the soil shaken from the roots, and the plant divided with a sharp instrument. Each portion of the rhizome, *i.e.*, underground stem, that has fibrous roots attached, will grow, but it is not advisable to divide too freely, or it will be some time before the young plants will attain to a useful size. They thrive in almost any kind of soil, but this should be lumpy, and free drainage should be assured by the addition of a liberal proportion of sand. Press the soil firmly about the roots when water when the operation of potting is completed. Though these plants like plenty of moisture when established, it is not advisable to water too frequently when fresh potted. Give a thorough soaking, and then allow to become moderately dry before watering again. Always be sure that there is thorough

drainage with these as with all pot plants. Sponge the foliage occasionally to free from dust. Not only is this desirable from the point of view of appearance, but also for the sake of the health of the plant. The leaves of plants are provided with minute openings similar to the pores in the human skin, known as stomata. Respiration and evaporation are carried on through these openings, and it is obvious that if these are clogged with dust or other foreign matter these functions are greatly hindered, and the health of the plant suffers as a consequence.

Palms.

These, like the aspidistras, dislike strong sunlight, and should therefore be kept in a shady portion of the room. They are also impatient of cold draughts, this being a common cause of the fronds turning brown at the tips. Do not attempt to divide or repot palms. They thrive in a pot-bound condition. It is really surprising how large a palm can be grown in a very small pot. Water liberally, but do not make the soil sour. It is a good plan to place a few stones or an inverted saucer in the bottom of each of your jardinieres. All kinds of begonias like plenty of light, but not bright sun, and are therefore best accommodated in a north window. The tuberous species that have been stored for the winter should now be shaken out, repotted, and started into growth. Overhaul your window-boxes, see to any repairing and painting that may be required, and have all in readiness for filling when the time arrives. Do not paint the insides. It is detrimental to the plants.

The Flower Garden.

Carnations—I find that these seldom survive the winter here. If it is desired to have these in the open border, good, strong plants in 3-inch or larger pots should now be purchased from the florists, and, when hardened, planted in the borders. The soil selected for them should have been worked well and manured liberally. Make firm and level before planting. When all is ready, take the plants from the pots, being very careful not to disturb the roots, and plant. Carnations on a mixed border are most effective in good bold groups. Montbretias that were lifted in the Fall should now be replanted. These are not particular as to soil, but, like most plants, respond to liberal treatment.

The Vegetable Garden.

Celery trenches should now be prepared. The soil will be the better for exposure to the air for a time before planting. To prepare the trench, set the line the full length desired, mark with

a spade, move the line 15 inches, and mark another line. Dig out the space between the lines to a depth of nine inches, placing the soil on either side of the trench. This space may be utilized later for the growing of lettuce, cauliflowers, or other early crop, that it will be possible to clear off before the celery is ready for earthing. In the bottom of the trench place a thick layer of manure, and lightly dig in. If it is found that the soil at the bottom of the trench is of an unsuitable nature, dig out another spit, and replace with good loam. Instructions for planting will be given at a later date. Keep the hoe going between the rows of all crops that are showing through the soil; also on the flower borders. Many thousands of weeds may very easily be destroyed at this period, and moisture is conserved by keeping a fine tilth. Wherever watering has been done, namely, around newly-planted trees and plants, it will be found that the earth has formed into a crust, which has become cracked. If it is left in this condition, more moisture will evaporate than has been applied. This crust should be broken up with the rake or hoe. It is good practice to cultivate after each watering, so soon as the surface has become sufficiently dry to work easily.

Keep a sharp look-out for cut worms. They seem to be abundant this year. A mixture of bran and paris green, sweetened with molasses, will destroy them if sprinkled on the surface, but care is needed in using paris green, as it is a deadly poison.



MAY 21st 1910

House Plants.

Geraniums that have been kept through the winter will, in all probability, have become leggy and bare at the base. These may now be cut hard back and the tops inserted as cuttings to provide young plants. To prepare a geranium cutting, make a clean neat incision with a sharp knife immediately below a joint and remove the lower leaves. Do not have the cutting too long—two, or at most three joints to each is sufficient. Choose growths that are short jointed and stocky and of medium texture, neither too sappy on the one hand nor too hard on the other. Insert in clean sand and be sure that the bottom of the cutting rests on a firm base. Water after insertion and place in a moderately warm position.

When the old plants have broken into new growth they should be taken from the pots, shaken out and repotted. Do not have the soil rich for geraniums or you will have growth at the expense of flower.

Cinder paths in the flower or kitchen garden should now be hoed, raked and rolled. It will give them a fresh and neat appearance and destroy weeds that may be growing through. If dandelions are present these should be taken out by the roots. If weeds are very troublesome a thick dressing of salt will be helpful.

The Flower Garden.

Beds and borders that are intended for annuals may now be sprinkled with artificial manure, forked and raked, so that they may be in readiness for planting. Do not be in too great a hurry to put out tender annuals. It is quite possible for us to have sufficient frost to destroy them, and in any case they will suffer badly from the cold winds we are at present experiencing. The first week in June is quite soon enough for general bedding operations to commence, and plants put out then will make as good or even better progress than those planted at the present time.

Biennials and perennials intended for flowering next year, as columbines, pyrethrum, lychnis, Canterbury bells, Michaelmas daisies, etc., may now be sown in a reserve portion of the garden. They may be sown broadcast in beds, or in lines, the latter being the better plan, as they can thus be cultivated and kept free from weeds more easily.

Seedling plants of either vegetables or flowers that are large enough to handle should now be pricked off into cold frames. Water after planting and shade from strong sun for a few days, till established; then give full exposure on warm days, but cover at night if there is any appearance of frost. Burlap stretched tightly across the frames will serve this purpose, or storm windows that have been removed from the dwelling house may be utilized.

Vegetable Garden.

Early cauliflowers, Brussels sprouts and Scotch kale, if properly hardened, may now be planted; also onions raised under glass, and herbs, as sage, thyme and parsley. I find it good practice to have the sprinkler going on the ground I intend to plant a short time before the operation and then again after planting. Of course it is necessary to allow the surface to become slightly dry again before planting. Cauliflowers and Scotch kale require to be planted in rows 18 inches apart and 18 inches from plant to plant. The former may be planted between the rows of the taller peas, or in some similar partially shady situation. The shade afforded by the peas will prevent discoloration when the flower has formed. The kale and Brussels sprouts like a more

open situation. The latter will require more space—2 feet by 2 feet at least. The onions can be planted in rows 15 inches apart and 6 inches from plant to plant. If large exhibition onions are required it will be necessary to remove alternate plants when large enough for use.

Dig up dandelions on waste spots in and around your property, or, if you have not the time to dig them out, chop them off with a hoe. This will not kill them, but will at least prevent flowering and seed ripening for the time being. By doing this you will not only be protecting your own property from infestation, but also that of your neighbors, thus making yourself a public benefactor.



MAY 28th, 1910

The Flower Garden.

By the time this appears in print, bedding out operations will be in full progress. "Bedding out" is the gardener's term applied to the temporary filling of flower beds and borders with half hardy and tender plants during the summer months. Everybody who is cultivating a garden this season seems very eager to get it "fixed" as early as possible, though, as I have pointed out on previous occasions, it is a mistake to be unseasonably eager if I may be allowed the term. It is certainly much better to wait a week or two than to remove plants out of the greenhouse or other sheltered position, into the open beds, if there is any fear of very cold winds or a night's frost, in which case they are liable to receive a check sufficient to effect their well-being for the whole season.

If the beds were forked over as recommended last week, they will be in good condition for planting. The benefits to be derived from good cultivation are many. It gives a greater degree of openness to the soil, so that the roots can penetrate more easily and descend to where the soil is moist, thus escaping to a greater degree, the evils of drought. During the wet spells, we sometimes experience too, when we get very heavy cold rain storms, the surplus water passes away to the subsoil more readily instead of standing about the roots of the plants and causing their decay. If the ground is loose, tread to make firm before planting. If dry, give a good soaking the previous day, but do not plant while it is wet and sticky; wait till the surface has dried slightly. Water your plants a few hours before planting so as to have them in a perfectly moist condition. If planted with the ball of roots dry, it is almost impossible to get the moisture to

enter this ball after the plant has been put in the ground, and it naturally suffers in consequence.

Having decided upon the arrangement, proceed with the work of planting. In planting beds of whatever shape, begin in the centre and work towards the edge. With borders, commence at the back and finish with the front row. Plant with a trowel, disturbing the roots of the plants as little as possible, and when in the holes press the soil firmly about them. This is most important.

After the bed is finished, give a good watering to settle the soil at the roots.

If the weather continues dry after planting, watering should be continued at intervals, but do not supply water in dribbles and surface sprinklings as I have seen it done so frequently. Give a thorough soaking at each watering and then wait till it is again needed. One good soaking is better than a dozen little sprinklings. If you doubt the truth of this remark, set your sprinkler going on a piece of ground that is thoroughly dry, let it remain one hour, and then dig into this ground with a trowel. You will be astonished to find how short a distance the water has penetrated into the soil.

In bedding arrangements the blending and contrasting of colors is a subject that requires great attention. The harmonizing of one color with another generally produces the most pleasing effect. Thus, by arranging purple, red, pink, salmon, yellow and white in the order in which they are mentioned, the eye is led gradually from one color to another and perfect harmony prevails. It is also important to consider the heights to which the respective kinds of plants used will grow, that you may have the tallest at the back of the border or centre of the bed. In small beds it is not advisable to introduce too many shades of color, two or at most three will suffice. The most accommodating color for contrasting with others is white, and for this reason a larger proportion of plants with white flowers should be provided than of any other color.

If the weather continues dry after planting, liberal waterings should be given at intervals, never allowing the plants to suffer for want of water. Frequently stir the surface of the soil to break up the crust formed by watering. This will prevent rapid evaporation of moisture. Have as much variety in your bedding arrangements as possible, and it is an excellent plan to try one or two fresh things each year.

Ageratum is a useful bedding plant. It is dwarf in habit, azure blue or white in color, and makes a very good substitute for *lobelia*, either as an edging or in small beds by itself. The flowers are lasting and retain their color well. *Celosias* are very

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graceful decorative plants with their showy feathery plumes of flowers. *C. pyramidalis* grows to a height of 18 inches and can be had in numerous shades of yellow and crimson. Heliotrope should be popular on account of its delicious fragrance.

The lantanas, with their verbena-like heads of richly colored flowers, produced abundantly during the whole of the summer, are charming subjects for beds. They are quite easy to cultivate. Petunias are very showy and deservedly popular. They are at their best in a sunny position and in fairly rich soil.



JUNE 4th 1910

Vegetable Garden.

If the celery trenches were prepared as recommended two weeks ago, the plants may now be put in. Flood the trenches the day previous to planting. This extremely popular vegetable requires, and well repays for, special attention in its cultivation, and is impatient of any check. The result of indifferent treatment may not be apparent at the time, but will surely show at a later date when the plants run to seed. For this reason it is important to secure good, strong, sturdy plants that have been grown thinly and have not become badly root-bound in the boxes.

Another most important factor in the successful culture of celery is a plentiful supply of water at all times. This plant, in its wild state, grows in bogs, riversides and damp ditches. It is, therefore, obvious that it can scarcely have too much water. Put the plants in about one foot apart, along the centre of the trench, and water well after planting. Be careful that each plant has a good ball of earth adhering to the roots when taken up, and plant with a trowel. Celeriac, or turnip-rooted celery, should also be planted at the present time, but it is not necessary to plant this in trenches. It will grow quite well on the flat. Plant in rows 18 inches apart and 12 inches from plant to plant.

Cabbage.—Cabbage for summer use may now be planted, but the planting of the later varieties intended for storage should be delayed a little longer. If planted too early, they are liable to head up too soon and burst, and thus become useless for storage. The early kinds, such as Early Jersey Wakefield, Winningsstadt, Early Summer, etc., can be planted in rows 18 inches apart and 18 inches from plant to plant. This may seem rather thick planting, but it is quite sufficient space for the full development of the heads, and has the advantage that the ground is

quickly shaded by the foliage of the plants, excessive evaporation of moisture is prevented, and weeds are smothered out. Owing to the very dry season we are experiencing, seeds generally are germinating very slowly and irregularly. So soon as it is possible to see the rows of carrots, beets, onions, parsnips, etc., lightly stir the surface of the soil between them, more particularly if much watering has been done. Growth will be much more rapid after this surface stirring.

Rhubarb is now making considerable growth, and water should be applied liberally.

The earliest sown peas are now ready for support of some kind. Sticks, if obtainable, are much better than string for this purpose. Before placing the sticks to the rows, draw up a little earth to the roots. This will prevent the twisting of the stems by the wind.

Corn should be sown at this time. Put 10 or 12 kernels in each 5-inch pot and cover about two inches deep. Place the pots in a greenhouse or on a hotbed. Fill as many pots as it is desired to have hills of corn. When the plants are up, pull out all but the four strongest in each pot.

Make successional sowings of lettuce, radish, mustard and cress, to keep up a supply of these saladings. The latter will require to be sown at least once a week to keep up a continuous supply. It is necessary to water radishes very frequently to promote rapid growth, and have them in a usable condition. If grown slowly through lack of moisture, they are acrid and tough.

Successional cauliflowers should now be planted, in the same manner as advised for the earliest batch.

Keep a sharp lookout for cutworms, which are particularly troublesome this year.

Cover the Potatoes.—If early planted potatoes are showing through the soil, pull a little earth up to cover them, and prevent injury by possible frost.

Trees and Shrubs.—Push on as rapidly as possible with planting operations. It is quite time that the planting of deciduous trees was completed. Shrubs that have been more or less killed back during the winter should be pruned back to living wood for the sake of neatness.

Flower Garden.

Sweet peas and many other annuals may yet be sown. It is, however, advisable in the case of sweet peas sown at this season to soak the seed for some hours before sowing.

Many of the tall herbaceous perennials are now throwing up their flower spikes. These should be neatly staked to prevent

injury by wind and for the sake of neatness. Unless sufficient supports are given the plants to keep them in tidy shape, half their charm is lost.



JUNE 11th, 1910

The Flower Garden.

The storm experienced on the 1st inst. will have helped to emphasize what I had previously said in this column with regard to being cautious in the placing out of tender plants too early in the season. Those that were out and exposed to the wind to any extent have suffered considerably, and, even if not totally destroyed, will take some weeks to recover.

My remarks also, with reference to the staking of perennial plants were, under the circumstances, timely. This is work that requires constant attention, as the plants in the borders are now growing rapidly. In the case of strong growing perennials, several sticks are preferable to one, as a natural effect cannot be produced when the shoots are secured in bunches.

The Kitchen Garden.

A further sowing of peas may be made now. These will come in, weather permitting, during August and the early part of September. There is risk of the crop being spoilt by early frost, but this vegetable is so much appreciated at the duck shooting time that it is worth the risk. The weather continuing so dry, it will be advisable to soak the seed before sowing and plant in a shallow trench. Tread the seed in after sowing. This will hasten germination. After the plants are through the soil a light mulching of stable manure on each side of the row will be beneficial.

If spinach is required for succession a further sowing should now be made, but generally speaking this vegetable is not much appreciated after the early cabbages and cauliflowers come in.

Spinach beet makes an excellent substitute for the ordinary spinach, and will afford a continuous supply throughout the summer from a single sowing made early in the season.

Keep the hoe going regularly amongst all crops to break up the crust formed by watering.

The earliest cauliflowers will be benefited by occasional applications of liquid manure.

Vegetable marrows may now be planted out. It is better to raise plants under glass or purchase from the florist than to sow seeds in the open. A good position for the plants is a

manure pile, but do not plant directly in the manure. Make a mound of a bushel or so of good soil on the top of the pile and plant in this. Protect from strong sun during the hottest part of the day until the plants are established. This can be done by covering with a flower-pot. Plenty of water must be supplied at all times during summer. Thin the shoots when they get too crowded. To be sure of securing fruits it is necessary to fertilize the flowers. This process, called setting, should be performed when the plants are dry and during the middle part of the day when the flowers are fully expanded. It consists in transferring dry pollen from the anthers of the male to the stigma of the female flowers. The operation may be performed by detaching a male flower, removing its corolla and applying the pollen direct to the female flower, which may be distinguished by the young marrow which is plainly visible from the first at the back of the flower.



JUNE 18th 1910

The Vegetable Garden.

The weather continuing so hot and dry, watering becomes daily a more important operation, all crops now requiring it. It should be done effectually, thoroughly soaking the ground at each operation and continued till rain falls. Continue to regularly stir the surface of the soil, to keep it loose and in a finely pulverized state. The more watering that is done, the more frequently should this cultivation take place.

Remove all growth from asparagus beds, whether suitable for use or not, so long as cutting is continued. The cutting of this crop should, however, not be continued after the end of the month. The beds should then be encouraged to make all the growth possible. Newly made beds should also be allowed to make all the growth they will. Nothing should be cut for use for the first two years after planting. By exercising a little patience in this way the produce will eventually be much finer.

In cutting asparagus for use, it is necessary to exercise a certain amount of care, or the shoots that have not yet appeared above ground may be damaged. Take a little soil from the side of the shoot to be cut, push the knife down almost vertically, turn the edge toward the shoot and cut with a sawing motion.

Scarlet runner beans will now require support of some kind, either string, mesh wire or sticks. If supports cannot be given, the plants should be pinched before they become entangled one with another. This treatment will give them the habit of the

waxpod and dwarf green beans, and good crops are obtainable under this treatment.

Plant late cabbages. If planted too early, they are liable to crack and thus become unfit for storing. Thoroughly soak the ground the day previous to planting, and again immediately after the work is completed. If only a small area is to be planted they can be protected from cutworms by wrapping a small piece of coarse paper round the stem. This method is, of course, too tedious and slow if a large number of plants have to be put in, in which case it is better to use the bran and paris green mixtures previously recommended.

Keep up a succession of cress and radishes by frequent sowings.

The outdoor or ridge cucumbers may now be planted out. The directions given for vegetable marrows will apply to these.

Hoe between the rows of parsnips and give a preliminary thinning, but do not thin to full distance at one operation. Water after thinning.

Turnips will also be ready for thinning. The same remarks will apply to these as to parsnips. The work should not be completed at one operation, but the bed should be gone over several times.

The Flower Garden.

Continue to water at regular intervals, thoroughly soaking the ground at each operation. Stir the surface to keep a crust from forming. Fill up any gaps in the flower beds where plants have died or been destroyed. So far this has been a bad season for planting, and there have been many losses amongst the plants.

When watering trees and shrubs, do not water with a sprinkler, but let the water run direct from the hose, and thus ensuring a thorough soaking.

Fill window boxes and place in position. In preparing the soil for these, remember that the plants will have a restricted root run, which they must occupy for several months. For this reason the soil should be the best obtainable and rich in character. A good compost consists of good black loam, three parts, rotted manure, thoroughly pulverized, one part, with a liberal proportion of leaf mould if obtainable, and a sprinkling of artificial manure and good sharp sand. Before filling, see that the upper corners of the boxes are close and watertight. They are liable to have opened by becoming dry and shrinking. If this has occurred and is not remedied, the water will run out at the corners instead of percolating through the soil, and the occupants of the boxes will suffer as a consequence. Press the soil firmly in, leaving space at the top for watering. Water and allow to partially dry

before planting. Good subjects for window and balcony boxes are: For the back or centre—marguerites, geraniums, heliotrope, stocks, asters, coreopsis drummondii, jacobaea; for the front, lobelia pyrethum or golden feather, isolepsis gracilis, thunbergia, canary creeper, Irish ivy, petunias, verbena, ivy-leaved geraniums (both variegated and plain leaved), and nasturtiums.

Seeds of biennials and perennials for next year's flowering may be sown in a reserve portion of the garden. Some that are worth a trial are: Wallflowers, alyssum, saxatile, forget-me-not, perennial candytuft, delphinium, francoa, campanula in variety, perennial poppies, anchusa, etc. I am not sure about the hardiness of all of these in this climate, but they are all good subjects, and, in this new country, where horticulture is practically in its infancy, there is room and opportunity for everybody to experiment in a small way.

Choose a situation where the soil is good, has been deeply dug, and worked to a fine tilth. A border that is not exposed to the hottest rays of the sun is the best position.

Dahlias that have been started in the greenhouse and afterwards thoroughly hardened, should now be planted out. They like a deep rooting medium, that has been liberally enriched with manure, as they are gross feeding plants. Plant at three feet apart in all directions, and mulch the surface of the ground to keep it cool and conserve moisture. Place a stout stake to each plant, or they will probably be broken off by the first wind.

Grass seed may yet be sown, if lawn-making or renovating has to be done. This, like many other seeds, is germinating indifferently this season. No amount of artificial watering can fully compensate for the lack of rain from which we are suffering this season. Yet the watering must be continued without cessation or stint to all parts of the garden.



JUNE 25th, 1910

Culture of Melons in Frames.

This climate not being suitable for the cultivation of the muskmelon in the open, any spare frames may well be utilized for a crop of these delicious fruits during the summer months. They may be grown on a hotbed that has been in use for spring crops, but to obtain the best results a fresh bed should be made up, following the instructions given in a previous article.

The best soil is good prairie sod that has been stacked for a year. A little well rotted manure may be added, but this must be

used very sparingly, or it will tend to induce an over-luxuriant growth. Some soil should be incorporated with the dung on the surface of the hotbed, and small mounds made where it is intended to place the plants. One plant will fill the whole of the space under one sash, so that no more than two plants will be required for a two-light frame.

Pinch the point out of the plant after the second or third rough leaf has expanded. Two branches will then grow from the axils of the lower leaves. Train these out in opposite directions, one towards the back and one towards the front of the frame. When these have nearly reached the sides of the frame, again pinch the points. The branches that grow from these will produce the fruit. The chief aim then is to get sufficient flowers expanded at one time to form a crop, as it is necessary to fertilize them all on one day that they may swell evenly.

This process of setting or fertilizing has already been described.

Allow only one fruit to a branch. When it is quite apparent that they are swelling, pinch each growth two leaves beyond the fruit. The sublateral growths made afterwards must be kept thinned to admit sufficient light and air.

As the fruits develop raise above the foliage on inverted flower pots to prevent moisture collecting beneath and to expose to the sun. Apply a light shading to the glass, though this is not an absolute necessity if very careful attention is paid to watering and ventilating.

The Temperature.

The temperature of the frame should be 60 to 65 degrees at night, with a rise of 10 degrees during the day. Spray and close early on cold or windy days. Melons require abundance of water and frequent syringing, regulating both, of course, according to the stage of growth, the season of the year, and the condition of the weather. Drier conditions must be maintained as regards both soil and atmosphere during the ripening period.

As the Fruit Ripens.

Ripening will be indicated by the fruit parting from its stalk, changing color, and emitting a strong perfume. It should then be cut and laid in the sun for a short time. The period at which a melon is at its best is a short one, and it is only by experience that this can be known.

Green and black fly sometimes attack melon plants. These can be destroyed by careful fumigation with tobacco stem or aphis punk.

The most troublesome pest, however, is red spider. The best plan of removing this insect is to syringe with as much force as the leaves will allow, paying more particular attention to the underside of the foliage, as this is where the pest congregates. The water used for watering and syringing at all times should be as nearly as possible the same temperature as the air in the frame. To accomplish this stand the water in the frame or in full sun for a few hours before using.

Work for the Week.

The rains of the past few days have come as a veritable godsend to the gardens, and a great relief to their owners from the incessant watering that had been previously necessary. Growth will now be exceedingly rapid, particularly if warm weather supervenes. Draw the earth up to the potatoes that were hoed and weeded last week. Do not make an absolute ridge of the soil, but leave a slight depression at the apex to collect the moisture.

Sow dwarf beans, if a succession is required.

Thin beets, leaving the plants at this thinning about four inches apart. Eventually every alternate plant must be removed, leaving the beets finally eight or nine inches asunder. The thinnings make an excellent substitute for spinach, and it will be found at the next thinning many of the roots are of usable size.

Thin carrots in the same manner, but not to the same distance. They may be finally left at six inches, unless large roots for exhibition purposes are required.

Cauliflowers.

Plant out cauliflowers for succession. Choose a suitably shaded situation—between the rows of peas or some similar position. If the earliest batch are showing signs of forming heads, bend the leaves over these to prevent discoloration.

Plant out celeriac on good soil, but not in trenches. Place the plants one foot apart and 18 inches from row to row. Stir the soil and remove weeds from trenches in which celery and leeks are growing.

Hoe and thin early sown onions. An occasional sprinkling of soot or artificial manure will be very beneficial to this and other vegetable crops, especially if the weather continues showery.

From this time onward sow radishes in a shady situation.

If Swede or white turnip seed has germinated irregularly, the beds may now be resown. The growth of these crops will be very rapid after the rains.

JULY 16th, 1910.

Flower Garden

Remove dead flowers and withered leaves from beds and borders to give a neat appearance, also remove seed pods from pansies, sweet peas, etc., or the formation of seeds will be a drain on the energies of the plants, thereby shortening their flowering period. Window boxes and hanging baskets will need daily attention as to watering, owing to their restricted rooting space. If there are choice kinds of Aquilegias which it is desired to perpetuate the seed pods must be watched closely, as they will soon be ripening. If they burst before being gathered the best of the seed is generally lost.

Plants Under Glass.

Seeding plants of Cyclamen intended for flowering next winter should now be ready for re-potting into their final pots, which should be from five to seven inches in diameter. Some thoroughly decayed manure should be added to the soil used for potting, also a liberal sprinkling of sharp sand and a small quantity of charcoal. Do not make the soil too firm in potting, and be very careful with the watering until the plants are re-established. Shade from sunshine and spray with clear water several times a day. Keep the plants sturdy by growing in a good light but shade from sunshine; give plenty of ventilation and keep free from insect pests.

Fuchias that were raised from cuttings rooted in the spring will require to be potted now. Shade and spray frequently after repotting. Fuchias are gross feeding plants, and therefore require a rich soil. Pinch frequently to induce a branching habit and to keep the plants in shape.

Campanula pyramidalis and *C. isophylla*, which are now developing their flower spikes should be assisted with liquid manure at alternate waterings. A handful of nitrate of soda dissolved in about one gallon of water is useful for this purpose and will keep the foliage a rich, dark green color. The latter plant makes a most beautiful subject for a hanging basket. The former is more useful as a conservatory plant, often attaining a height of nine or ten feet.

Maidenhair ferns have by now fully developed their foliage and cooler treatment will help to harden the fronds and make them lasting when cut. Cold draughts must, however, be avoided. Plants that have filled their pots with roots will be benefited by a stimulant, either clear soot water, or water in which nitrate of soda has been dissolved. Either must be used in a very weak state.

Culture of Tomatoes Under Glass.

Though tomatoes may be raised from cuttings, by far the most common method of propagation is from seed. The one advantage of the former method is that they more quickly grow to fruiting size.

Seeds for an early crop should be sown at the end of February or early in March, in shallow pans or boxes filled with light soil and placed in a temperature of 55 to 60 degrees, in a glass house or on a hotbed. When the seeds have germinated they must be kept well exposed to the light and as near the glass as possible to prevent them being drawn. When large enough to handle they should be potted off singly in small pots. By the beginning of April they will be large enough to be transferred to six-inch pots. If it is intended to grow them throughout in pots it will be necessary to again shift them into those 12 inches in diameter, or they may be grown in boxes or on narrow borders. The method of training is to keep them to a single stem by pinching out all lateral growths. This must be practised from the first and continued throughout the season. The shoots will require support of some kind—either stakes or a wire trellis—to which they must be regularly tied.

Tomatoes need very liberal treatment in the matter of watering at all times, especially when grown in pots or other restricted root space.

The soil in the early stages must not be too rich, or over-luxuriant growth will result, the fruit failing to develop. When in bearing, however, much more liberal treatment must be accorded them. They will require frequent stimulants in the form of liquid manure, also occasional topdressing of rich loam and artificial fertilizer.

If the foliage is thick and heavy, the fully developed leaves, namely those on the lower portions of the plant may be reduced sufficiently to expose the fruit to sun and air. This defoliation must not, however, be carried to excess, or the fruit will be deficient in size and quality. A plant cannot produce a good crop of fruit unless it is well provided with healthy foliage. The fruits should be picked as soon as they have developed color, and placed on a shelf to finish ripening. The above remarks will apply to a great extent to tomato growing in the open, and these should have the tops pinched out when about four bunches of fruit have set. This pinching will divert the whole energies of the plant into the development and finishing of the fruit and the crop will mature earlier.

JULY 22nd, 1910.

The Flower Garden.

Now that the planting is practically finished for the season, there remains little to be done but to attend to watering, weeding and cultivating, and awaiting results. From now onward, it is a good plan to make notes for guidance during another season. For instance, certain kinds of plants appear to be more at home in one situation than in another. A note should be made of this for another season's planting. If you are experimenting with a species that are new to you keep a record of those that please you and those that are a success, that you may plant in quantity another season.

If you have any banks or hot, sunny positions where the soil is sandy and it is difficult to get the general run of plants to thrive, remember to get for another season seeds or plants of *Mesembryanthemums* and *Portulaca* (Iceplants). There are numerous species of these of distinct and curiously interesting growth which make a good show of color during the summer months. They will thrive in the full glare of the sun and the poorer and more sandy the soil the better. The flowers are variously colored and very brilliant.

Poppies and other annuals that were sown in the open will now require thinning. Give each plant left room to develop fully. Water thoroughly immediately after thinning.

Tulips that have passed out of flower may be lifted and laid in the sun to ripen; afterwards to be stored in paper bags in a cool, dry place.

Continue to give overhead sprayings of clear water to newly planted trees and shrubs.

Weed, rake and roll all cinder or gravel paths. Any that are worn or discolored with soil from the borders should be re-surfaced.

The Kitchen Garden.

If young carrots are a desideratum, and space is available, a further sowing may be made. This will furnish a supply of young tender roots till late in the fall. The bed must be regularly and liberally watered and cultivated. When large enough thin to six inches apart, and water immediately after thinning. Thin onions to four or five inches, or a greater distance if large bulbs are desired. A few rows may be left unthinned to supply small bulbs for pickling.

Though deep hoeing and cultivation is beneficial to most crops, this is not the case with onions, which do best in a firm bed. Just stir the surface sufficiently to break the crust formed by

watering and to destroy weeds. A little soot dusted over the bed is very beneficial. Always water immediately after applying the soot.

Rows of beans or peas may be mulched with light litter or lawn mowings. Do not apply too thickly. This mulch will prevent baking and cracking of the soil, and also undue evaporation of moisture.

Asparagus beds should receive a dressing of guano, soot or other fertilizer. Cutting should now cease for the season. The beds must be kept free from weeds by hand weeding.

Cucumbers in frames should be given abundance of water and a little artificial manure occasionally. A top-dressing of loam and rotted manure should be given whenever the white roots show through the surface of the bed. Keep the atmosphere of the frame moist by frequent sprinklings. Ventilate about nine a.m. and close at 3.30 or 4 p.m., syringing the plants and surface of the bed both before opening and closing. If the frame is shaded much air is not needed—a brick or block of wood placed under the light at the back of the frame will be sufficient. Stop and regulate the shoots, pinching each growth one joint beyond the fruit. Frequently remove all surplus shoots and yellow exhausted leaves. Avoid over-cropping.

Sow lettuce for succession. The seeds will germinate better now if sown in a box which can be placed in the greenhouse or frame, the plants to be transplanted to the open air later on.

Broad beans that have a sufficient number of flowers set should have their tips removed by pinching. If black fly is troublesome syringe with soapy water.

House and Garden Plants.

Cuttings of geraniums and other plants that were inserted a few weeks ago will now be rooted. If these were inserted several together in a pot care must be exercised in dividing them, otherwise the roots will be damaged. Plants that have suffered root disturbance recently will be benefited by an occasional spraying with clear water, and they should not be exposed to the sun until re-established.

Pot roses that have flowered may now be placed out of doors. They will require watering regularly, and will be best plunged to the rim of the pot in the garden. They should be encouraged to make strong growth by feeding occasionally with a chemical fertilizer and should occupy a sunny position that the wood may ripen.

AUG. 6th, 1910

The Flower Garden.

The edges of the turf will need to be again cut with a sharp tool where they are growing on to the borders, and the soil, which the constant watering will have washed down, thrown up, leaving a little trench at the dividing point between lawn and border. Do not make this trench too deep or it will have an ugly rather than neat appearance. Keep newly planted trees well watered. Spray any trees that are infested with aphedes. These pests do not seem to be so prevalent as they were last season. I find that a mulch of littersy manure is very helpful in retaining the moisture around the trees at this season.

Remove old flower stalks from perennials to prevent the formation of seeds, this being a great drain on the strength of the plants.

The Vegetable Garden.

If you have no other use for vegetable or house refuse of a similar nature, as potato peelings and lettuce leaves, etc., bury in any vacant ground in the garden, as for instance early potato or cauliflower beds from which the crop has been removed. Do not allow the refuse to become dry, but bury it in a fresh state, and it will do much towards retaining moisture in the ground.

The second batch of cauliflower (Early London) is now coming on. For quality and appearance this is a better cauliflower than Snowball, though not quite so early. Walcheren will shortly be ready and promises well.

Celery, which seemed to be at a standstill for a long time, is now making good growth. Continue to water liberally. A little soil may be chopped down into the trenches, but care must be exercised that the heart is not buried. Have the soil sufficiently moist to be slightly sticky, and press it around each plant with the hands. You will thus avoid the risk of getting the soil into the heart of the plant, which would cause it to decay.

Potatoes and cabbages are very late coming this season. Continue to water the cabbage, but if potatoes have had a good soaking they should be kept dry from now onwards. Onions also should have the water withheld that they may mature and ripen.

Remove suckers from the tops of Celeric as they appear, keeping the energies of the plant confined to the formation of good clean root.

Water and mulch late sown peas. Radishes may still be sown, the best varieties for this season being Black and White Spanish.

Remove all lateral growths from tomatoes as they appear. If the foliage is heavy, remove sufficient to expose the fruit to the sun. Do not neglect rhubarb in the matter of watering.

Keep old cauliflower and cabbage stalks removed, also spinach which is of no further use; hoe and rake the ground. This will give a neat and tidy appearance to the garden. Keep the suckers removed from corn.

Transplant lettuce to vacant ground. Hoe and rake all beds and borders to keep everything as neat and tidy as possible.



AUG 27th 1910

The Vegetable Garden.

Celery should now have more soil placed around the plants to bleach them. Care must be taken that the soil does not penetrate to the heart of the plant. This can be prevented by holding the stems together with one hand while the earth is pressed to the plant with the other.

Leeks will also require the same treatment.

Have burlap, cheesecloth or other protective material in readiness to place over the more tender crops, as corn, dwarf beans, late peas, etc., should there be prospects of frost. Simple precautions of this kind may greatly prolong the season of these crops.

Gather herbs, such as parsley, sage, mint, thyme, marjoram, etc., and dry for winter use. It is customary to tie these in bunches and hang in a dry place, but a far better plan is to dry in a slow oven; when dry, rub between the hands and then pack in air-tight labelled tins. They have a nice green tint, and retain their strength much better when treated in this way.

Look over the cauliflower bed daily and cover the heads that are forming either by tying or bending the leaves over to protect from frost and discoloration by sunshine. Keep the suckers removed from the tops of the roots of celeriac. If the tops of shallots and garlic are drying off these should be taken up, spread to dry in the sun, and, when thoroughly harvested, stored in a dry place.

Where it is possible to maintain a supply of lettuce through the winter, seed should now be sown for this crop. Grand Rapids is the best variety for this purpose. The outdoor crop of tomatoes should now be gathered and the plants cleared away, as they will scarcely make any more growth from this time. The more advanced of the green fruits may be spread on a sunny greenhouse

shelf or in a window to ripen. The smaller green fruits can be utilized for pickling or sauce making.

The quarters where early peas have been grown may now be cleared and the ground manured and dug. This will be a saving of time later on in October, when every moment will be valuable.

Gather outdoor cucumbers for pickling. Continue to sow mustard and cress as required.

Where there is a suitable place, the present is a good time to make mushroom beds. Horse manure, from which the long litter has been removed, must be collected into a heap and shaken over daily for about a week to prevent overheating and to allow the rank steam to escape. The manure should be sufficiently moist to hold together when squeezed. When thoroughly prepared it must be made up into beds against the wall of the cellar, 9 inches in depth at front and about 12 inches at back, the size in other directions, of course, being regulated by the amount of manure or space available and other circumstances. Pack the manure as firm as possible as each successive layer is added to the bed. It is not advisable to introduce the spawn at once as its vitality might be destroyed should the bed become overheated. A thermometer should be placed in the bed, and when this registers 80 degrees and is receding below that point the bed may with safety be spawned. Pieces of spawn about as large as walnuts should be inserted in holes four inches apart over the surface of the bed, and covered over. A few days after one or two inches of moist rather stiff, not sandy, loam, must be spread over the bed and beaten firm with the back of a spade. If the conditions are right mushrooms will appear in about four or five weeks from the date of spawning.

Now that the nights are slightly frosty vegetable marrows will not be likely to make any further progress. The whole of the fruits, therefore, should be cut and the plants cleared away.

Black Currants.—These should have the old and weaker shoots removed, when the crop has been gathered. This will expose the remaining growths to the action of sun and wind to ripen, and these will be the more likely to pass through the winter successfully.

The Flower Garden.

No time must now be lost in getting such plants under glass as are required for stock to produce cuttings for another season. Those that need attention first are geraniums, marguerites, perennial candytuft and lobelia. Pot or box as many as may be considered necessary to produce the required number of plants for another season. A cold frame will be sufficient protection for the present. Shade from sun for a few days till the plants are re-established. Plants that are past flowering, and from which it is

intended to save seed, must be watched, and when approaching ripeness the stalks should be cut. This should be done when they are in a dry state. The best way to keep them is to place the seed vessels head downwards in paper bags, tied at the top, and placed in a dry position to thoroughly dry and ripen. Label the bags with the names of the seeds to avoid mistakes. The seed may be cleaned during the winter months, when there will be less pressure of work. Continue to remove decaying flowers and leaves to give the flower beds and borders a neat appearance. Gather ornamental grasses if required for decorative work during winter before they have advanced to the seeding stage or they will probably fall to pieces. Gypsophylla and the seed vessels of honesty (*lunaria biennis*) make excellent decorative material when dry, as does also the sea holly (*Erigeron marinum*).

The Greenhouses.

Now that the nights are chilly, cucumbers will require fire heat, except during the middle of the day. Keep the fruits regularly cut to relieve the plants. Small and bady shaped fruits can be used for pickling.

Melons will require a minimum temperature of 80 degrees with abundance of air when the sun is shining. This treatment will render the foliage broad and thick in substance. Keep the beds well supplied with moisture till the fruits show signs of ripening, when the water must be gradually diminished. Support the fruits with nets to prevent them breaking away from the plants.

Plants Under Glass.

Keep cinerarias close to the glass and give abundance of air during the day time to insure sturdy, thick foliage. These plants should have a position in the coolest part of the greenhouse.

Repot any palms that may require it. This should not be done, however, unless absolutely necessary, as they thrive better in a pot bound condition, provided they are not neglected in the matter of watering, and are more serviceable when in small pots.



SEPT. 10th, 1910.

Mint and Parsley.—If a supply of these herbs in a green state is required through the winter months a few plants of each should be lifted, the tops removed, the roots potted or boxed, and placed in the greenhouses. The recent rather sharp frost is a warning that we must get busy in the vegetable garden, to make

arrangements for storing the crops. All tomatoes, both green and ripe, must now be gathered. Also squashes, pumpkins and marrows, as these will be the first to feel the effects of the frost.

Onions should have attention next. Choose a dry sunny day for pulling the bulbs and lay them with their bases towards the sun. Turn them occasionally throughout the day, and, if frost threatens, place under cover at night. They should, however, be again spread out in the sun for several days till thoroughly dry and harvested. Different varieties are best kept and stored separately from each other, as their keeping qualities vary considerably. Onions raised from seed, of whatever varieties, will keep very much longer than those grown from sets. Those calculated to keep longest should especially be thoroughly dried and ripened. They are best tied in bunches and suspended from the rafters of a cool, dry shed or basement, where frost is merely excluded. If placed in a position exposed to too much heat or too much moisture, new growth is encouraged and the bulbs soon become useless in consequence. For this reason, onions seldom keep for long in the ordinary root store, the moisture given off by other vegetables, as celery, etc., keeping the atmosphere always more or less damp. Where a large quantity of onions are grown and time cannot be spared for tying them up, they may be stored, when thoroughly dry, several layers deep in a similar place to that above recommended and covered in with a layer of clean, dry straw.

Beets should be pulled during the early part of a sunny day and left in the sun for some hours to dry. Do not cut off the tops but twist them off. By doing this the risk of cutting too closely and consequent bleeding and loss of color is avoided. Store in dry sand in a cool frost-proof place. Under these conditions beets will keep in first rate condition for a whole year from the time of storing. In all processes connected with the growing, storing or cooking of this vegetable, the greatest care must be taken to avoid bruising or otherwise injuring the roots, as deficiency of color would be the result, rendering them valueless for table use.

Carrots should be lifted in dry weather, the tops cut off close to the crowns and stored in moderately damp sand in a place similar to that recommended for beets.

As the frost has put an end to the growth of the potatoes for this season, these may now be lifted as opportunity occurs. Allow them to lie for a few hours after lifting to dry and the skins to become set. Exposure to light, however, for a lengthened period has a very injurious influence on potatoes intended for food. It causes them to assume at first a yellowish tinge, and then a green color and materially impairs their flavor. Therefore, from the

time of storing until required for use light must be rigidly excluded. It is a good plan to "pit" the crop for a week or two before storing permanently to allow it to "sweat." If stored away in big bulk immediately after being lifted the mass is liable to heat, and the potatoes, besides not keeping so well, are rendered watery and insipid. These remarks apply more particularly where large quantities are grown, and it is my opinion that want of knowledge of these simple facts tends more than anything to bring Alberta grown potatoes into disrepute. For pitting, choose a situation where there is no possibility of water collecting. Dig the soil out about nine inches deep and three feet wide at the base. Pile the potatoes in this space in a ridge as high as convenient and cover with about nine inches of soil dug out from either side. The ridge, after being beaten flat with the spade will be complete. After about two weeks in the pit and before there is risk of very severe frost, store the potatoes in their permanent quarters, namely, a cool, dry place with a hard floor from which, as before stated, light must be rigidly excluded. Potatoes should be turned over occasionally through the winter and more frequently towards spring for the purpose of removing decayed tubers, which will otherwise quickly injure the sound ones they are in contact with, and also to remove any shoots that may be forming.

Corn is now over for the season. Any cobs that may be fit for use should be gathered and the stalks removed. Beans, both dwarf and runners, may now be pulled up, as they will be of no further service.

The Flower Garden.

Now that the tops of dahlias have been destroyed by frost, they should be cut down to within six inches of the ground, and the roots afterwards lifted. Remove as much soil as possible with a pointed stick, attach a label to each, if it is desired to know color or variety another season, and store away in a dry but cool place. The ordinary root store will be suitable if absolutely frost proof. Examine occasionally during the winter and cut away any tubers that may be decaying.

Greenhouses.

Maintain a buoyant atmosphere in houses containing carnations and chrysanthemums for winter flowering by keeping a gentle heat together with abundance of air. If those recently planted show signs of flagging, syringe with clear water frequently on sunny days. Pot on the later batches of cyclamen, *primula sinensis* and *P. obconica*.

Ferns should be exposed to as much light as possible (not brilliant sunshine) and ventilated freely on warm days. This will harden the fronds and they will winter more successfully as a consequence.

SEPT. 24th, 1910.

The Flower Garden.

Though lobelia may be readily propagated from seed in the spring, better plants are obtained, if, where there is greenhouse accommodation, stock plants are lifted at this season before injury by frost has occurred, and planted in pots or boxes. Select the more compact plants and those having the most desirable shade of color. When replanted, water thoroughly and place in a light, airy position in the greenhouse. Early in the year, when new growth has commenced, large quantities of cuttings will be obtainable and the desired number of sturdy plants may soon be secured, which will have the advantage over seedlings of being uniform in habit and color.

After hollyhocks have ceased to flower, or have been killed down by frost, cut the tops off to within six inches of the ground, lift the roots, remove the soil that adheres and store in moderately moist sand, in the root store or other cool place.

Window and balcony boxes have now put on a somewhat woe-begone appearance, unless in very sheltered situations. The worst of these should be removed, the old plants burnt, unless required for stock, and the soil scattered on the ground in the garden. Store the boxes in a dry place that they may be repainted during the winter months.

Vegetable Garden—Storing of Celery.

This crop should be lifted when in a dry condition, and all bruised, broken or otherwise damaged leaves removed. Do not retain those heads that have "bolted," *i.e.*, developed a central stem. If this stem is not much advanced in development, such heads may be used when lifted, but are useless for storing. Stand the heads upright in a bin in the root store, with leaves and roots intact, and fill in round with damp sand. Do not entirely bury the leaves, but leave the upper foliage exposed. Keep the root store well ventilated for a week or two after storing.

The Lawn.

This will not require cutting quite so frequently as formerly, as, owing to the nights being cooler, growth is less rapid. Once in two weeks will now, in most cases, be sufficiently frequent. It is better to leave a good growth of grass on the lawn for the winter. If the dry weather continues it will be necessary to water thoroughly. Drying out during winter is more injurious to a lawn than the intense cold.

Trees.

These are becoming badly infested with aphid, and should be sprayed without loss of time. Though the foliage is now falling, many of the insects will hibernate or deposit eggs in the cracks and crevices of the branches, from which the new colonies will develop in the spring, if no remedial measures are taken. A very simple insecticide, but one that is very effectual in destroying aphides, consists of two ounces of ordinary washing soap, dissolved in a gallon of hot water. This can be applied with an ordinary syringe or knapsack sprayer. If there are a large number of trees to be sprayed a more expeditious means of distribution must, of course, be used. It must also be borne in mind that the aphid is a sucking insect, which, before taking any nutriment from the leaves, first bores through the outer skin. It is therefore useless to simply render the surface of the foliage poisonous; the insecticide must come in actual contact with the insects themselves. These congregate on the under sides of the leaves, and that is the part of the foliage which must have the most careful attention, if the spraying is to be effectual. Keep the trees well watered at this season so that the soil around the roots will be in a thoroughly moist condition as it freezes up.



OCT. 1st, 1910.

The Flower Garden.

Remove all annuals from borders and beds, also cut the tops from perennials and burn all refuse on a vacant plot of ground. cut down hops and other herbaceous climbers, but the growths of ampelopsis and clematis should be left intact. Pansies, carnations and pinks may be left in the borders, as these frequently survive the winter, as do also matricaria inodora, Iceland and Oriental poppies, colombines, etc. Hollyhocks must be lifted and stored according to the instructions given in a previous article for dahlias. Gladioli should also be lifted, the bulbs exposed to the sun for some time to dry and ripen; they can then be put in paper bags and hung in a cool, dry, frost-proof place.

Manure and dig all flower borders when cleared. This will give a neat and tidy appearance and they will be in readiness for next season's planting.

The Vegetable Garden.

Storing Cabbages.—It will no longer be safe to leave this crop on the ground. The most expeditious way of cutting the

heads is to chop them off near the surface of the ground with a sharp spade. Some people recommend lifting the plants with roots attached and suspending from beams in the root store or cellar, but I find they keep in better condition if stacked in layers on the floor. Do not remove too many of the outer leaves and do not pack closely but leave interstices that the air may circulate through the pile. Select the heaviest and most compact heads and store these first, as they will keep in condition longer than the soft ones, which, if placed on the top of the pile, can be used first. If there are any signs of heating or decay later on overhaul the whole heap and remove those heads that are affected for immediate use.

Keep the root store well ventilated whenever weather permits.

Lawns will require no more cutting this season, so it will be a good plan to overhaul, clean, sharpen and thoroughly oil mowing machines, and store away in a dry place where they will not rust. To do the work thoroughly the machines should be taken to pieces and each part cleaned and dipped in oil before being replaced. Any parts that are badly worn should be renewed that there be no delay when they are required for work next spring.

Trees and Shrubs.

If it is intended to do any tree planting this fall a start may now be made by having the pits prepared, but it is too early yet to do any actual planting. This will be better done just before the ground freezes up.



OCT. 22, 1910.

The Flower Garden.

Though English and Spanish iris and allium moly will often pass through the winter safely if left in the ground, it is a wise precaution to lift these and store in the same manner as recommended for gladioli.

French anemones and Persian ranunculi must also be now taken up, and stored, or these will certainly be destroyed if allowed to remain in the ground.

Bend over all the growths of roses and cover with earth to protect during the winter months. If the shoots are strong and there is difficulty in bending them down so that there is a risk of breaking, remove some of the earth on one side of the plant, and then push the plant bodily over. It is better, however, to avoid root disturbance if possible. Bend towards the north if possible.

The Indoor Garden.

If Roman hyacinths and paper white narcissi are required for Christmas flowering they must be purchased and potted without further delay. In purchasing bulbs select those only of large size and perfectly sound condition. It is a mistake to buy cheap bulbs of inferior quality, as they are certain to prove disappointing.

Place as many bulbs in each pot as it will comfortably hold, and pot so that their tops just protrude through the soil. Press the soil firmly, but in doing so be careful not to bruise the bulbs. Leave sufficient space between the surface of the soil and the rim of the pot for watering. A good compost for these bulbs consists of good fibrous loam 12 parts, leaf mould one part and enough sharp sand to render the soil open. Provide liberal drainage in the pots. Water thoroughly, then bury the pots in sand or ashes, so that the roots may be developed. After a week or two has elapsed examine at intervals, and remove any that have developed an inch or two of top growth. These must not be placed in a strong heat at once, but should be brought along gently at first in a comparatively low temperature.

Do not expose to strong sunlight till the growths have lost their yellowness and have assumed a green color. By bringing these bulbs along in successional batches they may be had in flower from December onwards till April.

Bend down the shoots of raspberries, loganberries, blackberries and similar fruits, and cover with earth.

The remarks on roses in the present article will apply to these.

Push on as rapidly as possible with all manuring and digging operations that the work may be completed before the ground becomes frozen.



ANNUALS AND THEIR CULTURE

Read by E. E. Kerrison at the Horticultural Meeting

I am here before you to-night to read a paper on "Annuals and Their Culture." We have listened with great interest to the very excellent papers which have been read before this society at previous meetings, giving us sound and practical advice of the many ways to improve and beautify our homes, more especially with trees, shrubs, lawns and herbaceous plants. Now we have a good portion of our garden taken up with these, still we have room for some annuals, not to forget hanging baskets and window boxes for which they take a prominent part. For several months we have been without flowers in our gardens, and have to depend entirely on those grown inside. Now that spring is here again, we look with pleasure for the results we hope to obtain in the near future. How nice it will be after the worry of business to take a stroll round the garden once again, and with the flowers in all their beauty, which fill the air with the sweetest fragrance.

So we commence, as soon as the frost is out of the ground, to prepare for seeding and planting. I consider that no flower garden is complete without annuals, and as the collection is very numerous, I have picked out a few which I think will give you the best results here in the west. First, I would like to explain the meaning of annuals. Annuals are plants which require to be sown annually, as they live and bloom only one season. They are called either: hardy, half hardy or tender. Hardy annuals will grow and blossom without any artificial heat or protection, and may be sown during the months of May and June. Half hardy annuals applies to those annuals which although they bloom freely in the open ground, require artificial heat to assist germination and protection from atmospheric changes during the earlier stages of their growth. Many of them are of great interest and derive an additional value from flowering after most of the hardy annuals are out of bloom. Tender annuals require the aid of a greenhouse to bring them to perfection. The seeds of these are generally sown much earlier, about February, in a warm part of the greenhouse, and require careful watching with shading and watering.

Preparing the Soil.

This is a very important matter, which is very often overlooked. But I think after the lengthy discussions that we have had at previous meetings, dealing with the preparation of soil—I think you will realize that it is necessary to start well at the foundation to make a success of your garden. For the benefit of those who have not heard previous lectures, I would say: First, to clean off all rubbish and then put on a covering of well decayed stable manure, the finer and more broken down you make the manure the better. Spread it in, mixing thoroughly with the soil, levelling off with the rake. With this preparation the soil should be in good shape for seeding and planting.

Sweet Peas.

One of the most popular, and one which has made a great headway these last few years, new varieties being added to the collection each season. It is quite time these were planted, if not already planted they should be planted at once, as they will stand a little frost, and to grow them successfully, it is necessary to plant them early. I have seen failures here in Calgary, where they have been planted too late, being cut down with the frost just as they were coming out in bloom, which is very discouraging after the time and labor you have spent on them. I like to see sweet-peas grown in their separate colors.

I consider the under-named varieties among the best: Lady Grisel Hamilton, pale lavender; Black Michael, reddish-brown; King Edward, the finest crimson scarlet; Dorothy Eckford, pure white; Navy Blue, deep indigo blue; Queen Alexandra, giant scarlet; Prince of Wales, bright rose; Lovely, shell pink.

The new Spencer varieties are extra good. The flowers of sweet-peas should be picked as often as possible and all withered blooms removed to prevent the plants from running to seed, which would stop them from continuing in bloom.

The Way to Plant.

Prepare a trench in a sunny position about four inches deep and six inches wide, in which sow the peas, then cover them about two inches; as they appear through the ground gradually fill the trench, in this way the roots will be deep, and will stand the heat of the summer better. Be sure to get them supported in time, before they get too high, with brush or wire netting.

There are many seeds that can be planted in the garden now, but such annuals as Asters, Stocks, Phlox, Verbenas, Salpiglossis, etc., need to be started in a hot-bed or greenhouse in boxes or pans, and then transplanted into the garden. As our growing season is short, it is necessary to have good established plants to put out, to obtain the best results, and be sure you take special care in planting, for here lies one of the secrets of success. It is better to plant late in the afternoon after the heat of the day, which will allow the young plants to make a better start. Some amount of care and judgment in planting will more than compensate for the additional time spent in planting. The soil around the roots of the plants should be disturbed as little as possible. Make a hole large enough to admit the roots without cramping, in which place the plant, pressing the soil firmly around and level with the other part of the ground. The ground should not be watered immediately before planting. It is a good plan to water thoroughly the day before, and then after planting water each plant carefully with the can. As your plants grow, keep the surface soil stirred by the use of the hoe. This is very beneficial to the growth of the plants, as well as keeping the ground free of weeds.

Pansies.

Favorites with all, as you will find them in nearly every garden. They like good rich soil in a rather shady position. It is better to obtain good plants of these, from reliable florists who procure the best

seeds. In giant mixed sorts, you ought to get some good things. But if you prefer to grow separate colors, Lord Beaconsfield, Wallflower Crown, Odier Cassier, Snowflake Giant, Bridesmaid, are all good varieties.

Asters.

These are not only one of the most popular, but one of the most productive of our garden favorites, producing flowers in which richness and varieties of color are combined with the most beautiful form. In beds and borders they occupy a most prominent position. The Victoria and Comet are great favorites of mine; when wanted for a massive effect, they may be planted closer, say about nine inches apart each way. These will grow in any good soil, in a sunny position. The branching varieties will require more space.

Stocks

Are great favorites with most people, as they are very fragrant. I find the ten-week stocks do well here and certainly make a great show in a garden. Princess Alice is a good white; Beauty of Nice for a good pale pink, and Brilliant for a good blood red. The Virginia stock makes a nice edging for a border and will bloom all summer. Mathiold, Biconic, evening scented stock, is highly prized for its fragrant smell in the evening, and should be grown in every garden.

Petunias.

Nothing will make more show in a garden than a good bed of petunias. They will commence to bloom early and will continue to bloom until frost comes. Plant these about a foot apart; they will do well in hanging baskets and window boxes.

Antirrhinum Snapdragon

These are very easy to grow and are one of the best to grow for cut flowers. I have seen some good specimens grown here, so can well recommend them. These like rather light soil in a sunny position.

Verbenas.

Free flowering of a low spreading growth, single plants in good rich soil will cover quite a space, and will furnish a profusion of flowers. If the flowers are kept cut the plant will bloom much more freely. The colors are very striking. They will also do fine in window boxes.

Phlox.

You can have nothing more attractive than a good bed of Phlox. They are easily grown and will thrive in any locality; they make a quick and compact growth, and for colors these are unsurpassed. The new starred varieties are becoming great favorites and are well worth a trial.

Poppy.

Shirly Poppy, single and occasionally will come semi-double, and range in color from the purest white to the deepest crimson, with scarcely any two flowers alike. It is better to sow the seed where you intend these to bloom; sow very thinly and not too deep. The Iceland, although perennials, can be classed as annuals, as they will bloom the first year, and I consider that any flower grown from seed that will bloom the same season can be classed as annuals. The new Hybrid Icelands are a great improvement on the old varieties.

Salpiglossis.

I can strongly recommend these as one of easiest and best annuals to grow. The colors are good and will bloom through the whole season until frost. Although not widely known here in the West, they are to my mind one of the best, especially for cutting.

Lobelia.

We cannot do without Lobelia in our garden, for edging a border it cannot be beaten. We have several good varieties, but I must say that I like Emperor William blue as well as any; they are usually set about a foot apart. Lobelia is largely grown in hanging baskets and window boxes.

Dianthus, Indian Pinks.

These are largely grown here and do well, and should find a place in every garden. Singles are very attractive, usually growing about a foot high with very brilliant colors. Semi-doubles and doubles are also good. The Marguerite Carnation will bloom the first season and are most useful for cutting.

Chrysanthemums.

These are quite distinct from the autumn flowering varieties. They grow quickly and flower freely. The foliage is quite ornamental and mostly grow about twelve to eighteen inches high and produce on long stems, large daisy-like flowers of many bright colors in distinct bands.

Ageratum, Sweet Alyssum, Candytuft and Mignonette, are all good and should find a place in every garden. Any of these are fine for edging borders. We have still a great many more annuals that are quite equal to grow, such as Zinnias, Godetias, Sweet Sultan, Cornflower, Calliopsis, Marigold, Daisy, Pyrethrum, Sunflower, etc.

We have also a good collection of climbers, and I think that no class of flowers are more useful in a garden than a few good climbers for trellis, fence or verandah, which adds to the beauty of a home. Nasturtiums, I suppose, are one of the oldest climbers, but they are still favorites and will grow almost anywhere. They are also useful for planting on a bank, and allowed to trail down, or on the ground they will run and bloom just as well. The dwarf varieties are good for borders, especially Empress of India with bright scarlet flowers and dark foliage. Japanese Hops and Wild Cucumber vine, make a great growth in a season, and certainly make a nice covering for a verandah. Canariensis—Canary Creeper—are also good climbers and will bloom all summer with rich yellow flowers and delicate foliage. Convolvulus Major—Morning Glory—these are well-known old-fashioned climbers with rapid growth. Thunbergia makes a good climber and also useful as a trailer for hanging baskets. The colors are: white, light yellow and deep orange with black centres.

For Best Effect.

This will greatly depend on the way your grounds are laid out, whether you have beds or borders. For a good sized border, I like to see annuals planted in rows, choosing the taller varieties for the back of border, such as African Marigolds, Antirrhinums, Salpiglossis, Branching Asters, etc., say two or three rows of each variety according to space.

coming to the front, with Verbenas, Phlox, Mignonette, Dwarf Alyssum, Ageratum, Lobelia, Pyrethrum, and of these will make an attractive border. But for small beds, you will obtain the best effect by planting one variety in each bed, such as a good bed of Petunias, Phlox, Verbenas, Mignonette, Victoria and Comet Asters. You may also improve on this by edging a bed of any of the aforesaid with some dwarf growing plant as a contrast, taking, for instance, a bed of Pink Asters with an edging of White Alyssum, or a bed of White Stokes with a border of Blue Lobelia. This, of course, is merely a suggestion, as much depends on individual taste.

The last two seasons have made a great headway with hanging baskets and window boxes, and when properly arranged around a house can be made very effective and a great attraction, especially in some cases where a garden is taken up with trees and lawns. To fill a good basket or window box, I must say that I like to see a few good Geraniums, especially the Ivy, mixing through Nasturtiums, Verbenas, Alyssum, Thunbergia, Lobelia, Petunias, etc., and with a little care and attention with watering, can be made to bloom all summer.



TREE GROWING

*Paper read by H. G. Burrows before the Horticultural Society
at the Arlington Hotel.*

The subject was most capably and intelligently handled by H. G. Burrows, and the thanks of the meeting was tendered him by the chairman, F. F. Higgs, on a motion made by Sergt. J. J. Wilson and A. M. Terrill. The large audience listened most attentively to the reading of the paper, and many questions were asked regarding tree pruning and spraying for blight. The society has decided on the purchase of a large pump for tree spraying. This will be available to members of the society and citizens generally.

Mr. Burrows' paper was as follows:—

I am to speak to you to-night on the subject of "Trees, Their Culture and Usefulness." My paper is a small contribution with the many excellent papers which have preceded it to the one purpose. Beauty and art will and must play an important part in this country, as it has done, and is yet doing, in the older countries of the world to-day. Progress, said a prominent speaker recently, the best evidence of progress is the intelligence of the people. There is a growing desire and love for the beautiful. It is apparent to every intelligent, thinking person that any country, city, or individual to grow and prosper must rise with and be abreast of the times; and not only endeavor to offer as good as their competitors, but, if possible, something better.

At the convention of the Ontario Horticultural Association, held at Toronto in November last, Prof. H. L. Hutt, Agricultural College, Guelph, said: "It is very evident to those who travel, or even to those who merely read the papers, that a strong movement has set in on this continent for civic and rural improvements. Just what it may result in it is impossible to say at present, but it is safe to predict that the movement is going to have a marked effect on the appearance and character of our country generally. In some places the local horticultural societies or board of trade have taken an active part in promoting these improvements because they realize the fact that beautiful surroundings are a potent factor in attracting citizens and increasing trade. And the movement has been the outcome of a growing appreciation of art and a desire for real beauty, which has resulted from the prosperity of the times."

From the Ottawa Citizen we clip the following: "The people of Ottawa are taking an increasing pride in the appearance of the capital, which the Dominion Government has also done so much to beautify. Ten years ago there was only one park in Ottawa, and the most of the private residences were walled in by high fences. Now there are seven parks, nearly all the fences have been taken down, so that gardens and lawns are open to the street, and those having available grounds for the purpose are planting them with flowers and shrubs, and generally adding to the beauty not only of the premises, but of the locality."

The aim of the whole movement, put in a nutshell, is for "a better and more beautiful country."

Trees Indispensable.

In the beautifying of either private dwellings or public thoroughfares, trees are absolutely indispensable. And although many of our prairie cities are denude of natural tree growth, it does not follow they must ever remain so. Neither does it imply because they are not to be found in abundance around us they are unobtainable, impossible or even difficult to grow here; on the contrary, there is probably nothing that will give such good results for so small amount of time and money as trees, providing the right varieties and class of tree is procured, and it is properly planted and attended.

Pleasant and beautiful surroundings are to some natures as indispensable and as necessary as food. While there are others to whom it does not appeal in the same important way, and certainly not as necessary, yet there are but few, very few, of all grades and ages of society, who fail to enjoy the comforts and pleasures that beautiful surroundings afford.

Imagine, if you will, a walk on a hot summer day. The sun is shining in all its fierceness, the brilliancy dazzles your sight, the stones are hot beneath your feet, the very clothes you wear are a burden to you, your hat seems a heavy weight on your heated brow. You are uncomfortable, dissatisfied, and feel sore with everyone and every thing; declaring the tailor, the bootmaker, and the hatter has made a misfit with your apparel, and shall have no more of your patronage. Roads are not properly made nowadays, sidewalks are all wrong. But you turn from this glare and heat into one of the avenues, not an avenue in name only, but in effect. The beautiful green trees are on both sides of the road,

completely shading the path. The air is soft and pleasant, the boulevard is a carpet of cool, green grass on your right, while on your left is the beautiful, well-kept gardens in front of the many fine residential dwellings, handsome beds of flowers, the fragrance of which fills the whole air with its sweetness. You remove your hat and wipe the perspiration from your brow as you exclaim, "My, this is a great and pleasant change." Things and people are not what they appeared a little while ago, and are not so bad after all; for see here under the shade of the trees are the seats provided by a thoughtful, considerate city council, where the tired and aged ones can rest awhile in pleasant surroundings in comfort and peace. The imagination can be made a reality by the planting of trees.

One of the most important things a city has to consider and provide for is the health of its inhabitants. All vegetation life, and particularly trees, has a marked effect on the climate and health of the people. Scientists tell us there is a wonderful affinity between the atmosphere and the earth. The earth is constantly taking from the air that which is harmful to man, and giving out through the medium of trees and vegetation generally that which is good and beneficial.

Help to Prevent Dust.

There is another strong affinity between air and earth, and the force of the cohesion is made painfully real when the wind sweeps through our streets and avenues lifting the dust and casting it mercilessly into your face, your home, your store. Now, while there may be some truth in the old saying, "We all have to eat a peck of dirt before we die," no one has any particular wish to eat the peck right off hand, although it may be his neighbor's valuable real estate.

Now, while I do not claim that the dust nuisance problem will be entirely eliminated by the planting and growing of trees, I do claim they will do much towards it; because they act as a shade and natural protection for the surface soil and small vegetation growth from the direct and strongest rays of the sun, and thereby prevent rapid evaporation and drying out of the surface moisture.

Again, trees are most effective for shelter purposes. Where there are trees the velocity of the wind is broken to a large extent before it reaches the earth; and these late and early frosts, which make the growing season so short and gardening operations so limited, whether you are growing flowers, vegetables, or fruits, the shelter trees will be of great assistance.

Trees are most useful as moisture reserve forces. We people here in the Northwest are beginning to understand that it is not the extent of our resources but the good use we make of them, that spells success and prosperity. There are many people who complain of the drought and shortness of the rainy season, as in other places they complain of the much and continual rain and little sunshine. Had we not better quit this complaining and go ahead and do something, for "whether it's wet or whether it's not, we have to weather it, whether or not." By the planting of trees we may conserve a large amount of our rainfall.

A healthy well-rooted tree is capable of retaining and holding a considerable amount of moisture, which it continually dispenses through the medium of its leaves into the air, toning the hot, dry air, making the atmosphere pleasanter and much more enjoyable. But apart from the pleasure of having trees and well-kept garden grounds around the home, few people realize how much these add to the commercial value of a property. A purchaser having to decide between a house with bare, unkept grounds and one surrounded by fine trees, shrubs, etc., invariably chooses the latter at a marked advance in price. It at once appeals to him, he sees that he will at once enjoy what would otherwise take some years to secure.

The investment that will enable you to contribute more of real worth to a community in which you live, as well as personally benefit; if, in a word, it will make of you a better citizen, then I claim that planting of trees, whether few or many, is the soundest and best investment a man can make.

Tree Culture.

This is an extensive subject; volumes have been written on trees and tree culture, and no doubt volumes more will yet be written on this theme. Many good methods and valuable suggestions have been given, while others are not as good. While I admit there are certain laws governing tree life and culture the wide world over, you can not use the same line of cultural methods everywhere. We can not make a country or climate conform to our code of rules or ideas; on the contrary before we can reasonably hope for success, we must study the country, the climate and conditions and adapt our methods or set of rules to meet these. What I consider the sanest and best plan is to find a T. P. method—or in other words, a tried and proved good plan, and follow that until you are assured someone has a better.

You may not agree with all I have to say on the subject, but I will ask you to take this as you take your fish—you do not cast it from you because of the bones, but pick out the good and leave the remainder.

Preparing the Ground.

Preparing the ground must have our first consideration. While it is true that any good garden soil capable of growing vegetables will grow trees, it is too general an idea that any old place or ground will do for trees. This is a mistake and invariably results in failure.

I know of places right here in this city where trees have been planted in beds of rock, so solidly packed together that when the holes were dug and filled with water it took several days for it to drain away. There are other places just a bed of sand and the drainage so great that with all the water poured in it is always a dry spot. Both such places should, if possible, be avoided, but both can, if circumstances compel, be brought into fit and proper condition to receive trees. The holes must in all such ground be dug to a depth to insure perfect drainage, filling in the hole again with good garden soil. If the ground is in good condition, all that is required is to well dig the ground and dig the holes large enough to admit the roots of the tree to spread out in their natural position.

Securing the Trees.

Our next consideration is the class and varieties of trees to plant and how obtained.

The best way of procuring a stock of trees, especially where quantity is required and time is no object, is by propagation and seed. But as this method requires a good deal of care and attention, and few people except commercial growers require the quantity to warrant them sacrificing the delay of time before effect can be obtained, I do not purpose dealing with this. I consider the next best way is through a reliable nurseryman.

Years of experience have convinced me that nursery grown trees are in the majority of cases far superior to native-dug trees. Conditions under which they have been grown has induced a cleaner stock and better bunch of fibre roots. This class of tree invariably takes hold of the soil quicker and gives better results to the planted.

Trees can be shipped in from Manitoba and other places in perfect safety, and when properly packed will suffer no material damage in transit.

Nursery in Calgary.

One of the great needs of this city is nursery grounds where trees can be grown right here, not only for civic purposes, but where intending planters can purchase a few or many trees for their own private gardens. I am convinced that a large and profitable business could be done, if properly managed, either by private individual or company concern, and would prove a splendid investment for capital and be of great benefit to this locality. Can we consider ourselves abreast of the times when Alberta can only boast of one little bit of nursery ground away beyond Edmonton?

While I prefer nursery grown trees for the reasons stated, I do not wish it to be taken that I consider all native dug seedling trees worthless and good trees unobtainable from this source. On the contrary, thousands of healthy young trees are growing within a few miles of this city, and these, if properly lifted and cared for, can be planted with every prospect of success.

In buying trees, select and purchase those which suit your purpose. Do not judge a tree by its size only; a good, clean stem of sufficient strength to carry a well furnished head of branches, with a corresponding bunch of fibre roots, is what is required in a tree, all of which will vary, of course, according to the size of the tree. I strongly recommend planting young trees; they are more satisfactory in every way.

What Variety to Plant.

As to varieties—of the deciduous trees for shade purposes undoubtedly the poplars are the best for this district. Several varieties are native here, very hardy and quick growers. I consider the balsam poplar (*p. balsamifera*), commonly called the balm of Gilead, and the cottonwood, Canadian poplar (*p. Canadensis*), the best of these, while of the imported varieties, the Russian poplars have proved a splendid variety and very much at home in this district, as it thrives best in a rather dry soil. The poplar that has been planted here, both in private gardens

and public avenues, more than any other, namely, the poplar tremuloides, better known as the quaking aspen, is not a good variety for shade tree purposes. It is also very slow in growth.

The Manitoba maple or box elder (*acer negundo*), is a very rapid grower and a great favorite with many people for that reason, and considered very hardy, but I think there are several other varieties far better than this, and that if tried would prove more satisfactory: the red (*acer rubrum*); the silver-leafed (*acer dasycarpum*); and the ginnale (ginnalian maple). These have proved very hardy and most satisfactory, both at Brandon and also in Edmonton.

For ornamental purposes where variety is required more than rapid growth, as for shade purposes, such standard varieties of deciduous trees as American White Elm (*Ulmus Americana*), American White and Green Ash (*Fraxinus Americana* and *Viridis*), the Mountain or European Ash (*Fraxinus Excelsior*) are also very handsome trees, but have not proved very satisfactory here at present. The Birch (*Betula*) is a tree worthy of extensive cultivation. The variety known as Black Birch, Cherry B., Mahogany or Sweet Birch (*Betula Lenta*), while it is a tree that likes plenty of moisture, it is very hardy, and is growing in abundance along the banks of the Elbow River.

Our native White or Grey Birch (*B. Alba*), with its paper-like white bark, will grow on poor, sandy and gravelly soils if given plenty of water.

As a handsome specimen ornamental tree for the centre of flower beds or on the lawn there are perhaps few trees that will surpass the Cut-leaf Weeping Birch (*Betula Laciniatum Pendula*) in beauty and gracefulness. The Willows (*Salix*) is an immense genus of about 166 species, some 60 of which are native of North America, and all the species are more or less variable. Many of the varieties are quite hardy, but all thriving best where abundance of moisture is always obtainable.

Now while all the trees thus far mentioned are of the deciduous species—by that term we mean those trees which cast their leaf in the fall and remain in a dormant condition during the winter months and with the opening spring start up into new life and growth again—there is another species, perhaps the largest, but certainly the most important—namely, the Conifera, to which the Evergreen trees belong, the Firs, Spruces, Pines, etc.

For residential gardens in this district, especially in small gardens of fifty feet lots, I consider the Douglas Firs (*Abies*), White or Black Spruce (*Picea Alba* and *P. Nigra*) by far the best to plant. They make handsome specimen trees, and for screen, shelter or windbreak they are unsurpassed, while as ornamental trees they are evergreen and flourish all the year round. In larger gardens the Pines can be used to good advantage.

Small trees of any of the aforesaid varieties can be used for the purpose of making a hedge by planting fairly close together, and will answer the purpose of keeping cattle and dogs out of your garden, although I must confess I do not consider them as good for the purpose from a beauty point of view as the Caragana. This, with its fine cut-leaf foliage and bright yellow pea shaped flowers, makes the most satisfactory hedge. It is very hardy and easily raised from seed. To make a good

hedge the first year's growth should be cut back to within three inches of the ground. This will cause the plant to throw several strong shoots from the root. Now just a word in regard to flowering trees or shrubs, for I do not consider any garden complete without at least a few of these. A border of mixed trees and flowering shrubs will give a beauty and grandeur of effect to the garden and surroundings that nothing else will produce. Amongst those which have proved the most satisfactory in this district are the Lilacs, white, purple, etc.; white and pink Siberian and Tartarian Bush Honeysuckle, Caraganas, Spirea Van Houttii, Ribes, yellow flowering currant, etc. Many others no doubt could be added to advantage, yet there is sufficient here in variety to produce a pleasing effect.

Planning.

In regard to the arrangement of the garden and the placing of the various trees and shrubs some thought and consideration should be given, as very much depends upon this to produce the desired effect. While it is true we all have our individual likes and tastes, yet in the lay-out of our grounds or garden we need artistic foresight that can see two or three years hence, when the trees and shrubs have put on considerable new growth. It is therefore very necessary to consider the nature, habits and likely growth of each variety and carefully plan the lay-out accordingly.

The Planting.

In planting trees, the holes should not be dug for an indefinite period before planting; four or five hours is the best time. Generally the ground will then be in good condition, and will break up nice and fine, and yet retain a certain amount of moisture. You cannot use too much care in protecting the roots of your trees against sun and wind at the time of planting. If you have to leave them out of the ground for a time, see that the roots are in some way covered. Examine the roots of your trees before planting them, removing any broken or injured parts with a sharp knife, and where this is found necessary it is well to thin out, and also shorten some of the longest branches to compensate for any loss sustained by the roots. If the roots of the trees have become dry, it will be well to place them in a cellar or some cool place where air is excluded, and well spray them with water; after an hour or two they will then be in better shape for planting. The hole should be dug large enough to admit the roots without bending or cramping, and deep enough to bring the tree to its natural depth. One person should hold the tree in an upright position, while another shovels in the earth. This must be of the finest and best, using the surface soil worked well between the roots with the hand to bring every root in direct contact with the soil. No manure must be used in contact with the roots. See that the ground is firmly and solidly packed over all the roots. When the hole is two-thirds filled in, let the planter exert his full weight on the soil to ensure that the filling in is solid and all the air excluded. A pail or two of water should now be given to each tree thus planted, and when this has settled the remainder of the earth can then be shovelled in. To a newly planted tree too frequent watering is almost as harmful as too little. It retards root action. Once a week

is generally often enough, but twice is abundance in the driest season, but sufficient must be given each time to reach the roots. To newly planted trees, especially evergreens, it is a great assistance to mulch the surface soil with hay, or some dry litter.

When to Plant.

Every student of vegetable physiology admits that the proper time to transplant trees is during their dormant stage. But here conditions compel us to select the best part of the dormant season; the ground is unworkable and the air dry and frosty from November to April, and no trees can be planted during this period.

Evergreens are never in a completely dormant state, while they have greater root action in the early fall than at any other time. For these reasons evergreens should never be transplanted in the fall, but always in the spring.

With deciduous trees there is one safe rule and law to follow: Never transplant before they have cast the leaf in the fall; always transplant before the buds burst in the spring.

Prune with Discretion.

In regard to the pruning we must use discretion. The varieties and purposes for which we are growing the trees must regulate in pruning operations. Every tree and shrub has a habit of growth peculiar to itself. If we prune all trees alike we destroy their identity and beauty. We can assist nature very much by the use of the pruning knife to lop off straggling branches, to thin others out when the head of the tree has become too dense, to cut out the dead and decayed wood, to shorten the branches when the tree is growing too tall, and also to trim to good shape.

Evergreens require very little pruning. The pruning knife may, however, be used to advantage on the spruce and firs, to trim the branches and improve the shape of the tree, and if the tree is growing up tall and thin the leading shoots may be removed. This will strengthen the lateral growth and thicken the tree. Other leading shoots will very soon come along to take the place of those removed. The best time to prune evergreen is the early part of May. The best time to prune most varieties of deciduous trees is the latter part of the summer, while the trees are in full leaf. There are many reasons to favor this time of pruning. You can judge better which needs removing and to what extent. The sap is not flowing as freely as in the spring, and the tree will not suffer as much. The wound will heal quickly while the weather is warm, and above all the remaining new wood will ripen much better when the surplus is removed, and be in better condition to withstand the winter.

Young trees newly planted out require no further pruning after planting the first year. The branches act as a protection for the tender bark of the stem.

There are several other things that must receive our attention in tree culture which I will briefly mention.

Young trees generally need some support against strong winds. There are many simple and effectual ways of doing this.

Note.—It is very necessary and important that this means of support be given to the tree at the time of planting. If the tree is kept steady the roots have a much better chance to take hold of soil quickly.

Tree Pests.

There are also tree pests which often prove both troublesome and unpleasant during the summer months. The aphids is the general trouble on shade and ornamental trees. This is easily removed by spraying the trees with a soap wash made by dissolving 1 lb. of whale oil soap in six gallons of hot water for summer use, and double the strength for winter application (that is while the trees are in a dormant state). When the water is cold apply with a syringe or spray motor.

One of the most important points in tree culture in this district is the watering. This must not be overlooked. Trees need a thorough soaking at least once a week during the growing season, but withhold during the months of September and October; water only once or twice each month. Before the winter sets in the ground should be well flooded; by this means the dry frosty air will not reach the roots of the trees. It will also hold them firmly in the ground and supply the roots of the tree with moisture in the early spring days. You can assist root action by giving one or two good waterings in the spring before the rainy season comes. It will well repay you for the trouble.



THE NATIVE FLOWERS OF SOUTHERN ALBERTA

By A. M. Terrill

In the last paper which was given before the Horticultural Society by Miss Moodie on "The Native Flowers of Southern Alberta," it was shown that a very large portion of the province is one beautiful and immense flower garden and the natural home of a very large number of flowering plants.

The subject which this paper treats on is entirely the opposite, as nearly all house plants are taken from their natural outdoor conditions and placed in a semi-natural location for the beautifying of our homes and the recreation and pleasure of ourselves during those portions of the year when it is impossible to have flowers on the prairie and in the garden.

I would therefore very specially draw the attention of all lovers of house plants and those who wish to be successful in making their homes beautiful by cultivating them, to let their first aim be to find out the natural conditions under which the different plants have grown in their native home and approach as near as they can to this for their culture, in the matter of soil, water, temperature and light.

Soil.

A few years ago great stress was laid on proper soil for plants grown in pots, but now we begin to understand these things better, and while we realize different plants do better in some soil than others, yet we know that plants are adaptable and can adjust themselves to varying conditions very successfully and almost any good porous garden soil will suit them if the other conditions of culture are what they should be.

The amateur florist will find this a good formula for the preparation of a soil in which most plants will grow well:—Garden loam, one part leaf mould or turfy matter, one part; sand, coarse and sharp, one part

The portion of sand named may seem large, but experience has proved that a liberal amount of sand brings about surprisingly good results. It lightens the soil, makes and keeps it porous, allows air to get to the roots of the plants, and insures purity and sweetness, which prevent root trouble. Soils lacking in sand soon sour, because of undue retention of water, and defective root action is sure to result. I have spoken of leaf mould, or turfy matter as its substitute. Leaf soil we are often unable to obtain, but the other, which is nearly as good, being rich in vegetable matter, is procurable almost anywhere. Go into any old pasture, or along the roadside or on the prairie and turn over a sod. Just below the grass growing in it you will find a layer of soil full of fine roots. Scrape this off, close to the grass-top, and in it you have a valuable element of plant-growth.

Be very careful about applying any artificial fertilizer to the soil, there is great danger in their use by amateurs. If the soil is not rich enough a small quantity of bone meal or well-rotted stable manure is very much safer and better to use if well mixed with the soil, and will generally bring about a strong quick growth.

Large-rooted plants prefer a somewhat heavy compost soil. Fine rooted ones prefer a lighter one, but most plants will be entirely satisfied with the soil prepared according to the formula given.

Potting.

When new pots are used, always soak them before putting plants in them. Being very porous, when dry they extract moisture from the soil so rapidly that very often the roots of plants in them are rubbed and injured severely, sometimes beyond recovery.

Provide every pot over five inches across with good drainage. An inch of broken pottery, crockery, brick or gravel will be sufficient for five and six inch pots. For seven and eight inch pots use an inch and a half of it, and for larger sizes from two to three inches.

It is a good plan to put a layer of Sphagnum moss, or thin sod, over the drainage material before putting in soil. This will prevent the water washing the soil down and filling the cracks and crevices below through which surplus water should find free exit. Do not overlook the matter of drainage if you want good plants.

In potting a plant see that the soil is firm about its roots. Your fingers are the best tools, as you are likely to injure the delicate roots. Make the soil fairly compact, then apply water freely. Disturb the roots as little as possible. Simply jar the plant out of its old pot, set the ball of earth in a pot a size or two larger, and fill in about it with soil.

Entirely repotting a large plant that has attained its full growth is seldom necessary. Remove the top soil without interfering with the roots, put fresh rich soil in its place and the plant should thrive and be healthy. Young plants require repotting whenever they have grown to the limit of the old pot. If not shifted at such times they receive a check from which they are a long time in recovering.

You can easily satisfy yourself as to the condition of the roots of any plant by spreading one hand across the soil—the stalk of the plant between the fingers—then turning the pot upside down, tapping it against something hard, and thus loosening the soil in it so that it will slip out readily. If you water the plant well before doing this the earth will seldom crumble away from the roots. If the soil is full of roots and they have begun to make a net work about the outside of it, consider it as an indication that a larger pot is needed. But when your plants are two and three years old allow them to remain in the same old pots the year round, simply removing the top-soil occasionally as already advised, or furnishing food by the use of liquid or other fertilizers.

Watering.

This is of the greatest importance in the success with plants, and where a large number of amateurs make mistakes. Some persons water their plants regularly, whether they need it or not. The result is the plants become diseased and soon die, and their owners wonder why. Others water their plants very often, but give a little at a time. Their plants also fail, and they do not understand the reason. If they would examine the soil they would readily see. By their "little and often" system of watering the surface of the soil is kept moist, thus cheating them into the belief that the soil below must be moist also, while the fact is it is generally too dry. Both these systems are dangerous. There is only one rule that applies to this phase of floriculture, and that is this: when the soil in a pot looks dry on its surface, apply water, and enough of it to saturate all the soil in the pot. Then wait until the soil looks dry again before applying more. This rule is for general application. Observation will soon enable one to understand when and how to modify it.

Be very particular where plants are standing in jardinières to notice that there is no water settles in the bottom around the roots of the plant, as very few plants will stand this for more than a few days without the roots starting to decay, the soil becoming sour and the plant will become sickly and die in a few weeks.

The Use of Fertilizers.

Do not make the mistake of applying a fertilizer to a dormant plant thinking thereby to start it into growth. You are sure to injure it by this treatment, as it is not in a condition to make use of rich food when not growing. Wait until it begins to grow, then use your fertilizer, but let it be weak at first, increasing in strength as well as the frequency of its application as the development of the plant increases.

When you come across a fertilizer that results in sturdy, healthy development, hold fast to it. Don't experiment. Liquid manure, prepared by soaking old cow manure in water until its strength is extracted, is good, but it is open to the same objection urged against the use of this

manure in potting soil—it is likely to breed worms. If used, let it be the color of weak tea. Bone meal is always effective, cheap and easy to procure. If you use this, a teaspoonful to a nine-inch pot once in three months will generally be sufficient. For larger or smaller pots use a similar proportion. Scatter it over the surface of the soil, and then dig it in about the roots of the plants. When plants are coming into flower fertilizers can be given with more frequency than at other times, but never strong.

Insects on Plants.

Every person who grows plants has more or less trouble with insects. If worms are found at the roots of your plants make a solution by dissolving a piece of perfectly fresh lime as large as a coffee cup in a pail of water. Air-slaked lime is worthless for this purpose. As soon as the lime is dissolved and its sediment settles, pour off the clear water and apply enough to each plant to saturate all the soil in the pot. Never use it in small quantities if you wish it to be effective. Repeat as often as necessary.

Of those insects which attack the foliage there is a very long list, the worst being aphid, red spider, mealy-bug, scale, thrip, etc. Fortunately not all these enemies of plant life are found in one collection at the same time, but all are likely to infest our plants at one time or another, and nothing but eternal vigilance will enable us to come off victorious. Keep watch of your plants, for insects breed so rapidly that where none are found to-day, next week there may be hundreds. As soon as you discover one begin the fight.



MISCELLANEOUS SUGGESTIONS

Give your plants all the fresh air possible. Even in winter this can be done every pleasant day. Open a door or window at some distance from them. The fresh air will then lose its chill before it comes in contact with the plants.

Stir the soil on the top of pots frequently to admit air to the roots and assist evaporation.

Keep all dead and dying leaves and faded flowers picked off. They breed disease.

Turn your plants about at least once a week, that all sides of them may have a chance at the light and sunshine; otherwise they will become one-sided and unsymmetrical.

Train your plants while they are growing, for you cannot make fine specimens of them by taking them in hand later. If you want them to be bushy and compact, pinch off the tips of the main branches. Continue this treatment until you have secured as many branches as you think necessary. If you want your plant to grow in tree form, allow no branches to grow on the main stalk until it is as tall as you wish it to

be. Then nip off the top of it. Branches will soon start below. Allow none to grow except four or five near the top. When four or five inches long, nip off their ends and encourage these to throw off branches. In this way a head will be formed.

Cuttings should be taken from half-ripened wood. They root most readily in clear sand, which should always be kept moist and warm all through.

Plants grown for foliage require larger pots than flowering plants, as their beauty depends upon the development of leaves rather than flowers, and these should be encouraged to the utmost by giving rich soil and plenty of root room. Most flowering plants bloom best when slightly pot-bound.

Frozen plants may frequently be saved by showering them with water in a dark room, both room and water to be about frost point in temperature. Do this as soon as you discover their condition. Leave them in the dark for a day or two. Then look them over, and if portions of them have succumbed to the ordeal through which they have passed, cut away the injured branches below the portions injured by freezing. Make this a rule: When amputation is necessary, always cut back to healthy wood.

If roots become diseased, repot the plant, cutting away such as are unhealthy. If this is done as soon as the condition of the plant is discovered recovery generally takes place. When roots have to be removed, always cut back the top proportionately. If it is not convenient to repot the plant, allow it to become quite dry and remain on the dry side until signs of renewed activity are seen.

If *jardinieres* are used, put something in them for the pot to rest on to keep the pots from standing in water.

Never use cold water on your plants. It is always better to have the chill taken off.

Below I give lists of plants best adapted to particular exposures. These lists do not include all desirable plants for amateur use, but they include those that most readily adapt themselves to the conditions which prevail in the average living room.

Plants for Sunny South Windows.

Abutilon, Carnation, Chrysanthemum, Cineraria, Coleus, Geranium, Heliotrope, Hibiscus, Lantana, Marguerite, Pelargonium, Petunia, Rose, Salvia, Impatiens, Sultana.

Plants for Eastern Windows:

Amaryllis, Begonia, Calla, Chinese Primrose, Primula Obconica, Feverfew, Fuchsia, Gloxinia, Cyclamen, and all bulbs suitable for forcing in winter.

Best Palms for the Amateur.

Kentia Belmoreana, *Kentia Fosteriana*, *Latania Borbonica*

Best Ferns for the Amateur.

Best ferns are *Nephrolepis* varieties—*Nephrolepis Bostoniensis* (sword fern), *Nephrolepis Scottii*, *Nephrolepis Barrowsii*, *Nephrolepis Whitminii*. Give all ferns a light, porous soil, plenty of water, no sunshine and an elevated position, which will allow their long fronds to droop without interference from other plants.

Miscellaneous Decorative Plants.

Asparagus Plumosa Nanus, Asparagus, Sprengeri, fine; Asparagus Tenuissimus, Araucaria, Aspid.stra, Begonias with variegated leaves. English Ivy, Vine; Ficus, Rubber Plant.

While these lists are not to be considered complete, they include so many most excellent kinds that plenty of variety is afforded. Begonias, Geraniums, Fuchsias, and most of the leading sorts contain scores of varieties of wonderful merit. The chief difficulty one will find in making a collection is what not to get. But let me advise you to have only as many plants as your windows will easily accommodate.

Palms, Callas, Chinese Primroses, Primula Obconica, English Ivy. Ferns, and Aspidistra can be grown in north windows. So can many of the Begonias. If west windows are sheltered from the hot sun of afternoon, a good many plants can be grown in them, but they are not so well adapted to flowering plants as an east or south window.

Plants are adaptable, and very often we succeed in growing them well under most unfavorable conditions. Therefore, don't be discouraged in trying to grow them, even if the place you have for them is not just what you would like to have it.

In conclusion let me urge upon the amateur florist the necessity of studying and perfectly understanding the plants being grown. Watch the effect of whatever treatment is given, and the understanding will come. Bring to their cultivation patient, persevering and practical application of these suggestions, and success is reasonably sure. Avoid hazardous methods and know what you are about. Don't attempt to grow plants by guess work and expect success.



LAWNS

By *W. B. McNaughton*

A well-kept lawn is a source of great pleasure to its owner, and he always considers that the money he expends on it is money well spent, as it gives his home an appearance of beauty and of rest.

"A great many people do not pay enough attention, when they select a site upon which to build their home, to acquiring enough ground so that their home may be surrounded by lawns and gardens, and when completed it lacks that quiet, restful and yet important look that it would have if sitting quietly among beautiful trees, shrubs, lawns and flower beds.

Lawns are made either by using sod or by the sowing of seed, but as I believe that sod is not to be procured in this part of the country, we will have to deal more with lawns from seed, but whether from sod or from seed, the preparation of the ground is practically the same.

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Preparation.

In preparing to make your lawn the first thing is to get your land properly graded. Go over your ground and grub out all the old roots. Where we have so many new homes, that have sprung up as you might say almost in a day here in Calgary, there have been ditches opened up for sewers, etc.; see that these are filled in good and solid, either by ramming or by water (I myself prefer water, then you are almost sure to have the ditches filled in solid, which can be done by attaching the hose to a standpipe and letting the water flow in the ditches).

After you have graded your land procure some well-rotted stable manure (be sure it is well-rotted) and give a liberal coating of same. The ground should then be dug or ploughed to a depth of at least eight or ten inches, the deeper the better, as it gives the roots a better chance to go down and your lawn will not dry out as quickly in the hot weather. I very much prefer to have the ground dug, as you can then have the surface kept even and the soil can be broken up much finer, and you will be well repaid for the extra time spent on it.

After digging go over the ground with your rake, raking the ground as even as you possibly can. If your ground is of a heavy nature it will be as well to get a few loads of good friable loam and give a coating of about two inches.

Your ground will now be ready for sowing. Some gardeners prefer to go over their ground with a roller before sowing, rolling the surface evenly, when it will show any inequalities which would otherwise not have been noticed. You then can mend these imperfections and roll the places where you have disturbed the soil.

Seeding and Sowing.

The best variety of seed for a lawn in this country is, I believe, a mixture of blue grass, rye grass and white clover. There are a number of mixtures offered by the seedsmen, all of which have proved good in some situation or other, but my experience has been that the blue grass and rye grass are hard to beat, and if you prefer, some white clover mixed through it. I usually use about one to two pounds of rye grass to ten pounds of blue grass, but it depends chiefly upon the time of the year. If in summer, I use a large quantity of rye grass to the ten pounds of blue grass and about one pound of clover to every ten pounds of grass seed. I prefer to sow the clover separate, as the seed is heavier and has a tendency to run to the bottom of the bag or box in mixtures, consequently you find that the clover is very thick where you finished sowing.

Always get the best and freshest seed obtainable. Cheap seed is never satisfactory, and you often lose a lot of valuable time by buying cheap seed.

Sometimes a sprinkling of oats is sown with the grass seed, the growth of which shades the little blades of grass as they appear, but where you use the rye grass with the blue, this is hardly necessary, as the rye grass serves the same purpose and does not take the moisture as fast as the oats. Another thing, the rye grass helps to make the lawn the first year, but as the blue grass gets strong, it kills out the rye.

The quantity of seed usually sown is about 75 to 100 lbs. to the acre or about 1 lb. to every 30 square feet.

Sow as early in the spring as possible (spring sowing is much preferred, for by so sowing we get the benefit of the early rains) and your lawn will be well-established before the hot, dry summer days set in. Fall sowing, to my mind, is not desirable for this part of the country where we get so much dry weather and drying winds in the fall, and again, the mild winters with practically no snow and snow is nature's own protector of vegetation in cold climates.

In order to get a nice even lawn the seed must be sown evenly, otherwise it will grow bunchy; never try to sow with a strong wind blowing, but wait until it calms down or a gentle breeze is blowing, when you will find your seed will settle more evenly than if it is quite calm.

After sowing go over the surface with a rake, passing the rake gently backwards and forward so as to work the seed into the soil. If this is done carefully, the seed will come up evenly and not in waves showing every pull of the rake toward you. After this light raking, give a good rolling with a light roller.

Watering.

After sowing and the germ is once started it must not on any account be allowed to become dry, otherwise the germ will be destroyed; therefore it must be kept moist. How often the seedman, florist, or whoever sold the seed, is condemned for selling poor seed when they were not to blame at all. What a lot of abuse is showered on the innocent seedmen, when the fault is really with the purchaser. So many people put in seeds and expect them to grow without any more exertion on their part. Therefore, until your seed is well up, attend to it that it does not dry out; give it a good watering in the morning, and, later in the day, attend to the dry spots, and above all, try to avoid watering at night.

When you have to use the cold, icy waters of these mountain streams and the cool nights combined, make the soil so cold that there is little or no growth in it, and it chills the little plant almost as much as it would you.

When you are starting a lawn from seed in summer, it is as well, after sowing, to cover it with a light covering of straw or brush to shade it, so that it will not dry out so quickly and keep the moisture down, removing same if possible on some cloudy day after the seed is up.

While I am dealing with watering in this paper, I may as well give a few points on the watering of old established lawns. Some people have to have the sprinkler going from morning until night, and they generally have the brownest lawns. A good watering once or twice a week is all that should be necessary. Go over the lawn and water the dry spots first and then give a general watering, and give the sun a chance to warm the moistened soil so that root action can take place and then the grass can grow. Continual watering washes the soil from the roots and the nourishment from what soil is left around the roots, consequently the grass is brown, and all the water you may put on will not bring its color back. A good watering in the fall just before it freezes up, I believe, would be beneficial to hold the moisture in the soil, as I am inclined to

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think that the dry condition of the soil in winter is responsible for so many brown patches in the spring.

After the young grass is up allow it to get a good start before mowing and on no account mow close for the first season.

Weeding.

This is something that is not paid enough attention to in lawns, and if you do not keep the newly laid lawn clean of weeds the first year, you will find that you will have nothing but weeds the second.

True, the lawn mower helps to keep them down, but that is not sufficient, as dandelion and a number of other weeds in lawns must be cut out by the roots, using either a spud or knife, cutting them off well below the surface. You will find it just as pleasant a job in the evening as standing pouring cold water on the grass.

Care of the Old Lawn.

As soon as the frost is out of the ground in the spring and the grass is starting to grow over the lawn, give it a good rolling, using a heavy roller this time, which will make the soil firm and even up the surface, as a lawn is always more or less uneven in the spring. In this country it is often very dry in the spring, so it is as well to do it before the ground gets too dry, or after the first shower, or give it a good watering first.

Fertilizers.

Fertilizers for lawns is something that I have watched the results of in different countries, and a great deal depends on the fertilizer you use, when you use it, and how you use it, and as to how your lawns will grow. There is not nearly enough attention paid to fertilizing the lawns.

There are a number of good commercial fertilizers put up by the different seed houses for dressing lawns, all of which, generally speaking, are alright if you follow the instructions, but the one I have found most successful is bone meal. Using about one pound of bone meal to one bushel of soil, giving the lawn a dressing of one inch, and taking your rake and working it in well between the blades of grass. This will also cover up the roots that have been laid bare by constant watering. A good dressing of bone meal in the spring should be sufficient for the season. I have seen where lawns have to be watered continually, a summer dressing of rotted manure put on, given a good watering and let stand for a couple of days, then broken up fine and the surplus raked off. By this process, the fine manure that has been worked into the grass serves as a mulch and protects the roots that have worked to the surface. A lawn treated in this way in the summer will only require about one-half the water.

To renovate the old lawn use about one-half the quantity of seed that you do for the new lawn. Go over the surface with a rake and clean off all the old dry grass and rubbish, then use about one inch of fine, pulverized loam for a dressing, work it well in between the blades and make it even, then sow your seed, raking it in well, and pay the same attention to it with regard to watering as a new lawn.

Another thing. See that the edges of the flower beds, borders, etc., are cut evenly and straight with a good sharp edging knife, and not cut in and out any old way with a spade or shovel, as I have seen some done

here. When mowing, run your machine backward and forward in straight lines and see how nice it will look when you have finished. Do not put off the clipping of the edges and around the trees, etc., until to-morrow, for to-morrow never comes as a rule for that task, and the whole effect is spoiled by tufts of grass around the trees. With care in watering and fertilizing there is no reason why we cannot have as good lawns here as in any other part of this continent.

There is one thing that I do not think should be encouraged by gardeners in laying out gardens in this country, and that is "terracing." While I must admit that they look very pretty, if well kept, But they are generally a source of trouble, for if they are once allowed to become dry, it is a very hard matter to get the water into them again, and they dry out so rapidly when we get the dry, hot winds here in the summer time.



FORESTRY IN CANADA

By A. Mitchell

Before taking up the slides I should like to say a few words on forestry in general, what it is and how Canada and the rest of the world stand in relation to it, so that when you come across a paragraph in the papers relating in any way to forestry you will read it and not pass it over as of no importance.

It has been said that the two greatest problems before Canada are Forestry and Transportation. With the rapid expansion of our railway systems we can see how the former is being solved, but what Canada is doing with regard to the forestry problem is not quite so apparent to the general public.

The Forestry Branch of the Department of the Interior may be said to be in three divisions—timber and irrigation, the management of the reserves and exploration, the tree planting division. These are all well-defined divisions under separate heads and are all controlled by the Superintendent of Forestry at Ottawa. One of the most important of the matters immediately of interest to the Forestry Branch, as you might well understand, is to prevent fires and so preserve the woods we already have. This is a matter that gets a lot of attention every year, and a great many incipient fires are put out, which if left to themselves might do enormous damage.

The work of the reserve division consists largely, in the meantime, of finding out exactly what Canada has in the way of forest, for after all we really know very little about it. All the stories of the immense reserves of forest wealth possessed by Canada are only vague estimates. This division aims at getting beyond this, and every year parties of

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foresters are sent through the various reserves and a forest survey is thus gradually being made all over the timber areas of the country. This survey is done thoroughly and systematically, so that at the end of the season the foresters can sit down in the office and from their data prepare a map of the country they have been over and show, to a few hundred feet, the quantity of timber standing there, how much is at present fit to cut and how much will be fit to cut in twenty or thirty years and what its probable value will be. The lay of the land is also shown, so that a prospective buyer can estimate to a fair degree of certainty the probable cost of road-making and logging. The condition of the forest is also carefully noted, especially with regard to its chances for reproducing itself, and from the data collected in summer a plan of management can be worked out to extend over a period of many years. Such, very briefly, is the work of the reserve division under Mr. Knechtel, and a good deal of this kind of work has already been done, but there still remains an immense amount to do.

The work of the planting division I will leave until we come to the slides.

Now the question will doubtless arise in some minds, "What is the use of all this attention to forestry? Is it not the case that Canada has timber enough to last her for all time without all this elaborate work?" Well, the answer to that is that Canada has **not** enough timber to last her for all time; that indeed her supply is not nearly as large as was supposed, and our timber supplies are being curtailed so much that the attention of the world is now being turned towards the subject of forestry as it never was before. A few years ago eight hundred million acres was the estimate of Canada's timber supply. In 1902 Dr. Fernow gave it as about four hundred million, and after closer investigation about two years ago gave it as being about two hundred and thirty-two million, and another authority, Dr. Judson Clarke, not long ago gave it as about one hundred million. There is a great difference here between one hundred and eight hundred million acres, but it only shows how really little was known about the subject till within a few years ago. It shows also that if our forest supply is so small as these later estimates would make it appear it is indeed high time Canada was setting her house in order. Not only should this be done for the sake of our own home demands, but also for the sake of the business it will bring to Canada in years to come.

Economists have long been preaching a timber famine, and at last the nations of the earth are beginning to see there is some reason for their fears.

Germany possesses great forests and has the best managed forest system in the world, and has had them for about 200 years, and yet she is not providing enough for her own needs but is importing all the time, so that her imports have increased 400 per cent. in the last forty years. The forests of France are managed second only to those of Germany, and yet, in seventy years her timber imports increased 700 per cent., while her population has increased only 20 per cent. in the same time. Great Britain imports most of the timber she uses and in forty years this has increased 200 per cent., while her population has increased 43 per cent., and this notwithstanding the fact that Britain builds her houses almost entirely of

stone, brick, steel or concrete and that the use of these materials is increasing very rapidly as substitutes for timber. It has been estimated by the Forestry Department of the United States that at the present rate of consumption the timber of that country will not last over twenty-five years, and the fact that the price of lumber has gone up 8 per cent. every year since 1899 is very significant and points strongly to the fact that the trade is already feeling the effects of a shortening of the supplies.

Sweden and Russia alone of the European countries have a surplus for export, but in Sweden this can't last much longer, and in Russia a great deal of the timber is on rivers that run north to the Arctic Ocean, and as water carriage is almost a necessity for exporting timber remuneratively it will be seen at once that this supply is practically cut off from the world's markets by the ice-bound character of the northern ocean. Canada still has a surplus of merchantable timber, and she has, besides great areas of forest to develop supplies for the future, and she has the necessary river capacity, and if her woods are handled properly and the work is not delayed too late her forests may become an enormous source of national wealth, and it is not too much to say that in course of time she may control the lumber supply of the world, just as now she practically does that of the paper pulp trade.

Another very interesting point in connection with Canada's position in regard to the timber trade is her northern latitude.

In the temperate and colder zones of the earth are found the cone bearing trees or evergreens, the pines, the spruces, the Douglas fir, the balsam and the cedars, and it is these which are in demand in all civilized countries. They are what is known as the structural timbers; that is, their chief use is in the constructing, in scaffolding as well as permanent work, of buildings, and they are of such a nature that, though they are kept for years dry and under cover, yet at any time they can be brought out and a nail driven into them just as easily as when they were freshly cut. With hardwoods, oak, walnut, beech, etc., it is different, for the longer they are kept, the harder they get and the more difficult it is to pierce them with a nail. They are thus much more expensive to work besides being undesirable in other ways.

Canada lies entirely in the north temperate and sub-arctic zones, and thus it is her peculiar fortune to possess a maximum of this coniferous structural timber which is so desirable and which we find the nations of the world so anxious to get, and it is ours now, at this stage of our career, to say whether Canada shall reap the full benefit of her natural advantages or let such an opportunity slip through her fingers and be forever lost. A good beginning has already been made, but much—very much—yet remains to be done.

So much, then, on the world's situation with regard to the timber supply and our share in it, and just a word more on forestry, what it is, and what it means to a country.

First, understand at the very outset that forestry is not the reserving of trees from being cut. That is not it. It is rather the cutting of timber so that there may, in the course of time be found a still further and even better supply of timber to cut on the same area. That is forestry and that is what is meant when we talk of forest management. To so handle

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the woods that their produce may go on ever increasing in quantity and value for all time. And it is not by any means a mere idle speculative theory for the nations of Europe and India have found this quite possible, and not only this, but it has found that, while increased quantities may be taken at every cutting from a given area, the quality of what is left, or "the wood capital," as it is called, is likewise increased enormously in value. This is the kind of thing we hope to see carried on in Canada, but there is another side of the question likewise of great interest to us, and more especially to us on the western prairies here, and that is the question of the influence of the forest on the water supply.

Forests have been called "Nature's balance wheel," and it is a good phrase, for probably the greatest use they are in nature, far beyond their value as sources of timber, is to regulate the water supply. From them come the streams that feed the rivers that carry our commerce and provide us with our supplies of water, and the beneficial action of the forests consists in catching the snows of winter and retaining them under their shelter so that the sun and warm winds do not strike them too violently, and the melting which takes place is done gradually. If this were not done the spring thaws would be very rapid and the released water would rush into the rivers, cause floods and do very great damage, and later on the rivers would be very much lower and so much less useful. Likewise also with the summer rains. The forest soil is loose and porous, and the rain as it falls soaks into it instead of rushing at once into the river, and is gradually given off in springs, which are thus enabled to maintain a regular and constant flow all the year round. Destroy the forests and you ruin the country, and France, Northern Africa, Syria, China and even some parts of North America have all learned to their cost the evils arising from excessive forest destruction. In Alberta with our great irrigation systems we can thus see how vital it is to have the forests preserved at the head waters of the streams, and while more apparently directly bearing on irrigation this matter bears none the less directly on the water supplies on the farms for our wells are fed from these same rivers and streams and if we suffer the source of their supply to be interfered with there must surely follow a lowering of the level of the ground water all over the country. Thus we see how closely all people, no matter who they may be, are interested in forestry and what an important bearing it has on the welfare of a country.

These, then, are some of the points where in forestry affects Canada, and perhaps enough has been said to enable every one to see how vitally he is interested in it. It is a national question and the only way for a nation to handle it is to have the people understand something about it, hence the hope I expressed before, that when you see a paragraph in the papers relating to forestry you will read it and not pass it over as of no importance, because it concerns you very much indeed.

Now we will return to the Planting Division of the Forestry Branch. This division now has its headquarters at Indian Head, and Mr. N. M. Ross is its chief. Its work consists in growing and supplying trees to farmers throughout the three prairie provinces who apply for them. This it has been doing since 1901, and in all something over 4500 acres have been planted, and with this year's planting there will have been sent out

something like 13 million trees. Applications for assistance in this way are received up till the 1st of March of any year, and all the people who apply are expected to have their land prepared to plant during the summer following, so that the trees will get a thorough good chance after they are planted. Without this preparation it is out of the question expecting trees to grow in this country, and inspectors are sent round to visit as far as possible every man and see if his land is in really good order. There are seven men doing this sort of work, and it has been found in most years only about 50 per cent. of those who applied have prepared land sufficiently well to warrant them being recommended for trees. With our knowledge of conditions we know that if the trees were sent out indiscriminately to every one who applied for them and half were planted on unprepared land, that half would be dead inside of two years and thus we look upon the inspection as very important, and really a great saving in tree life to the country. The work is increasing very rapidly, and this spring it is expected that close on 2,300,000 will be shipped out to the farmers for planting purposes. These trees are not supplied to citizens of towns and cities. They are intended for settlers on the land and the whole thing is simply an attempt to solve in a practical manner what every one must admit very urgently needs solution, viz.: the clothing of the prairie with its proper complement of trees.

The trees we find doing best are Manitoba maple, ash, elm, cotton wood and sharp-leaved willow. The ash is the hardiest, but is rather a slow grower for two or three years after it is planted. The most rapid growers are the willow and the cottonwood. Unfortunately the cottonwood in the higher districts of Alberta is not so hardy as it might be and it is possible this tree may be replaced altogether in these districts by the sharp-leaved willow and Russian poplar. Russian poplar, at least some varieties, are quite frost hardy, but they have the objectionable quality of throwing up suckers from their roots when planted near cultivated land. Some varieties are also very subject to sunscald and canker of the stem and are very objectionable in this way, besides being short lived.

We believe in close planting and the trees are planted not wider than 4 feet apart each way. When planted as close as this, the branches soon meet and shade the ground so that the soil is not dried directly by the sun and the wind, and the moisture of the plantation is conserved for the use of the trees.

This close planting has another use, for in course of time the trees grow tall enough to be useful on the farm as firewood, poles or posts, and when planted thus close the stems will be straight and branchless and of good quality. Many people object to such close planting, but our reasons for it are sound, as anyone may verify for himself by examining a natural forest, where the straightest, clearest and best timber is always found where the trees grow closest together, while if you want a branchy and coarse timbered tree you must go where the forest is thin and the trees far apart. We are finding, too, that many people have a great hankering after pruning, and when we insist on their leaving the plantation entirely alone, it is difficult sometimes to get them to see things in just the way we do. The truth is that there is a place for pruning, but it is not in a

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plantation. Nature in crowded wood is the best pruner, and many a man to-day is regretting his action, when he was persuaded to prune his trees. The pruning opens up the woods again and allows the drying winds and the sun to get in, and destroys that condition we have just seen to be so desirable and so beneficial. The place for pruning is on our street and ornamental trees, but though of great importance and interest it is a subject we cannot take up at this time.

With these remarks, then, as an introduction, we will now take up the slides and try and give you some idea in that way of the work that is being done by the Planting Division and of what it is possible to accomplish in a very few years by judicious planting.



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