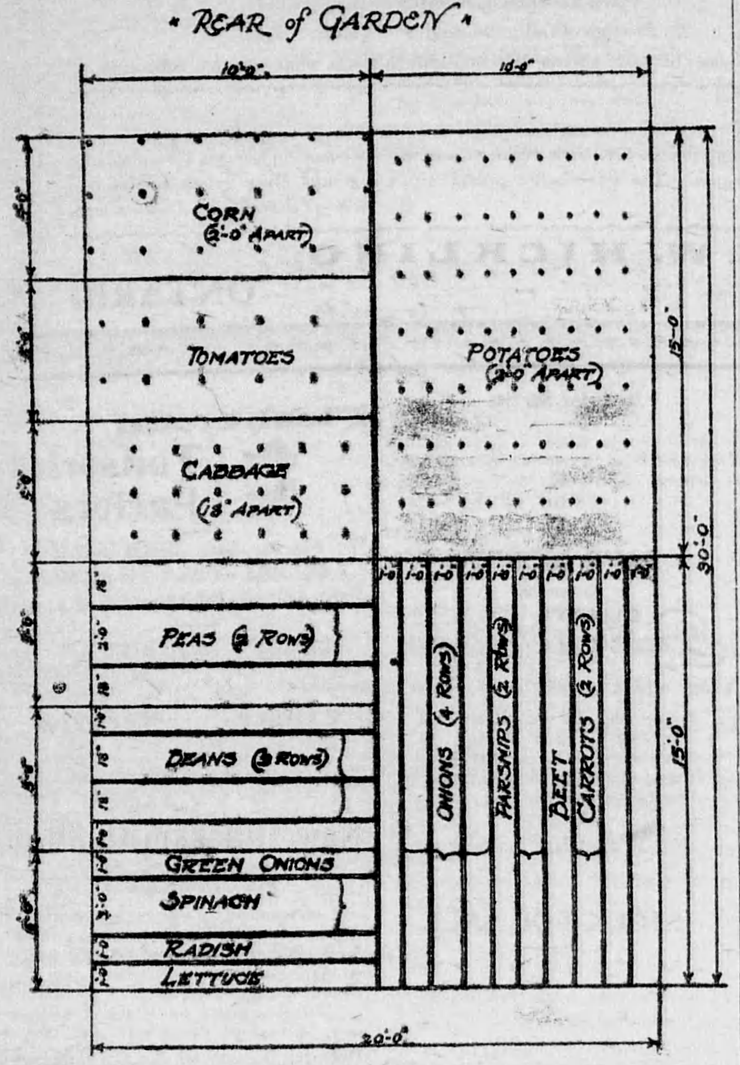
Conducted by Professor Henry G. Bell

The object of this department is to place at the service of our farm readers the advice of an acknowledged authority on all subjects pertaining to soils and crops.

Address all questions to Professor Henry G. Bell, in care of The Wilson Publishing Company, Limited, Toronto, and answers will appear in this column in the order in which they are received. As space is limited it is advisable where immediate reply is necessary that a stamped and addressed envelope be enclosed with the question, when the answer will be mailed direct.

Important Points in Home Gardening.

This year the home garden is of supreme importance. There are certain points which if taken care of will greatly assist in making the garden most productive. First, there should be prepared a careful plan of the garden, so that all available space will be used to best account. Necessarily it is impossible to suggest a plan for all gardens on account of variation in shape. However, the plan put out by the Ontario Department of Agriculture is suggested.



In comparative small areas it is unwise to attempt growing potatoes or corn, since these crops requires a considerable area to produce a quantity of food and are best handled on larger areas where the necessary care can be given with a minumum expenditure of labor.

Many home gardeners would do well to pay more attention to arrange their crops in what is called a companion cropping system. This consists of planting alternate rows of vegetables with differing habits of growth and rates of maturity. For instance, lettuce or radishes may be grown with early cabbage—either in the same row with the cabbage or between the rows. Green onions or spinach may be handled likewise. Radishes may be sown in the same rows with onions, parsnips, beets or carrots. Successive plantings of lettuce and radishes may also be made between beets; turnips and bunch onions may be grown in rows between peas. Sweet corn may be planted between rows of early peas or beans. As the early crops such as lettuce, radishes, etc., mature, they can be harvested and the ground left for the later maturing crop. The pulling of radishes, early carrots, etc., leads to a cultivation of the soil which is good for the following crop.

Another important item in planning the garden crop is to arrange for a succession of crops. For instance, if the early radishes and lettuce have been planted in separate beds as soon as the crop is harvested the ground should be immediately planted to cabbage, tomatoes, kohl rabi, garden turnips, etc. Lettuce may be followed by bunch onions and the onions followed by late beets. Late sowings of beans and turnips can be sown after sweet corn is harvested. Such careful management of crops will produce a maximum amount of food on the land.

A circumstance which frequently limits garden yields is the supply of plantfood at the disposal of the garden crop. Plantfood is made up of three important constituents. Nitrogen, which causes the leaf and stalks of the vegetables to grow, phosphoric acid which causes the vegetables to mature, and potash which gives them strength to resist plant disease and assists in the formation of filling of the roots and fruit.

These three plantfoods are found in the soil and are supplied in manure and fertilizers. Sandy soils are usually short of all three important plantfoods. Clay soils have a medium supply of them, while muck soils have a relatively large amount of nitrogen, a small amount of phosphoric acid, and a very small supply of potash.

All crops take up their food through their tiny rootlets. This is possible only when the plantfood will dissolve in water. Hence, the supply of water in the soil is a point of vital importance. The average home gardener has the advantage of being able to add water to his garden when the crop needs it.

For garden crops the seed bed should be dug or plowed a medium depth and the soil worked until it is fine and mellow. The soil should contain a good supply of humus or decaying matter. Humus performs six important functions:

1. Humus catches and holds water like a sponge.
2. Humus retains plantfood dissolved in soil water.
3. Humus binds together sandy soil.
4. Humus opens up heavy clay soil.
5. Humus forms the home of soil bacteria.
6. Humus forms the food of soil bacteria.

If your soil is clay, and it is dead and heavy, obtain strawy manure or leaf mould and work it into the soil. If the garden is sandy and tends to dry out, the addition of strawy manure, leaf mould or decaying plant matter will be of great benefit.

On heavy clay gardens, or on sandy soils where clover refuses to grow, it is well to add ten to fifteen pounds of lime (either ground limestone or air-slaked burnt lime,) to 200 square feet area. Spread this on top of the soil when the garden is dug or plowed and work it in by harrowing or raking. This lime corrects the sour condition of the soil. Remember lime is not a plantfood; lime is a soil corrector.

The Food of the Plant

Manure and fertilizers are the great garden plantfoods. Both carry nourishment for the growing crops. Fertilizers carry plantfood in a more concentrated form than does manure. Manure carries a considerable amount of humus or decaying plant matter.

Fertilizers do not supply a considerable amount of humus, but they do carry plantfood in an available form. It is possible to maintain the humus of the garden by carefully gathering piles of leaves that ordinarily blow away in the autumn, and the clippings of lawns, which are usually destroyed. If this humus-making material has been stored in a pile throughout the winter, spread it on the garden just before digging or plowing and work it into the soil.

Largest yields of best quality are obtained by using both manure and fertilizers.

The amount of fertilizers to add to various garden areas is recommended as follows:

Analysis of Fertilizers

The analysis of the fertilizer refers to the amount of plantfood constituents that are found in the fertilizers. These constituents are ammonia, (nitrogen) the stalk grower; phosphoric acid, the plant ripener; and potash, the plant strengthener and starch former. For average gardens it is well to use fertilizers carrying 3 to 6 per cent. ammonia, 8 to 12 per cent. phosphoric acid and 1 to 4 per cent. potash.

How to Apply Fertilizers

After the seed bed is well prepared, scatter one half the amount of fertilizer over the ground before planting. Rake it well into the soil. When ready to plant, make your furrows and scatter the remainder of the fertilizer lightly in the furrow. Rake a light covering of fine soil over the fertilizer before dropping seeds, or setting bulbs, or plants.

Side or Top-Dressing with Fertilizers

Good results have been obtained by saving a bag of fertilizer to be scattered between the rows while the crop is growing. Before cultivating your beets, carrots or other garden crops, scatter a few handfuls of fertilizer between the rows, and work it into the soil by hoeing or raking between the rows. This additional plantfood gives added vigor to the growing crop. Rapidity of growth is essential to tender, delicious vegetables.

In applying fertilizers as side-dressings avoid sprinkling it on the growing crops. Scatter along the spaces between the rows, and work it into the soil as indicated.

Principles of Thinning and Cultivation

There is a certain limited supply of plantfood available for growing crops. This supply will produce good vegetables up to a certain quantity per square yard. If the crops are planted too thickly, there is too great a demand on the moisture of the soil, consequently the yield of the crops as well as the quantity of the produce is seriously interrupted. As a consequence, care should be taken to thin out carrots, beets, turnips, onions and parsnips, and to guard against planting corn, tomatoes and cabbages too thickly.

Cultivation of crops has one main purpose, which is to maintain a surface mulch or layer of loose soil. This should not be too deep. A mulch 1½" to 2" deep is sufficient. The purpose of the loose mulch is to prevent the escape of moisture or soil water by evaporation. Of course, cultivation of the crops also kills weeds, which in all cases should be kept out of the garden. In cultivating growing crops as the plants develop avoid cultivating too deeply and too close up to the growing crops. Such a practice prunes off many of the small rootlets which are the feeding avenues of the crop. Such a practice amounts to starving the crop. On heavy clay soils, a judicious amount of cultivation must be done in order to assist a good circulation of air through the surface layer of the soil. As the garden crops develop, attention should be given to suitable treatment of the various types of garden crops and to the control of garden insects and diseases. These subjects will be treated in subsequent articles.

For a plot measuring	On a medium loam soil	On sandy or loam soil
12′ x 15′ use	10 lbs. fertilizer	15 lbs. fertilizer
18′ x 20′ use	20 lbs. fertilizer	30 lbs. fertilizer
20′ x 30′ use	25 lbs. fertilizer	50 lbs. fertilizer
25′ x 40′ use	55 lbs. fertilizer	75 lbs. fertilizer

RENOVATING THE RHUBARB

By R. G. Kirby

The gardener stopped before the rhubarb patch and said, "It is more than five years old and it has not been fertilized since it was planted. The blossom stalks have been allowed to develop and the production of seed has been a severe tax on the strength of the roots. Why not renovate the rhubarb, give it a new lease on life and raise stalks that are fit to market?"

Then the farmer remembered that quality rhubarb was one of his favorite side dishes and rhubarb pie was cheap but good and healthy. He began to pick up a few points about the plant with the idea of making the rhubarb patch more productive. The rhubarb is the only useful member of its genus as the docks to which it is closely related are prominent among the black sheep and of no value on any farm.

A Warm Location Best

A warm soil on a southern slope will bring out the rhubarb early in spring when the price is best. A deep sandy loam which is well drained will produce the best results and it can scarcely be fertilized too heavily. The root cuttings can be started to the best advantage in trenches about one and a half feet deep which have been filled with composted manure. An annual application of manure in the fall will keep up the quality of the crop.

Root cuttings are the most desirable for starting a rhubarb plantation. They can be started from seed but this is apt to produce plants which are not uniform. Divide the root, allowing a strong eye to each piece and the cutting will produce a good plant in one season.

Growing Quality Rhubarb

In growing rhubarb it is well to remember that the size and quality of a crop depends upon the care during the preceding year. Large stalks bring the best prices and, of course, a fertile soil free from weeds means a rapid development of the rhubarb stalks early in the spring when the prices are the best. Placing the plants three or four feet apart in rows four feet wide is the usual custom.

The cultivation of a commercial rhubarb plantation should be thorough but not deep. The large expanse of leaves means that the plants need plenty of moisture and so the weeds must be kept down and the soil maintained in a mellow condition. When the plants are bearing heavily, which is the case by the third year, it is best to delay cultivation until after the crop is harvested. Then well rotted manure can be worked into the soil to prepare the roots to undergo the strain of producing another crop the next spring. The blossom stalks must not be allowed to grow or they will cause serious injury to the crop during the succeeding year.

In general, a crop of rhubarb is not difficult to produce and with the increased cost of early vegetables, together with the scarcity which may result from labor shortages, the rhubarb should bring a fair price. At present there are many old rhubarb beds which are not producing the quality stalks which they are capable of growing if plenty of fertility is furnished. Other beds are so old that their renovation is hardly worth the trouble and new beds can be started in fertile soil by the division of the roots.

Few Insect Enemies

The plant is quite free from insect enemies. The rhubarb curculio and the rhubarb flea-beetle sometimes cause slight injuries but are seldom serious. The curculio punctures the stems, causing exudations, and while the stems cannot be sprayed with arsenicals for obvious reasons, these pests are not active and they can be picked off by hand if their damage appears to be serious. Many fine crops of rhubarb are produced with no regard to insect enemies and this is more than can be said about the majority of garden crops. As a spring tonic the rhubarb is of great value and it should be more generally used. In a section where winter is long and severe the use of canned rhubarb will undoubtedly be of great value in improving the health of the family, especially if pork and potatoes have been playing too heavy a part in the daily diet.

Mothers and daughters of all ages are cordially invited to write to this department. Initials only will be published with each question and its answer as a means of identification, but full name and address must be given in each letter. Write on one side of paper only. Answers will be mailed direct if stamped and addressed envelope is enclosed.

Address all correspondence for this department to Mrs. Helen Law, 235 Woodbine Ave., Toronto.

Subscriber:—1. Paint spots can be removed from hardwood floors by apply kerosene and then rubbing with a soft cloth wrung from lukewarm water. 2. Butter and cheese are two different classes of food, both of which are important. Cheese is a meat substitute and is therefore a muscle-building food and very important as such, especially when it becomes the main dish in a meal. Butter is a food in the fats class and is valuable because it makes energy. Children must have a certain amount of butter each day. In actual units of food value butter has 3410 calories to the pound and full-cream cheese 1885 calories. 3 You can remove a grease stain from white canvas shoes by scrubbing the shoes with warm water and pure white soap. If, however, you prefer not to wet the shoes sponge the spot with chloroform or a little ether. Either is inflammable, so be careful of it. In removing the stain surround it with a ring of French chalk to prevent he grease from spreading. 4. As you dislike the taste and odor of soda in tomato soup, you will be glad to know that it is not necessary to use the soda, for if you have both the tomatoes and the milk boiling, when the two are combined, the milk will not curdle. 5. Oleomargarine is made of beef fats and vegetable fats. By vegetable fats are meant those made from olive, cocoanut, peanut and refined cottonseed oil.

Vegetette:—Glad to know you are turning garden plans over in your mind and that you will soon be turning over the soil. You have the right war-time idea. A Canadian Army Medical officer, writing to his mother from France, says: "You garden experts will be interested to hear that the British Army has ordered every available bit of ground, even under shell fire, to be put in cultivation. It will mean literally a million small gardens growing all kinds of things. It is a thing that should have been done three years ago, and we wouldn't be so short of things." This was written before the present heavy fighting commenced and the "best laid plans o' mice and men gang aft agley" but you may be sure that there will be countless war gardens somewhere in France this year. Why not in Canada? It's for the same cause.

Cora:—Yes, I can supply you with the information you want about the Quebec Home-Makers Clubs. They are planning to organize all the girls in their respective communities. These girls' organizations, in conjunction with the Quebec Home-Makers Club, will assist in the production and conservation of food. By growing vegetables in home gardens and on vacant lots, by canning all perishable vegetables, by picking and canning fruit, by helping in the production of maple sugar, by making soap for laundry purposes out of bones and fats not used for food and by encouraging the "Keep a Pig" and "Grow more Wheat" campaigns.

Up-to-Date:—The new form of induction does not seem quite courteous to me. To say, "Miss Blank, meet Mr. Smith," makes of it a command, when according to the rules of polite society permission should be asked before a stranger is introduced. To say, "Miss Blank, may I introduce Mr. Smith?" shows an inclination to please both Miss Blank and Mr. Smith, which is entirely absent from the first form. It is sometimes more commendable to be courteous than up to date, and I think you will find that the fad for such introductions will be short-lived.

Ex-Torontonian:—Many thanks for your kind appreciation. Your attitude towards the war and the problems it raises is that of all the really thoughtful people of Canada. Some there are who think the war will last until everyone comes to realize the lessons this conflict is meant to teach us—the lesson of thrift, of endurance, of consideration for others, of humility, and above all the ability to see the Divine in the daily which will solve for us life's enigmas. The book you mention, "Toronto Does Her Bit," costs fifty cents.

X. Y. Z.:—A plan for the remodelling of your kitchen will be sent you by mail. Judging from the details you furnish, the work should not be difficult, and the new arrangement will greatly lessen the housework. Best wishes for success. I trust that you received the expert advice mailed you regarding the installation of waterworks.

INTERNATIONAL LESSON
MAY 12.

Lesson VI. Jesus Faces The Cross—Mark 10. 32-52. Golden Text, Phil. 2. 8.

Verse 32. On the way, going up to Jerusalem—Moving steadily along, talking as they went. That it was "up" to the holy city, may be remembered, when we consider that Jerusalem stood nearly four thousand feet above the level of the Jordan valley. Jesus was going before: and they were amazed . . . afraid—It is Mark alone who notices the position of Jesus and the mental perturbation of the disciples. It seems that it was unusual for Jesus to go ahead of the company. Then, there was something in his appearance and spirit which awed them. A crisis was imminent. His anticipation of the serious conflict made itself known in his countenance. And he took again the twelve—That is, fell back from his advanced position and resumed his place with them in ordinary conversation. Began to tell them the things that were to happen unto him—This is now the third time that he seeks to impress upon them the gravity of the days ahead of him, but they seem not to comprehend, so unwilling were they to entertain any thought of disaster to their Messiah and to the kingdom he was to establish.

33. The Son of man shall be delivered unto the chief priests and the scribes—He saw clearly that there was no avoiding the clutches of his enemies. He did not seek to evade the inevitable issue, but marched directly toward his goal, caring not for himself but for these trustful disciples to whom he was to hand over the great work he had inaugurated and who were pitiably ignorant of the great meaning of it all. Condemn him to death . . deliver him unto the Gentiles—To him the approaching death was not an accidental tragedy, but an event which clearly lay in his pathway as a part of his Messianic program. It was not an incident, but a necessary part of his work. These were bitter words to the disciples. The thought that he was to die and was to be delivered to the Gentiles instead of leading them to victory over the "nations" must have thrown them into utter confusion.

34 Mock . . spit upon . . scourge. . . kill—The climax of indignities. "Crucify him," says Matthew. Put him to death, like the meanest and most abandoned criminal. After three days he shall rise again—Here is a prophecy which makes this utterance a revelation. Foresight might suggest that to go into the very midst of his enemies would mean disaster and death, but to affirm that he would rise from the dead at a stated time lifts this prediction above common foresight into divine knowledge.

35. We would that thou shouldest do for us whatsoever we shall ask—Certainly a large request and in anything but a modest spirit. This is a very painful episode. At a time when their hearts should have been deeply touched by the thought of the suffering which awaited their Master they were thinking about securing the best places in his kingdom.

37. Grant that we may sit, one on thy right hand, and one on thy left hand—The positions of honor, next to the throne itself, the right hand having the post of precedence. In thy glory—The glory of the Messianic King.

38. Ye know not what ye ask—They were to learn the difference between standing first and being first, and that there is a vast difference between appointment and achievement. They were also to learn that it is suffering, not honor which marks the first place in the high roll of the kingdom. Are ye able to drink the cup . . . to be baptized—Figurative expressions to indicate a man's portion in life and the overwhelming power of calamity.

39. They said, We are able—We are hardly to suppose that this indicates they had an adequate idea of the cost of drinking the cup and undergoing such a baptism. It is rather an inconsiderate and superficial answer. The cup that I drink ye shall drink—He administers no rebuke for their self-seeking, but assures them that they shall verily share in his sufferings in the pathway of their apostleship.

40. To sit on my right hand or on my left hand is not mine to give . . . . for them for whom it hath been prepared—Not personal influence but fitness, and that fitness is determined by the service rendered. So, the bestowment as a matter of personal favor is out of the question. No personal equation enters into it.

42. Jesus called them to him—Such a display of selfish ambition must have intensely grieved him. They who are accounted to rule over the Gentiles—That is, those who seem to rule. He would show them that men rule by force, by heredity, by choice, by flattery, by intrigue, but that few possess the real qualities of leadership. They lord it over them, and the people become their servants.

43. But it is not so among you—In the Kingdom the leaders instead of being lords become servants and the very highest become bond servant of all. The essential principle of the kingdom of God is to achieve greatness—not through preferment, but through service rendered.

45. The Son of man came not to be ministered unto, but to minister—Even the Son of man is not exempt from this rule. He is the Head of humanity and yet he is the servant of all. To give his life a ransom for many—His death is the supreme service for humanity. He gave his life not merely in behalf of many but instead of many. Here we have before us the profound truth of the vicarious sacrifice of Christ. His life becomes the "lutron" or price by which men are freed from bondage.

Subject to Moisture.

Furniture which, like chairs and stands for porches and tents, is subjected to continual dampness, often falls apart without warning. To forestall this disintegration, coat once or twice with transparent shellac before setting the article in an exposed spot. Be doubly thorough at the joinings, and thus add years of wear to its life.

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