The Home Acre

E. P. Roe

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CHAPTER I. TREE−PLANTING

Land hunger is so general that it may be regarded as a natural craving. Artificial modes of life, it is true, can destroy it, but it is apt to reassert itself in later generations. To tens of thousands of bread−winners in cities a country home is the dream of the future, the crown and reward of their life−toil. Increasing numbers are taking what would seem to be the wiser course, and are combining rural pleasures and advantages with their business. As the questions of rapid transit are solved, the welfare of children will turn the scale more and more often against the conventional city house or flat. A home CAN be created in rented dwellings and apartments; but a home for which we have the deed, a cottage surrounded by trees, flowers, lawn, and garden, is the refuge which best satisfies the heart. By means of such a suburban nook we can keep up our relations with Nature and all her varied and health−giving life. The tired man returning from business finds that his excited brain will not cease to act. He can enjoy restoring rest in the complete diversion of his thoughts; he can think of this tree or that plant, and how he can fill to advantage unoccupied spaces with other trees, flowers, and vegetables. If there is a Jersey cow to welcome him with her placid trust, a good roadster to whinny for an airing, and a flock of chickens to clamor about his feet for their supper, his jangling nerves will be quieted, in spite of all the bulls and bears of Wall Street. Best of all, he will see that his children have air and space in which to grow naturally, healthfully. His fruit−trees will testify to his wisdom in providing a country home. For instance, he will observe that if sound plums are left in contact with stung and decaying specimens, they too will be infected; he will see that too close crowding renders the prospect for good fruit doubtful; and, by natural transition of thought, will be glad that his boys and girls are not shut in to the fortuitous associations of hall− way and street. The area of land purchased will depend largely on the desires and purse of the buyer; but about one acre appears to satisfy the majority of people. This amount is not so great that the business man is burdened with care, nor is its limit so small that he is cramped and thwarted by line fences. If he can give to his bit of Eden but little thought and money, he will find that an acre can be so laid out as to entail comparatively small expense in either the one or the other; if he has the time and taste to make the land his play−ground as well as that of his children, scope is afforded for an almost infinite variety of pleasing labors and interesting experiments. When we come to co−work with Nature, all we do has some of the characteristics of an experiment. The labor of the year is a game of skill, into which also enter the fascinating elements of apparent chance. What a tree, a flower, or vegetable bed will give, depends chiefly upon us; yet all the vicissitudes of dew, rain, frost, and sun, have their part in the result. We play the game with Nature, and she will usually let us win if we are not careless, ignorant, or stupid. She keeps up our zest by never permitting the game to be played twice under the same conditions. We can no more carry on our garden this season precisely as we did last year than a captain can sail his ship exactly as he did on the preceding voyage. A country home makes even the weather interesting; and the rise and fall of the mercury is watched with scarcely less solicitude than the mutations of the market.

In this chapter and in those which may ensue I merely hope to make some useful suggestions and give practical advice—the result of experience, my own and others'—which the reader may carry out and modify according to his judgment.

We will suppose that an acre has been bought; that it is comparatively level, with nothing of especial value upon it—in brief, that the home and its surroundings are still to be created.

It is not within my design to treat of the dwelling, its architecture, etc., but we shall have something to say further on in regard to its location. Before purchasing, the most careful investigations should be made as to the healthfulness of the region and the opportunities for thorough drainage. Having bought the acre, the question of removing all undue accumulations of water on or beneath the surface should be attended to at first. The dry appearance of the soil during much of the year may be misleading. It should be remembered that there are equinoctial storms and melting snows. Superabundant moisture at every period should have channels of immediate escape, for moisture in excess is an injury to plant as well as to family life; while thoroughly and quickly drained land endures drought far better than that which is rendered heavy and sour by water stagnating beneath the surface. Tile−drains are usually the cheapest and most effective; but if there are stones and rocks upon the place, they can be utilized and disposed of at the same time by their burial in ditches—and they should be

covered so deeply that a plow, although sunk to the beam, can pass over them. Tiles or the top of a stone drain should be at least two feet below the surface. If the ground of the acre is underlaid with a porous subsoil, there is usually an adequate natural drainage.

Making haste slowly is often the quickest way to desired results. It is the usual method to erect the dwelling first, and afterward to subdue and enrich the ground gradually. This in many instances may prove the best course; but when it is practicable, I should advise that building be deferred until the land (with the exception of the spaces to be occupied with the house and barn) can be covered with a heavy dressing of barnyard manure, and that this be plowed under in the autumn. Such general enriching of the soil may seem a waste in view of the carriage−drive and walks yet to be laid out; but this will not prove true. It should be remembered that while certain parts of the place are to be kept bare of surface−vegetation, they nevertheless will form a portion of the root−pasturage of the shade and fruit trees. The land, also, can be more evenly and deeply plowed before obstructions are placed upon it, and roots, pestiferous weeds, and stones removed with greatest economy. Moreover, the good initial enriching is capital, hoarded in the soil, to start with. On many new places I have seen trees and plants beginning a feeble and uncertain life, barely existing rather than growing, because their roots found the soil like a table with dishes but without food. If the fertilizer is plowed under in the autumn, again mixed with the soil by a second plowing in the spring, it will be decomposed and ready for immediate use by every rootlet in contact with it. Now, as farmers say, the "land is in good heart," and it will cheer its owner's heart to see the growth promptly made by whatever is properly planted. Instead of losing time, he has gained years. Suppose the acre to have been bought in September, and treated as I have indicated, it is ready for a generous reception of plants and trees the following spring.

Possibly at the time of purchase the acre may be covered with coarse grass, weeds, or undergrowth of some kind. In this case, after the initial plowing, the cultivation for a season of some such crop as corn or potatoes may be of great advantage in clearing the land, and the proceeds of the crop would partially meet expenses. If the aim is merely to subdue and clean the land as quickly as possible, nothing is better than buckwheat, sown thickly and plowed under just as it comes into blossom. It is the nature of this rampart−growing grain to kill out everything else and leave the soil light and mellow. If the ground is encumbered with many stones and rocks, the question of clearing it is more complicated. They can be used, and often sold to advantage, for building purposes. In some instances I have seen laboring−men clear the most unpromising plots of ground by burying all rocks and stones deeply beneath the surface—men, too, who had no other time for the task except the brief hours before and after their daily toil.

I shall give no distinct plan for laying out the ground. The taste of the owner, or more probably that of his wife, will now come into play. Their ideas also will be modified by many local circumstances—as, for instance, the undulations of the land, if there are any; proximity to neighbors, etc. If little besides shade and lawn is desired, this fact will have a controlling influence; if, on the other hand, the proprietor wishes to make his acre as productive as possible, the house will be built nearer the street, wider open space will be left for the garden, and fruit−trees will predominate over those grown merely for shade and beauty. There are few who would care to follow a plan which many others had adopted. Indeed, it would be the natural wish of persons of taste to impart something of their own individuality to their rural home; and the effort to do this would afford much agreeable occupation. Plates giving the elevation and arrangement of country homes can be studied by the evening lamp; visits to places noted for their beauty, simplicity, and good taste will afford motives for many a breezy drive; while useful suggestions from what had been accomplished by others may repay for an extended journey. Such observations and study will cost little more than an agreeable expenditure of time; and surely a home is worth careful thought. It then truly becomes YOUR home—something that you have evolved with loving effort. Dear thoughts of wife and children enter into its very materiality; walks are planned with a loving consciousness of the feet which are to tread them, and trees planted with prophetic vision of the groups that will gather beneath the shade. This could scarcely be true if the acre were turned over to architect, builders, and landscape−gardeners, with an agreement that you should have possession at a specified time.

We will suppose that it is early spring, that the ground has received its second plowing, and that the carriage−drive and the main walks have been marked out on paper, or, better still, on a carefully considered map. There is now so much to do that one is almost bewildered; and the old saying, "Rome was not built in a day," is a good thing to remember. An orderly succession of labor will bring beauty and comfort in good time, especially if essential or foundation labors are first well performed. Few things will prove more satisfactory than dry, hard,

smooth carriage−roads and walks. These, with their curves, can be carefully staked out, the surface−earth between the stakes to the depth of four or five inches carted to the rear of the place near the stable, or the place where the stable is to be. Of the value of this surface−soil we shall speak presently, and will merely remark in passing that it is amply worth the trouble of saving. Its removal leaves the beds of the driveway and walks depressed several inches below the surrounding surface. Fill these shallow excavations with little stones, the larger in the bottom, the smaller on top, and cover all with gravel. You now have roads and walks that will be dry and hard even in oozy March, and you can stroll about your place the moment the heaviest shower is over. The greater first cost will be more than made good by the fact that scarcely a weed can start or grow on pathways thus treated. All they will need is an occasional rounding up and smoothing with a rake.

While this labor is going on you can begin the planting of trees. To this task I would earnestly ask careful attention. Your house can be built in a summer; but it requires a good part of a century to build the best trees into anything like perfection.

The usual tendency is to plant much too closely. Observe well− developed trees, and see how wide a space they require. There is naturally an eager wish for shade as soon as possible, and a desire to banish from surroundings an aspect of bareness. These purposes can, it is true, often be accomplished by setting out more trees at first than could mature, and by taking out one and another from time to time when they begin to interfere with each other's growth. One symmetrical, noble tree, however, is certainly worth more than a dozen distorted, misshapen specimens. If given space, every kind of tree and shrub will develop its own individuality; and herein lies one of their greatest charms. If the oak typifies manhood, the drooping elm is equally suggestive of feminine grace, while the sugar−maple, prodigal of its rich juices, tasselled bloom, and winged seeds, reminds us of wholesome, cheerful natures. Even when dying, its foliage takes on the earliest and richest hues of autumn.

The trees about our door become in a sense our companions. They appeal to the eye, fancy, and feelings of different people differently. Therefore I shall leave the choice of arboreal associates to those who are to plant them—a choice best guided by observation of trees. Why should you not plant those you like the best, those which are the most congenial?

A few suggestions, however, may be useful. I would advise the reader not to be in too great haste to fill up his grounds. While there are trees to which his choice reverts almost instantly, there are probably many other beautiful varieties with which he is not acquainted. If he has kept space for the planting of something new every spring and fall, he has done much to preserve his zest in his rural surroundings, and to give a pleasing direction to his summer observation. He is ever on the alert to discover trees and shrubs that satisfy his taste.

During the preparation of this book I visited the grounds of Mr. A. S. Fuller, at Kidgewood, N. J., and for an hour or two I broke the tenth commandment in spite of myself. I was surrounded by trees from almost every portion of the northern temperate zone, from Oregon to Japan; and in Mr. Fuller I had a guide whose sympathy with his arboreal pets was only equalled by his knowledge of their characteristics. All who love trees should possess his book entitled "Practical Forestry." If it could only be put into the hands of law−makers, and they compelled to learn much of its contents by heart, they would cease to be more or less conscious traitors to their country in allowing the destruction of forests. They might avert the verdict of the future, and prevent posterity from denouncing the irreparable wrong which is now permitted with impunity. The Arnolds of to−day are those who have the power to save the trees, yet fail to do so.

Japan appears to be doing as much to adorn our lawns and gardens as our drawing−rooms; and from this and other foreign lands much that is beautiful or curious is coming annually to our shores. At the same time I was convinced of the wisdom of Mr. Fuller's appreciation of our native trees. In few instances should we have to go far from home to find nearly all that we wanted in beautiful variety—maples, dogwoods, scarlet and chestnut oaks, the liquid− amber, the whitewood or tulip−tree, white birch, and horn−beam, or the hop−tree; not to speak of the evergreens and shrubs indigenous to our forests. Perhaps it is not generally known that the persimmon, so well remembered by old campaigners in Virginia, will grow readily in this latitude. There are forests of this tree around Paterson, N. J., and it has been known to endure twenty− seven degrees below zero. It is a handsome tree at any season, and its fruit in November caused much straggling from our line of march in the South. Then there is our clean−boled, graceful beech, whose smooth white bark has received so many tender confidences. In the neighborhood of a village you will rarely find one of these trees whereon is not linked the names of lovers that have sat beneath the shade. Indeed I have found mementoes of trysts or rambles deep in the forest of which the

faithful beech has kept the record until the lovers were old or dead. On an immense old beech in Tennessee there is an inscription which, while it suggests a hug, presents to the fancy an experience remote from a lover's embrace. It reads, "D. Boone cilled bar on tree."

There is one objection to the beech which also lies against the white oak—it does not drop its leaves within the space of a few autumn days. The bleached foliage is falling all winter long, thus giving the ground near an untidy aspect. With some, the question of absolute neatness is paramount; with others, leaves are clean dirt, and their rustle in the wind does not cease to be music even after they have fallen.

Speaking of native trees and shrubs, we shall do well to use our eyes carefully during our summer walks and drives; for if we do, we can scarcely fail to fall in love with types and varieties growing wild. They will thrive just as well on the acre if properly removed. In a sense they bring the forest with them, and open vistas at our door deep into the heart of Nature. The tree is not only a thing of beauty in itself, but it represents to the fancy all its wild haunts the world over

In gratifying our taste for native trees we need not confine ourselves to those indigenous to our own locality. From the nurseries we can obtain specimens that beautify other regions of our broad land; as, for instance, the Kentucky yellow−wood, the papaw, the Judas−tree, and, in the latitude of New Jersey and southward, the holly.

In many instances the purchaser of the acre may find a lasting pleasure in developing a specialty. He may desire to gather about him all the drooping or weeping trees that will grow in his latitude, or he may choose to turn his acre largely into a nut− orchard, and delight his children with a harvest which they will gather with all the zest of the frisky red squirrel. If one could succeed in obtaining a bearing tree of Hale's paper−shell hickory− nut, he would have a prize indeed. Increasing attention is given to the growing of nut−trees in our large nurseries, and there would be no difficulty in obtaining a supply.

In passing from this subject of choice in deciduous trees and shrubs, I would suggest, in addition to visits to woods and copse, to the well−ornamented places of men who have long gratified a fine taste in this respect, that the reader also make time to see occasionally a nursery like that of S.B. Parsons Co., at Flushing, N.Y. There is no teaching like that of the eyes; and the amateur who would do a bit of landscape−gardening about his own home learns what he would like and what he can do by seeing shrubs and trees in their various stages of growth and beauty.

I shall treat the subject of evergreens at the close of this chapter.

As a rule, I have not much sympathy with the effort to set out large trees in the hope of obtaining shade more quickly. The trees have to be trimmed up and cut back so greatly that their symmetry is often destroyed. They are also apt to be checked in their growth so seriously by such removal that a slender sapling, planted at the same time, overtakes and passes them. I prefer a young tree, straight−stemmed, healthy, and typical of its species or variety. Then we may watch its rapid natural development as we would that of a child. Still, when large trees can be removed in winter with a great ball of frozen earth that insures the preservation of the fibrous roots, much time can be saved. It should ever be remembered that prompt, rapid growth of the transplanted tree depends on two things—plenty of small fibrous roots, and a fertile soil to receive them. It usually happens that the purchaser employs a local citizen to aid in putting his ground in order. In every rural neighborhood there are smart men—"smart" is the proper adjective; for they are neither sagacious nor trustworthy, and there is ever a dismal hiatus between their promises and performance. Such men lie in wait for newcomers, to take advantage of their inexperience and necessary absence. They will assure their confiding employers that they are beyond learning anything new in the planting of trees—which is true, in a sinister sense. They will leave roots exposed to sun and wind— in brief, pay no more attention to them than a baby−farmer would bestow on an infant's appetite; and then, when convenient, thrust them into a hole scarcely large enough for a post. They expect to receive their money long before the dishonest character of their work can be discovered. The number of trees which this class of men have dwarfed or killed outright would make a forest. The result of a well−meaning yet ignorant man's work might be equally unsatisfactory. Therefore, the purchaser of the acre should know how a tree should be planted, and see to it himself; or he should by careful inquiry select a man for the task who could bring testimonials from those to whom he had rendered like services in the past.

The hole destined to receive a shade or fruit tree should be at least three feet in diameter and two feet deep. It then should be partially filled with good surface soil, upon which the tree should stand, so that its roots could extend naturally according to their original growth. Good fine loam should be sifted through and over them, and

they should not be permitted to come in contact with decaying matter or coarse, unfermented manure. The tree should be set as deeply in the soil as it stood when first taken up. As the earth is thrown gently through and over the roots it should be packed lightly against them with the foot, and water, should the season be rather dry and warm, poured in from time to time to settle the fine soil about them. The surface should be levelled at last with a slight dip toward the tree, so that spring and summer rains may be retained directly about the roots. Then a mulch of coarse manure is helpful, for it keeps the surface moist, and its richness will reach the roots gradually in a diluted form. A mulch of straw, leaves, or coarse hay is better than none at all. After being planted, three stout stakes should be inserted firmly in the earth at the three points of a triangle, the tree being its centre. Then by a rope of straw or some soft material the tree should be braced firmly between the protecting stakes, and thus it is kept from being whipped around by the wind. Should periods of drought ensue during the growing season, it would be well to rake the mulch one side, and saturate the ground around the young tree with an abundance of water, and the mulch afterward spread as before. Such watering is often essential, and it should be thorough. Unskilled persons usually do more harm than good by their half−way measures in this respect.

Speaking of trees, it may so happen that the acre is already in forest. Then, indeed, there should be careful discrimination in the use of the axe. It may be said that a fine tree is in the way of the dwelling. Perhaps the proposed dwelling is in the way of the tree. In England the work of "groving," or thinning out trees, is carried to the perfection of a fine art. One shudders at the havoc which might be made by a stolid laborer. Indeed, to nearly all who could be employed in preparing a wooded acre for habitation, a tree would be looked upon as little more than so much cord−wood or lumber.

If I had a wooded acre I should study the trees most carefully before coming to any decision as to the situation of the dwelling and out−buildings. Having removed those obviously unworthy to remain, I should put in the axe very thoughtfully among the finer specimens, remembering that I should be under the soil before Nature could build others like them.

In the fitting up of this planet as the home of mankind it would appear that the Creator regarded the coniferae, or evergreen family, as well worthy of attention; for almost from the first, according to geologists, this family records on the rocky tablets of the earth its appearance, large and varied development, and its adaptation to each change in climate and condition of the globe's surface during the countless ages of preparation. Surely, therefore, he who is evolving a home on one acre of the earth's area cannot neglect a genus of trees that has been so signally honored. Evergreens will speedily banish the sense of newness from his grounds; for by putting them about his door he has added the link which connects his acre with the earliest geological record of tree−planting. Then, like Diedrich Knickerbocker, who felt that he must trace the province of New York back to the origin of the universe, he can look upon his coniferae and feel that his latest work is in accord with one of the earliest laws of creation. I imagine, however, that my readers' choice of evergreens will be determined chiefly by the fact that they are always beautiful, are easily managed, and that by means of them beautiful effects can be created within comparatively small space. On Mr Fuller's grounds I saw what might be fittingly termed a small parterre of dwarf evergreens, some of which were twenty−five years old.

Numbers of this family might be described as evergreen and gold; for part of the perennial foliage shades off from the deepest green to bright golden hues. Among the group of this variety, Japanese in origin, Mr. Fuller showed me a "sporting" specimen, which, from some obscure and remarkable impulse, appeared bent on producing a new and distinct type. One of the branches was quite different from all the others on the tree. It was pressed down and layered in the soil beneath; when lo! a new tree was produced, set out beside its parent, whom it soon surpassed in size, beauty, and general vigor. Although still maintaining its green and golden hues, it was so distinct that no one would dream that it was but a "sport" from the adjacent dwarf and modest tree. Indeed, it reminded one of Beatrix Esmond beside her gentle and retiring mother. If it should not in the future emulate in caprice the fair subject of comparison, it may eventually become one of the best− known ornaments of our lawns. At present it appears nowise inclined to hide its golden light under a bushel.

What I have said about forming the acquaintance of deciduous trees and shrubs before planting to any great extent, applies with even greater force to the evergreen, family. There is a large and beautiful variety from which to choose, and I would suggest that the choice be made chiefly from the dwarf−growing kinds, since the space of one acre is too limited for much indulgence in. Norway spruces, the firs, or pines. An hour with a note−book spent in grounds like those of Mr. Fuller would do more in aiding a satisfactory selection than years of reading.

Moreover, it should be remembered that many beautiful evergreens, especially those of foreign origin, are but half hardy. The amateur may find that after an exceptionally severe winter some lovely specimen, which has grown to fill a large space in his heart, as well as on his acre, has been killed. There is an ample choice from entirely hardy varieties for every locality, and these, by careful inquiry of trustworthy nurserymen, should be obtained.

Moreover, it should be remembered that few evergreens will thrive in a wet, heavy soil. If Nature has not provided thorough drainage by means of a porous subsoil, the work must be done artificially. As a rule, light but not poor soils, and warm exposures, are best adapted to this genus of trees.

I think that all authorities agree substantially that spring in our climate is the best time for the transplanting of evergreens; but they differ between early and advanced spring. The late Mr. A. J. Downing preferred early spring; that is, as soon as the frost is out, and the ground dry enough to crumble freely. Mr. A. S. Fuller indorses this opinion. Mr. Josiah Hoopes, author of a valuable work entitled "The Book of Evergreens," advises that transplanting be deferred to later spring, when the young trees are just beginning their season's growth; and this view has the approval of the Hon. Marshall P. Wilder and Mr. S. B. Parsons, Jr., Superintendent of City Parks. Abundant success is undoubtedly achieved at both seasons; but should a hot, dry period ensue after the later planting—early May, for instance—only abundant watering and diligent mulching will save the trees.

It should be carefully remembered that the evergreen families do not possess the vitality of deciduous trees, and are more easily injured or killed by removal. The roots of the former are more sensitive to exposure to dry air and to sunlight; and much more certainty of life and growth is secured if the transfer can be accomplished in cloudy or rainy weather. The roots should never be permitted to become dry, and it is well also to sprinkle the foliage at the time of planting. Moreover, do not permit careless workmen to save a few minutes in the digging of the trees. Every fibrous root that can be preserved intact is a promise of life and vigor. If a nurseryman should send me an assortment of evergreens with only the large woody roots left, I should refuse to receive the trees.

What I have said in opposition to the transplanting of large trees applies with greater force to evergreens. Mr. Hoopes writes: "An error into which many unpracticed planters frequently fall is that of planting large trees; and it is one which we consider opposed to sound common−sense. We are aware that the owner of every new place is anxious to produce what is usually known as an immediate effect, and therefore he proceeds to plant large evergreens, covering his grounds with great unsightly trees. In almost every case of this kind the lower limbs are apt to die, and thus greatly disfigure the symmetry of the trees. Young, healthy plants, when carefully taken up and as properly replanted, are never subject to this disfigurement, and are almost certain to form handsome specimens."

Any one who has seen the beautiful pyramids, cones, and mounds of green into which so many varieties develop, if permitted to grow according to the laws of their being, should not be induced to purchase old and large trees which nurserymen are often anxious to part with before they become utterly unsalable.

When the evergreens reach the acre, plant them with the same care and on the same general principles indicated for other trees. Let the soil be mellow and good. Mulch at once, and water abundantly the first summer during dry periods. Be sure that the trees are not set any deeper in the ground than they stood before removal. If the soil of the acre is heavy or poor, go to the roadside or some old pasture and find rich light soil with which to fill in around the roots. If no soil can be found without a large proportion of clay, the addition of a little sand, thoroughly mixed through it, is beneficial. The hole should be ample in size, so that the roots can be spread out according to their natural bent. If the ground after planting needs enriching, spread the fertilizer around the trees, not against them, and on the surface only. Never put manure on or very near the roots.

Fine young seedling evergreens can often be found in the woods or fields, and may be had for the asking, or for a trifling sum. Dig them so as to save all the roots possible. Never permit these to become dry till they are safe in your own grounds. Aim to start the little trees under the same conditions in which you found them in Nature. If taken from a shady spot, they should be shaded for a season or two, until they become accustomed to sunlight. This can easily be accomplished by four crotched stakes supporting a light scaffolding, on which is placed during the hot months a few evergreen boughs.

Very pretty and useful purposes can often be served by the employment of certain kinds of evergreens as hedges. I do not like the arbitrary and stiff divisions of a small place which I have often seen. They take away the sense of roominess, and destroy the possibility of pretty little vistas; but when used judiciously as screens they combine much beauty with utility. As part of line fences they are often eminently satisfactory, shutting out prying

eyes and inclosing the home within walls of living green. The strong−growing pines and Norway spruce are better adapted to large estates than to the area of an acre. Therefore we would advise the employment of the American arbor vitae and of hemlock. The hedge of the latter evergreen on Mr. Fuller's place formed one of the most beautiful and symmetrical walls I have ever seen. It was so smooth, even, and impervious that in the distance it appeared like solid emerald.

The ground should be thoroughly prepared for a hedge by deep plowing or by digging; the trees should be small, young, of even height and size, and they should be planted carefully in line, according to the directions already given for a single specimen; the ground on each side mulched and kept moist during the first summer. In the autumn, rake the mulch away and top−dress the soil on both sides for the space of two or three feet outward from the stems with well−decayed manure. This protects the roots and ensures a vigorous growth the coming season. Allow no weeds or even grass to encroach on the young hedge until it is strong and established. For the first year no trimming will be necessary beyond cutting back an occasional branch or top that is growing stronger than the others; and this should be done in early October. During the second season the plants should grow much more strongly; and now the shears are needed in summer. Some branches and top shoots will push far beyond the others. They should be cut back evenly, and in accordance with the shape the hedge is to take. The pyramidal form appears to me to be the one most in harmony with Nature. In October, the hedge should receive its final shearing for the year; and if there is an apparent deficiency of vigor, the ground on both sides should receive another top−dressing, after removing the summer mulch. As the hedge grows older and stronger, the principal shearing will be done in early summer, as this checks growth and causes the close, dense interlacing of branches and formation of foliage wherein the beauty and usefulness of the hedge consist.

CHAPTER II. FRUIT−TREES AND GRASS

It is a happy proof of our civilization that a dwelling−place, a shelter from sun and storm, does not constitute a home. Even the modest rooms of our mechanics are not furnished with useful articles merely; ornaments and pictures appear quite as indispensable. Out−of−doors the impulse to beautify is even stronger; and usually the purchaser's first effort is to make his place attractive by means of trees and shrubs that are more than useful—they are essential; because the refined tastes of men and women to−day demand them.

In the first chapter I endeavored to satisfy this demand in some degree, and now will ask the reader's attention to a few practical suggestions in regard to several of the fruits which best supply the family need. We shall find, however, that while Nature is prodigal in supplying what appeals to the palate and satisfies hunger, she is also like a graceful hostess who decks her banquet with all the beauty that she can possibly bestow upon it. We can imagine that the luscious fruits of the year might have been produced in a much more prosaic way. Indeed, we are at a loss to decide which we value the more, the apple−blossoms or the apples which follow. Nature is not content with bulk, flavor, and nutriment, but in the fruit itself so deftly pleases the eye with every trick of color and form that the hues and beauty of the flower are often surpassed. We look at a red−cheeked apple or purple cluster of grapes hesitatingly, and are loth to mar the exquisite shadings and perfect outlines of the vessel in which the rich juices are served. Therefore, in stocking the acre with fruit, the proprietor has not ceased to embellish it; and should he decide that fruit−trees must predominate over those grown for shade and ornament only, he can combine almost as much beauty as utility with his plan.

All the fruits may be set out both in the spring and the fall seasons; but in our latitude and northward, I should prefer early spring for strawberries and peaches.

By this time we may suppose that the owner of the acre has matured his plans, and marked out the spaces designed for the lawn, garden, fruit trees, vines, etc. Fruit trees, like shade trees, are not the growth of a summer. Therefore there is natural eagerness to have them in the ground as soon as possible, and they can usually be ordered from the same nursery, and at the same time with the ornamental stock. I shall speak first of apples, pears, and cherries, and I have been at some pains to secure the opinions of eminent horticulturists as to the best selections of these fruits for the home table, not for market. When there is a surplus, however, there will be no difficulty in disposing of the fine varieties named.

The Hon. Marshall P. Wilder, the veteran President of the American Pomological Society, writes as follows: "Herewith is the selection I have made for family use; but I could put in as many more in some of the classes which are just as desirable, or nearly so. These have been made with reference to covering the seasons. Apples—Red Astrakhan, Porter, Gravenstein, Rhode Island Greening, Baldwin, Roxbury Russet, and Sweet Bough for baking. Pears— Clapp's Favorite (to be gathered August 20), Bartlett, Seckel, Sheldon, Beurre Bosc, Buerre d'Anjou, and Vicar of Winkfield for baking, etc. Cherries—Black Eagle, Black Tartarian, Downer, Windsor, Cumberland, and Red Jacket."

Mr. Wilder's honored name, like that of the late Charles Downing, is inseparably linked with American fruits, and the country owes these two men a debt of gratitude which never can be paid for their lifelong and intelligent efforts to guide the people wisely in the choice and culture of the very best varieties. A moment's thought will convince the reader that I am not giving too much space to this matter of selection. We are now dealing with questions which wide and varied experience can best answer. Men who give their lives to the cultivation and observation of fruits in all their myriad varieties acquire a knowledge which is almost invaluable. We cannot afford to put out trees, to give them good culture, and wait for years, only to learn that all our care has been bestowed on inferior or second−rate varieties. Life is too brief. We all feel that the best is good enough for us; and the best usually costs no more in money or time than do less desirable varieties. Therefore I seek to give on this important question of choice the opinions of some of the highest authorities in the land.

Mr. A. S. Fuller is not only a well−known horticultural author, but has also had the widest experience in the culture and observation of fruit. He prefaces his opinion with the following words: "How much and how often we horticulturists have been puzzled with questions like yours! If we made no progress, were always of the same mind, and if seasons never changed, then perhaps there would be little difficulty in deciding which of the varieties

of the different kinds of fruit were really the best. But seasons, our tastes, and even the varieties sometimes change; and our preferences and opinions must vary accordingly. Apples— Early Harvest, Fall Pippins, Spitzenburgh, Rhode Island Greening, Autumn Sweet Bough, and Talman's Sweet. Cherries—Early Purple Guigne, Bigarreau of Mezel, Black Eagle, Coe's Transparent, Governor Wood, and Belle Magnifique."

The choice of Mr. E. S. Carmen, editor of the "Rural New Yorker:" "Apples—Early Harvest, Gravenstein, Jefferis, Baldwin, Mother, Spitzenburgh. Pears—Seckel, Tyson, Clapp's Favorite, Bartlett, Beurre d'Anjou, and Dana's Hovey. Cherries—Black Tartarian, Coe's Transparent, Governor Wood, Mezel, Napoleon Bigarreau."

The authorities appear to differ. And so they would in regard to any locality; but it should be remembered that President Wilder advises for the latitude of Massachusetts, Messrs. Fuller and Carmen for that of New Jersey. I will give now the selection of the eminent horticulturist Mr. P. O. Berckmans for the latitude of Georgia: "Cherries (this is not a good cherry−producing region, but I name the following as the best in order of merit)—Buttners, Governor Wood, Belle de Choisy, Early Richmond, and May Duke. Pears (in order of maturity)—Clapp's Favorite, Seckel, Duchesse, Beurre Superfine, Leconte, Winter Nellis, or Glout. Morceau. Apples—Early Harvest, Red June, Carter's Blue, Stevenson's Winter, Shockley, Buncombe, Carolina Greening."

He who makes his choice from these selections will not meet with much disappointment. I am aware, however, that the enjoyment of fruit depends much upon the taste of the individual; and who has a better right to gratify his taste than the man who buys, sets out, and cares for the trees? Some familiar kind not in favor with the fruit critics, an old variety that has become a dear memory of boyhood, may be the best one of all for him—perhaps for the reason that it recalls the loved faces that gathered about the wide, quaint fireplace of his childhood's home.

It is also a well−recognized fact that certain varieties of fruit appear to be peculiarly adapted to certain localities. Because a man has made a good selection on general principles, he need not be restricted to this choice. He will soon find his trees growing lustily and making large branching heads. Each branch can be made to produce a different kind of apple or pear, and the kindred varieties of cherries will succeed on the same tree. For instance, one may be visiting a neighbor who gives him some fruit that is unusually delicious, or that manifest great adaptation to the locality. As a rule the neighbor will gladly give scions which, grafted upon the trees of the Home Acre, will soon begin to yield the coveted variety. This opportunity to grow different kinds of fruit on one tree imparts a new and delightful interest to the orchard. The proprietor can always be on the lookout for something new and fine, and the few moments required in grafting or budding make it his. The operation is so simple and easy that he can learn to perform it himself, and there are always plenty of adepts in the rural vicinage to give him his initial lesson. While he will keep the standard kinds for his main supply, he can gratify his taste and eye with some pretty innovations. I know of an apple− tree which bears over a hundred varieties. A branch, for instance, is producing Yellow Bell−flowers. At a certain point in its growth where it has the diameter of a man's thumb it may be grafted with the Red Baldwin. When the scion has grown for two or three years, its leading shoots can be grafted with the Roxbury Russet, and eventually the terminal bough of this growth with the Early Harvest. Thus may be presented the interesting spectacle of one limb of a tree yielding four very distinct kinds of apples.

In the limited area of an acre there is usually not very much range in soil and locality. The owner must make the best of what he has bought, and remedy unfavorable conditions, if they exist, by skill. It should be remembered that peaty, cold, damp, spongy soils are unfit for fruit−trees of any kind. We can scarcely imagine, however, that one would buy land for a home containing much soil of this nature. A sandy loam, with a subsoil that dries out so quickly that it can be worked after a heavy rain, is the best for nearly all the fruit−trees, especially for cherries and peaches. Therefore in selecting the ground, be sure it is well drained.

If the acre has been enriched and plowed twice deeply, as I have already suggested, little more is necessary in planting than to excavate a hole large enough to receive the roots spread out in their natural positions. Should no such thorough and general preparation have been made, or if the ground is hard, poor, and stony, the owner will find it to his advantage to dig a good−sized hole three or four feet across and two deep, filling in and around the tree with fine rich surface soil. If he can obtain some thoroughly decomposed compost or manure, for instance, as the scrapings of a barnyard, or rich black soil from an old pasture, to mix with the earth beneath and around the roots, the good effects will be seen speedily; but in no instance should raw manure from the stable, or anything that must decay before becoming plant food, be brought in contact with the roots. Again I repeat my caution

against planting too deeply—one of the commonest and most fatal errors. Let the tree be set about as deeply as it stood before removal. If the tree be planted early in spring, as it should be, there will be moisture enough in the soil; but when planting is delayed until the ground has become rather dry and warm, a pail of water poured about its roots when the hole has been nearly filled will be beneficial. Now that the tree is planted, any kind of coarse manure spread to the depth of two or three inches on the surface as a mulch is very useful. Stake at once to protect against the winds. Do not make the common mistake of planting too closely. Observe the area shaded by fully grown trees, and you will learn the folly of crowding. Moreover, dense shade about the house is not desirable. There should be space for plenty of air and sunshine. The fruit from one well− developed tree will often more than supply a family; for ten or fifteen barrels of apples is not an unusual yield. The standard apples should be thirty feet apart. Pears, the dwarfer−growing cherries, plums, etc., can be grown in the intervening spaces. In ordering from the nurseries insist on straight, shapely, and young trees, say three years from the bud. Many trees that are sent out are small enough, but they are old and stunted. Also require that there should be an abundance of fibrous and unmutilated roots.

Because the young trees come from the nursery unpruned, do not leave them in that condition. Before planting, or immediately after, cut back all the branches at least one−half; and where they are too thick, cut out some altogether. In removal the tree has lost much of its root power, and it is absurd to expect it to provide for just as much top as before.

In many books on fruit−culture much space has been given to dwarf pears, apples, and cherries, and trees of this character were planted much more largely some years ago than they are at present. The pear is dwarfed by grafting it on the quince; the apple can be limited to a mere garden fruit−tree in size by being grown on a Doucin stock, or even reduced to the size of a bush if compelled to draw its life through the roots of the Paradise. These two named stocks, much employed by European nurserymen, are distinct species of apples, and reproduce themselves without variation from the seed. The cherry is dwarfed by being worked on the Mahaleb—a small, handsome tree, with glossy, deep−green foliage, much cultivated abroad as an ornament of lawns. Except in the hands of practiced gardeners, trees thus dwarfed are seldom satisfactory, for much skill and care are required in their cultivation. Their chief advantages consist in the fact that they bear early and take but little space. Therefore they may be considered worthy of attention by the purchasers of small places. Those who are disposed to make pets of their trees and to indulge in horticultural experiments may derive much pleasure from these dwarfs, for they can be developed into symmetrical pyramids or graceful, fruitful shrubs within the limits of a garden border.

When the seeds of ordinary apples and pears are sown they produce seedlings, or free stocks, and upon these are budded or grafted the fine varieties which compose our orchards. They are known as standard trees; they come into bearing more slowly, and eventually attain the normal size familiar to us all. Standard cherries are worked on seedlings of the Mazzard, which Barry describes as a "lofty, rapid−growing, pyramidal−headed tree." I should advise the reader to indulge in the dwarfs very charily, and chiefly as a source of fairly profitable amusement. It is to the standards that he will look for shade, beauty, and abundance of fruit.

Since we have been dwelling on the apple, pear, and cherry, there are certain advantages of continuing the subject in the same connection, giving the principles of cultivation and care until the trees reach maturity. During the first summer an occasional watering may be required in long periods of drought. In many instances buds will form and start along the stem of the tree, or near the roots. These should be rubbed off the moment they are detected.

One of our chief aims is to form an evenly balanced, open, symmetrical head; and this can often be accomplished better by a little watchfulness during the season of growth than at any other time. If, for instance, two branches start so closely together that one or the other must be removed in the spring pruning, why let the superfluous one grow at all? It is just so much wasted effort. By rubbing off the pushing bud or tender shoot the strength of the tree is thrown into the branches that we wish to remain. Thus the eye and hand of the master become to the young tree what instruction, counsel, and admonition are to a growing boy, with the difference that the tree is easily and certainly managed when taken in time.

The study of the principles of growth in the young trees can be made as pleasing as it is profitable, for the readiness with which they respond to a guiding hand will soon invest them with almost a human interest. A child will not show neglect more certainly than they; and if humored and allowed to grow after their own fashion, they will soon prove how essential are restraint and training. A fruit tree is not like one in a forest—a simple,

unperverted product of Nature. It is a result of human interference and development; and we might just as reasonably expect our domestic animals to take care of themselves as our grafted and budded trees. Moreover, they do not comply with their raison d'etre by merely existing, growing, and propagating their kind. A Bartlett pear−tree, like a Jersey cow, is given place for the sake of its delicious product. It is also like the cow in requiring judicious feeding and care.

Trees left to themselves tend to form too much wood, like the grape−vine. Of course fine fruit is impossible when the head of a tree is like a thicket. The growth of unchecked branches follows the terminal bud, thus producing long naked reaches of wood devoid of fruit spurs. Therefore the need of shortening in, so that side branches may be developed. When the reader remembers that every dormant bud in early spring is a possible branch, and that even the immature buds at the axil of the leaves in early summer can be forced into immediate growth by pinching back the leading shoot, he will see how entirely the young tree is under his control. These simple facts and principles are worth far more to the intelligent man than any number of arbitrary rules as to pruning. Reason and observation soon guide his hand in summer or his knife in March—the season when trees are usually trimmed.

Beyond shortening in leading branches and cutting out crossing and interfering boughs, so as to keep the head symmetrical and open to light and air, the cherry does not need very much pruning. If with the lapse of years it becomes necessary to take off large limbs from any fruit−tree, the authorities recommend early June as the best season for the operation.

It will soon be discovered—quite likely during the first summer— that fruit−trees have enemies, that they need not only cultivation and feeding, but also protection. The pear, apple, and quince are liable to one mysterious disease which it is almost impossible to guard against or cure—the fireblight. Of course there have been innumerable preventives and cures recommended, just as we see a dozen certain remedies for consumption advertised in any popular journal; but the disease still remains a disheartening mystery, and is more fatal to the pear than to its kindred fruits. I have had thrifty young trees, just coming into bearing, suddenly turn black in both wood and foliage, appearing in the distance as if scorched by a blast from a furnace. In another instance a large mature tree was attacked, losing in a summer half its boughs. These were cut out, and the remainder of the tree appeared healthy during the following summer, and bore a good crop of fruit. The disease often attacks but a single branch or a small portion of a tree. The authorities advise that everything should be cut away at once below all evidence of infection and burned. Some of my trees have been attacked and have recovered; others were apparently recovering, but died a year or two later. One could theorize to the end of a volume about the trouble. I frankly confess that I know neither the cause nor the remedy. It seems to me that our best resource is to comply with the general conditions of good and healthy growth. The usual experience is that trees which are fertilized with wood−ashes and a moderate amount of lime and salt, rather than with stimulating manures, escape the disease. If the ground is poor, however, and the growth feeble, barnyard manure or its equivalent is needed as a mulch. The apple−blight is another kindred and equally obscure disease. No better remedy is known than to cut out the infected part at once.

In coping with insects we can act more intelligently, and therefore successfully. We can study the characters of our enemies, and learn their vulnerable points. The black and green aphides, or plant−lice, are often very troublesome. They appear in immense numbers on the young and tender shoots of trees, and by sucking their juices check or enfeeble the growth. They are the milch−cows of ants, which are usually found very busy among them. Nature apparently has made ample provision for this pest, for it has been estimated that "one individual in five generations might be the progenitor of six thousand millions." They are easily destroyed, however. Mr. Barry, of the firm of Ellwanger Barry, in his excellent work "The Fruit Garden," writes as follows: "Our plan is to prepare a barrel of tobacco juice by steeping stems for several days, until the juice is of a dark brown color; we then mix this with soap−suds. A pail is filled, and the ends of the shoots, where the insects are assembled, are bent down and dipped in the liquid. One dip is enough. Such parts as cannot be dipped are sprinkled liberally with a garden−syringe, and the application repeated from time to time, as long as any of the aphides remain. The liquid may be so strong as to injure the foliage; therefore it is well to test it on one or two subjects before using it extensively. Apply it in the evening."

The scaly aphis or bark−louse attacks weak, feeble−growing trees, and can usually be removed by scrubbing the bark with the preparation given above.

In our region and in many localities the apple−tree borer is a very formidable pest, often destroying a young tree before its presence is known. I once found a young tree in a distant part of my place that I could push over with my finger. In June a brown and white striped beetle deposits its eggs in the bark of the apple−tree near the ground. The larvae when hatched bore their way into the wood, and will soon destroy a small tree. They cannot do their mischief, however, without giving evidence of their presence. Sawdust exudes from the holes by which they entered, and there should be sufficient watchfulness to discover them before they have done much harm. I prefer to cut them out with a sharp, pointed knife, and make sure that they are dead; but a wire thrust into the hole will usually pierce and kill them. Wood−ashes mounded up against the base of the tree are said to be a preventive. In the fall they can be spread, and they at least make one of the best of fertilizers.

The codling−moth, or apple−worm, is another enemy that should be fought resolutely, for it destroys millions of bushels of fruit. In the latitude of New York State this moth begins its depredations about the middle of June. Whatever may be thought of the relation of the apple to the fall of man, this creature certainly leads to the speedy fall of the apple. Who has not seen the ground covered with premature and decaying fruit in July, August, and September? Bach specimen will be found perforated by a worm−hole. The egg has been laid in the calyx of the young apple, where it soon hatches into a small white grub, which burrows into the core, throwing out behind it a brownish powder. After about three weeks of apple diet it eats its way out, shelters itself under the scaly bark of the tree—if allowed to be scaly—or in some other hiding−place, spins a cocoon, and in about three weeks comes out a moth, and is ready to help destroy other apples. This insect probably constitutes one of Nature's methods of preventing trees from overbearing; but like some people we know, it so exaggerates its mission as to become an insufferable nuisance. The remedies recommended are that trees should be scraped free of all scales in the spring, and washed with a solution of soft soap. About the 1st of July, wrap bandages of old cloth, carpet, or rags of any kind around the trunk and larger limbs. The worms will appreciate such excellent cover, and will swarm into these hiding− places to undergo transformation into moths. Therefore the wraps of rags should often be taken down, thrown into scalding water, dried, and replaced. The fruit as it falls should be picked up at once and carried to the pigs, and, when practicable, worm−infested specimens should be taken from the trees before the worm escapes.

The canker−worm in those localities where it is destructive can be guarded against by bands of tar−covered canvas around the trees. The moth cannot fly, but crawls up the tree in the late autumn and during mild spells in winter, but especially throughout the spring until May. When, the evil−disposed moth meets the 'tarry band he finds no thoroughfare, and is either caught or compelled to seek some other arena of mischief.

We have all seen the flaunting, unsightly abodes of the tent caterpillar and the foliage−denuded branches about them. Fortunately these are not stealthy enemies, and the owner can scarcely see his acre at all without being aware of their presence. He has only to look very early in the morning or late in the evening to find them all bunched up in their nests. These should be taken down and destroyed.

Cherry and pear slugs, "small, slimy, dark brown worms," can be destroyed by dusting the trees with dry wood ashes or air−slacked lime.

Field−mice often girdle young trees, especially during the winter, working beneath the snow. Unless heaps of rubbish are left here and there as shelter for these little pests, one or two good cats will keep the acre free of them. Treading the snow compactly around the tree is also practiced.

Do not let the reader be discouraged by this list of the most common enemies, or by hearing of others. After reading some medical works we are led to wonder that the human race does not speedily die out. As a rule, however, with moderate care, most of us are able to say, "I'm pretty well, I thank you," and when ailing we do not straightway despair. In spite of all enemies and drawbacks, fruit is becoming more plentiful every year. If one man can raise it, so can another.

Be hospitable to birds, the best of all insect destroyers. Put up plenty of houses for bluebirds and wrens, and treat the little brown song−sparrow as one of your stanchest friends.

A brief word in regard to the quince, and our present list of fruits is complete.

If the quince is cultivated after the common neglectful method, it would better be relegated to an obscure part of the garden, for, left to itself, it makes a great sprawling bush; properly trained, it becomes a beautiful ornament to the lawn, like the other fruits that I have described. Only a little care, with the judicious use of the pruning−shears, is required to develop it into a miniature and fruitful tree, which can be grown with a natural rounded head or in the form of a pyramid, as the cultivator chooses. It will thrive well on the same soil and under

similar treatment accorded to the pear or the apple. Procure from a nursery straight−stemmed plants; set them out about eight feet apart; begin to form the head three feet from the ground, and keep the stem and roots free from all sprouts and suckers. Develop the head just as you would that of an apple−tree, shortening in the branches, and cutting out those that interfere with each other. Half a dozen trees will soon give an ample supply. The orange and the pear shaped are the varieties usually recommended. Rea's Mammoth is also highly spoken of. Remember that the quince equally with the apple is subject to injury from the borer, and the evil should be met as I have already described.

There is a natural wish to have as much grass about the dwelling as possible, for nothing is more beautiful. If there are children, they will assuredly petition for lawn−tennis and croquet grounds. I trust that their wishes may be gratified, for children are worth infinitely more than anything else that can be grown upon the acre. With a little extra care, all the trees of which I have spoken can be grown in the spaces allotted to grass. It is only necessary to keep a circle of space six feet in diameter—the trunk forming the centre—around the tree mellow and free from any vegetable growth whatever. This gives a chance to fertilize and work the ground immediately over the roots. Of course vigorous fruit−trees cannot be grown in a thick sod, while peaches and grapes require the free culture of the garden, as will be shown hereafter. In view, however, of the general wish for grass, I have advised on the supposition that all the ornamental trees, most of the shrubs, and the four fruits named would be grown on the portions of the acre to be kept in lawn. It may be added here that plums also will do well under the same conditions, if given good care.

Grass is a product that can be cultivated as truly as the most delicate and fastidious of fruits, and I had the lawn is mind when I urged the generous initial deep plowing and enriching. Nothing that grows responds more promptly to good treatment than grass; but a fine lawn cannot be created in a season, any more than a fine tree.

We will suppose that the spring plantings of trees have been made with open spaces reserved for the favorite games. Now the ground can be prepared for grass−seed, for it need not be trampled over any more. If certain parts have become packed and hard, they should be dug or plowed deeply again, then harrowed and raked perfectly smooth, and all stones, big or little, taken from the surface. The seed may now be sown, and it should be of thick, fine−growing varieties, such as are employed in Central Park and other pleasure−grounds. Mr. Samuel Parsons, Jr., Superintendent of Central Park, writes me: "The best grass−seeds for ordinary lawns are a mixture of red−top and Kentucky blue−grass in equal parts, with perhaps a small amount of white clover. On very sandy ground I prefer the Kentucky blue−grass, as it is very hardy and vigorous under adverse circumstances." Having sown and raked in the seed very lightly a great advantage will be gained in passing a lawn− roller over the ground. I have succeeded well in getting a good "catch" of grass by sowing the seed with oats, which were cut and cured as hay as soon as the grain was what is termed "in the milk." The strong and quickly growing oats make the ground green in a few days, and shelter the slower maturing grass−roots. Mr. Parsons says, "I prefer to sow the grass−seed alone." As soon as the grass begins to grow with some vigor, cut it often, for this tends to thicken it and produce the velvety effect that is so beautiful. From the very first the lawn will need weeding. The ground contains seeds of strong growing plants, such as dock, plantain, etc., which should be taken out as fast as they appear. To some the dandelion is a weed; but not to me, unless it takes more than its share of space, for I always miss these little earth stars when they are absent. They intensify the sunshine shimmering on the lawn, making one smile involuntarily when seeing them. Moreover, they awaken pleasant memories, for a childhood in which dandelions had no part is a defective experience.

In late autumn the fallen leaves should be raked carefully away, as they tend to smother the grass if permitted to lie until spring. Now comes the chief opportunity of the year, in the form of a liberal top−dressing of manure from the stable. If this is spread evenly and not too thickly in November, and the coarser remains of it are raked off early in April, the results will be astonishing. A deep emerald hue will be imparted to the grass, and the frequent cuttings required will soon produce a turf that yields to the foot like a Persian rug. Any one who has walked over the plain at West Point can understand the value of these regular autumnal top−dressings. If the stable−manure can be composted and left till thoroughly decayed, fine and friable, all the better. If stable−manure can not be obtained, Mr. Parsons recommends Mapes's fertilizer for lawns.

CHAPTER III. THE GARDEN

We now approach that part of the acre to which its possessor will probably give his warmest and most frequent thoughts—the garden. If properly made and conducted, it will yield a revenue which the wealth of the Indies could not purchase; for whoever bought in market the flavor of fruit and vegetables raised by one's own hands or under our own eyes? Sentiment does count. A boy is a boy; but it makes a vast difference whether he is our boy or not. A garden may soon become a part of the man himself, and he be a better man for its care. Wholesome are the thoughts and schemes it suggests; healthful are the blood and muscle resulting from its products and labor therein. Even with the purse of a millionaire, the best of the city's markets is no substitute for a garden; for Nature and life are here, and these are not bought and sold. From stalls and pedlers' wagons we can buy but dead and dying things. The indolent epicure's enjoyment of game is not the relish of the sportsman who has taken his dinner direct from the woods and waters.

I am often told, "It is cheaper to buy fruit and vegetables than to raise them." I have nothing to say in reply. There are many cheap things that we can have; experience has proved that one of the BEST things to have is a garden, either to work in or to visit daily when the season permits. We have but one life to live here, and to get the cheapest things out of it is a rather poor ambition.

There are multitudes who can never possess an acre, more or less, and who must obtain Nature's products at second hand. This is not so great a misfortune as to have no desire for her companionship, or wish to work under her direction in dewy mornings and shadowy evenings. We may therefore reasonably suppose that the man who has exchanged his city shelter for a rural home looks forward to the garden with the natural, primal instinct, and is eager to make the most of it in all its aspects. Then let us plunge in medias res at once.

The ideal soil for a garden is a mellow, sandy loam, underlaid with a subsoil that is not too open or porous. Such ground is termed "grateful," and it is not the kind of gratitude which has been defined as "a lively appreciation of favors to come," which is true of some other soils. This ideal land remembers past favors; it retains the fertilizers with which it has been enriched, and returns them in the form of good crops until the gift is exhausted; therefore it is a thrifty as well as a grateful soil. The owner can bring it up to the highest degree of fertility, and keep it there by judicious management. This sandy loam—Nature's blending of sand and clay—is a safe bank. The manure incorporated with it is a deposit which can be drawn against in fruit and vegetables, for it does not leach away and disappear with one season's rains.

Light, thin, sandy soil, with a porous or gravelly subsoil, is of a very different type, and requires different treatment. It is a spendthrift. No matter how much you give it one year, it very soon requires just so much more. You can enrich it, but you can't keep it rich. Therefore you must manage it as one would take care of a spendthrift, giving what is essential at the time, and in a way that permits as little waste as possible. I shall explain this treatment more fully further on.

In the choice of a garden plot you may be restricted to a stiff, tenacious, heavy clay. Now you have a miser to deal with—a soil that retains, but in many cases makes no proper use of, what it receives. Skill and good management, however, can improve any soil, and coax luxuriant crops from the most unpropitious.

We will speak first of the ideal soil already mentioned, and hope that the acre contains an area of it of suitable dimensions for a garden. What should be the first step in this case? Why, to get more of it. A quarter of an acre can be made equal to half an acre. You can about double the garden, without adding to it an inch of surface, by increasing the depth of good soil. For instance, ground has been cultivated to the depth of six or seven inches. Try the experiment of stirring the soil and enriching it one foot downward, or eighteen inches, or even two feet, and see what vast differences will result. With every inch you go down, making all friable and fertile, you add just so much more to root pasturage. When you wish to raise a great deal, increase your leverage. Roots are your levers; and when they rest against a deep fertile soil they lift into the air and sunshine products that may well delight the eyes and palate of the most fastidious. We suggest that this thorough deepening, pulverization, and enriching of the soil be done at the start, when the plow can be used without any obstructions. If there are stones, rocks, roots, anything which prevents the treatment which a garden plot should receive, there is a decided advantage in clearing them all out at the beginning. Last fall I saw a half−acre that was swampy, and so encumbered with

stones that one could walk all over it without stepping off the rocks. The land was sloping, and therefore capable of drainage. The proprietor put three men to work on the lower side with picks, shovels, and blasting−tools. They turned the soil over to the depth of eighteen inches, taking out every stone larger than a walnut. Eight or ten feet apart deep ditches were cut, and the stones, as far as possible, placed in these. The rest were carted away for a heavy wall. You may say it was expensive work. So it was; yet so complete a garden spot was made that I believe it would yield a fair interest in potatoes alone. I relate this instance to show what can be done. A more forbidding area for a garden in its original state could scarcely be found. Enough vegetables and fruit can be raised from it hereafter, with annual fertilizing, to supply a large family, and it will improve every year under the refining effects of frost, sun, and cultivation.

It should be remembered that culture does for soil what it does for men and women. It mellows, brings it up, and renders it capable of finer products. Much, indeed, can be done with a crude piece of land in a single year when treated with the thoroughness that has been suggested, and some strong−growing vegetables may be seen at their best during the first season; but the more delicate vegetables thrive better with successive years of cultivation. No matter how abundantly the ground may be enriched at first, time and chemical action are required to transmute the fertilizers into the best forms of plant−food, and make them a part of the very soil itself. Plowing or spading, especially if done in late autumn, exposes the mould to the beneficial action of the air and frost, and the garden gradually takes on the refined, mellow, fertile character which distinguishes it from the ordinary field.

In dealing with a thin, sandy soil, one has almost to reverse the principles just given. Yet there is no cause for discouragement. Fine results, if not the best, can be secured. In this case there is scarcely any possibility for a thorough preparation of the soil from the start. It can gradually be improved, however, by making good its deficiencies, the chief of which is the lack of vegetable mould. If I had such soil I would rake up all the leaves I could find, employ them as bedding for my cow and pigs (if I kept any), and spread the compost−heap resulting on the sandy garden. The soil is already too light and warm, and it should be our aim to apply fertilizers tending to counteract this defect. A nervous, excitable person should let stimulants alone, and take good, solid, blood−making food. This illustration suggests the proper course to be taken. Many a time I have seen action the reverse of this resulting disastrously. For instance, a man carts on his light thin soil hot fermenting manure from the horse−stable, and plows it under. Seeds are planted. In the moist, cool, early spring they make a great start, feeling the impulse of the powerful stimulant. There is a hasty and unhealthful growth; but long before maturity the days grow long and hot, drought comes, and the garden dries up. Therefore every effort should be made to supply cool manures with staying qualities, such as are furnished by decayed vegetable matter composted with the cleanings of the cow−stable. We thus learn the value of fallen leaves, muck from the swamp, etc.; and they also bring with them but few seeds of noxious vegetation.

On the other hand, stolid, phlegmatic clay requires the stimulus of manure from the horse−stable. It can be plowed under at once, and left to ferment and decay in the soil. The process of decomposition will tend to banish its cold, inert qualities, and make the ground loose, open, and amenable to the influences of frost, sun, and rain.

Does the owner of light, warm soils ask, "What, then, shall I do with my stable−manure, since you have said that it will be an injury to my garden?" I have not said this—only that it will do harm if applied in its raw, hot, fermenting state. Compost it with leaves, sod, earth, muck, anything that will keep it from burning up with its own heat. If you can obtain no such ingredients, have it turned over and exposed to the air so often that it will decay without passing through a process approaching combustion. When it has become so thoroughly decomposed as to resemble a fine black powder, you have a fertilizer superior to any high−priced patent compound that can be bought. Further on I will show how it can be used both in this state and also in its crude condition on light soils with the best results.

It is scarcely possible to lay too much stress on this subject of fertilizers. The soil of the garden−plot looks inert: so does heavy machinery; but apply to it the proper motive power, and you have activity at once. Manure is the motive power to soil, and it should be applied in a way and degree to secure the best results. To produce some vegetables and fruits much is required; in other growths, very little.

In laying out a garden there are several points to be considered. The proprietor may be more desirous of securing some degree of beauty in the arrangement than of obtaining the highest condition of productiveness. If this be true, he may plan to make down its centre a wide, gravelled walk, with a grape−arbor here and there, and fruit−trees and flowers in borders on each side of the path. So far from having any objection to this arrangement, I

should be inclined to adopt it myself. It would be conducive to frequent visits to the garden and to lounging in it, especially if there be rustic seats under the arbors. I am inclined to favor anything which accords with my theory that the best products of a garden are neither eaten nor sold. From such a walk down the middle of the garden the proprietor can glance at the rows of vegetables and small fruits on either side, and daily note their progress. What he loses in space and crops he gains in pleasure.

Nor does he lose much; for if the borders on each side of the path are planted with grape−vines, peach and plum trees, flowers and shrubs, the very ground he walks on becomes part of their root pasturage. At the same time it must be admitted that the roots will also extend with depleting appetites into the land devoted to vegetables. The trees and vines above will, to some extent, cast an unwholesome shade. He who has set his heart on the biggest cabbages and best potatoes in town must cultivate them in ground open to the sky, and unpervaded by any roots except their own. If the general fruitfulness of the garden rather than perfection in a few vegetables is desired, the borders, with their trees, vines, and flowers, will prove no objection. Moreover, when it comes to competing in cabbages, potatoes, etc., the proprietor of the Home Acre will find that some Irishman, by the aid of his redolent pig− pen, will surpass him. The roots and shade extending from his borders will not prevent him from growing good vegetables, if not the largest.

We will therefore suppose that, as the simplest and most economical arrangement, he has adopted the plan of a walk six feet wide extending through the centre of his garden. As was the case with the other paths, it will be greatly to his advantage to stake it out and remove about four inches of the surface−soil, piling it near the stable to be used for composting purposes or in the earth−closet. The excavation thus made should be filled with small stones or cinders, and then covered with fine gravel. A walk that shall be dry at all times is thus secured, and it will be almost wholly free from weeds. In these advantages alone one is repaid for the extra first cost, and in addition the rich surface soil obtained will double the bulk and value of the fertilizers with which it is mixed.

Having made the walk, borders five feet wide can be laid out on each side of it, and the soil in these should be as rich and deep as any other parts of the garden. What shall be planted in these borders will depend largely on the tastes of the gardener; but, as has been suggested, there will assuredly be one or more shadowy grape−arbors under which the proprietor can retire to provide horticultural strategy. This brings us to that chef−d'oeuvre of Nature—

The vine. It climbs by its tendrils, and they appear to have clasped the heart of humanity. Among the best of Heaven's gifts, it has sustained the worst perversions. But we will refrain from a temperance lecture; also from sacred and classical reminiscences. The world is not composed of monks who thought to escape temptation—and vainly too—in stony cells. To some the purple cluster suggests Bacchanal revelry; to others, sitting under one's own vine and fig−tree—in brief, a home. The vine is like woman, the inspiration of the best and the worst.

It may well become one of the dreams of our life to own land, if for no other reason than that of obtaining the privilege of planting vines. As they take root, so will we, and after we have eaten their delicious fruit, the very thought of leaving our acre will be repugnant. The literature of the vine would fill a library; the literature of love would crowd many libraries. It is not essential to read everything before we start a little vineyard or go a−courting.

It is said that about two thousand known and named varieties of grapes have been and are being grown in Europe; and all these are supposed to have been developed from one species (Vitis vinifera), which originally was the wild product of Nature, like those growing in our thickets and forests. One can scarcely suppose this possible when contemplating a cluster of Tokay or some other highly developed variety of the hot−house. Yet the native vine, which began to "yield fruit after his kind, the third day" (whatever may have been the length of that day), may have been, after all, a good starting−point in the process of development. One can hardly believe that the "one cluster of grapes" which the burdened spies, returning from Palestine, bore "between two of them upon a staff," was the result of high scientific culture. In that clime, and when the world was young, Nature must have been more beneficent than now. It is certain that no such cluster ever hung from the native vines of this land; yet it is from our wild species, whose fruit the Indians shared with the birds and foxes (when not hanging so high as to be sour), that we have developed the delicious varieties of our out−door vineyards. For about two centuries our forefathers kept on planting vines imported from Europe, only to meet with failure. Nature, that had so abundantly rewarded their efforts abroad, quietly checkmated them here. At last American fruit−growers took the hint, and began developing our native species. Then Nature smiled; and as a lure along this correct path of progress, gave

such incentives as the Isabella, the Catawba, and Concord. We are now bewildered by almost as great a choice of varieties from native species as they have abroad; and as an aid to selection I will again give the verdict of some of the authorities.

The choice of the Hon. Norman J. Colman, Commissioner of Agriculture: "Early Victor, Worden, Martha, Elvira, Cynthiana." This is for the region of Missouri. For the latitude of New Jersey, A.S. Fuller's selection: "Delaware, Concord, Moore's Early, Antoinette (white), Augusta (white), Goethe (amber)." E.S. Carmen: "Moore's Early [you cannot praise this too much. The quality is merely that of the Concord; but the vines are marvels of perfect health, the bunches large, the berries of the largest size. They ripen all at once, and are fully ripe when the Concord begins to color], Worden, Brighton, Victoria (white), Niagara (white), El Dorado. [This does not thrive everywhere, but the grapes ripen early—September 1, or before—and the quality is perfection—white.]" Choice of P.J. Berckman, for the latitude of Georgia: "White grapes—Peter Wylie, Triumph, Maxatawny, Scuppernong. Bed grapes—Delaware, Berckman's, Brighton. Black— Concord, Ives."

As I have over a hundred varieties in bearing, I may venture to express an opinion also. I confess that I am very fond of those old favorites of our fathers, the Isabella and Catawba. They will not ripen everywhere in our latitude, yet I seldom fail to secure a good crop. In the fall of 1885 we voted the Isabella almost unsurpassed. If one has warm, well−drained soil, or can train a vine near the south side of a building, I should advise the trial of this fine old grape. The Iona, Brighton, and Agawam also are great favorites with me. We regard the Diana, Wyoming Red, Perkins, and Rogers' hybrids, Lindley, Wilder, and Amenia, as among the best. The Rebecca, Duchess, Lady Washington, and Purity are fine white grapes. I have not yet tested the Niagara. Years ago I obtained of Mr. James Ricketts, the prize−taker for seedling grapes, two vines of a small wine grape called the Bacchus. To my taste it is very pleasant after two or three slight frosts.

Our list of varieties is long enough, and one must be fastidious indeed who does not find some to suit his taste. In many localities the chief question is, What kind CAN I grow? In our favored region on the Hudson almost all the out−door grapes will thrive; but as we go north the seasons become too cool and short for some kinds, and proceeding south the summers are too long and hot for others. The salt air of the sea−coast is not conducive to vine−culture, and only the most vigorous, like the Concord and Moore's Early, will resist the mildew blight. We must therefore do the best we can, and that will be very well indeed in most localities.

Because our list of good grapes is already so long, it does not follow that we have reached the limit of development by any means. When we remember that almost within a lifetime our fine varieties have been developed from the wild northern Fox grape (Vitis labrusca), the Summer grape (oestivalis), Frost (cordifolia), we are led to think that perhaps we have scarcely more than crossed the stile which leads into the path of progress. If I should live to keep up my little specimen vineyard ten years longer, perhaps the greater part of the varieties now cultivated will have given place to others. The delicious Brighton requires no more space than a sour, defective variety; while the proprietor starts with the best kinds he can obtain, he will find no restraint beyond his own ignorance or carelessness that will prevent his replacing the Brighton with a variety twice as good when it is developed. Thus vine−planting and grape−tasting stretch away into an alluring and endless vista.

When such exchanges are made, we do not recommend the grafting of a new favorite on an old vine. This is a pretty operation when one has the taste and leisure for it, and a new, high−priced variety can sometimes be obtained speedily and cheaply in this way. Usually, however, new kinds soon drop down within the means of almost any purchaser, and there are advantages in having each variety growing upon its own root. Nature yields to the skill of the careful gardener, and permits the insertion of one distinct variety of fruit upon another; but with the vine she does not favor this method of propagation and change, as in the case of pears and apples, where the graft forms a close, tenacious union with the stock in which it is placed. Mr. Fuller writes: "On account of the peculiar structure of the wood of the vine, a lasting union is seldom obtained when grafted above−ground, and is far from being certain even when grafted below the surface, by the ordinary method." The vine is increased so readily by easy and natural methods, to be explained hereafter, that he who desires nothing more than to secure a good supply of grapes for the table can dismiss the subject. On the other hand, those who wish to amuse themselves by experimenting with Nature can find abundant enjoyment in not only grafting old vines, but also in raising new seedlings, among which he may obtain a prize which will "astonish the natives." Those, however, whose tastes carry them to such lengths in vine−culture will be sure to purchase exhaustive treatises on the subject, and will therefore give no heed to these simple practical chapters. It is my aim to enable the business man returning from

his city office, or the farmer engrossed with the care of many acres, to learn in a few moments, from time to time, just what he must do to supply his family abundantly with fruits and vegetables.

If one is about to adopt a grape−culture as a calling, common− sense requires that he should locate in some region peculiarly adapted to the vine. If the possessor of a large farm purposes to put several acres in vineyard, he should also aim to select a soil and exposure best suited to his purpose. Two thousand years ago Virgil wrote, "Nor let thy vineyard bend toward the sun when setting." The inference is that the vines should face the east, if possible; and from that day to this, eastern and southern exposures have been found the best. Yet climate modifies even this principle. In the South, I should plant my vineyard on a north− western slope, or on the north side of a belt of woods, for the reason that the long, hot days there would cause too rapid an evaporation from the foliage of the vines, and enfeeble, if not kill them. In the limited space of the Home Acre one can use only such land as he has, and plant where he must; but if the favorable exposures indicated exist, it would be well to make the most of them. I can mention, however, as encouragement to many, that I saw, last fall, splendid grapes growing on perfectly level and sandy soil in New Jersey.

A low−lying, heavy, tenacious clay is undoubtedly the worst ground in which to plant a vine; and yet by thorough drainage, a liberal admixture of sand, and light fertilizers, it can be made to produce good grapes of some varieties. A light sandy soil, if enriched abundantly with well−decayed vegetable and barnyard manures, gives wider scope in choice of kinds; while on the ideal well−drained sandy loam that we have described, any outdoor grape can be planted hopefully if the garden is sufficiently removed from the seaboard.

As a general truth it may be stated that any land in a condition to produce a fine crop of corn and potatoes is ready for the vine. This would be true of the entire garden if the suggestions heretofore made have been carried out. Therefore the borders which have been named are ready to receive the vines, which may be planted in either spring or fall. I prefer the fall season for several reasons. The ground is usually drier then, and crumbles more finely; the young vine becomes well established and settled in its place by spring, and even forms new roots before the growing season begins, and in eight cases out of ten makes a stronger growth than follows spring planting; it is work accomplished when there is usually the greatest leisure. If the ground is ready in EARLY spring, I should advise no delay. A year's growth is gained by setting out the vines at once. As a rule I do not advise late spring planting—that is, after the buds have started on the young vines. They may live, but usually they scarcely do more, the first year.

In ordering from a nursery I should ask for vigorous, well−rooted two−year−old vines, and I should be almost as well contented with first−class one−year−olds. If any one should advertise "extra large, strong vines, ready to bear at once," I should have nothing to do with him. That's a nursery trick to get rid of old stock. The first year after the shock of removal a vine should not be permitted to bear at all; and a young vigorous vine is worth a dozen old stunted ones.

Having procured the vines, keep them in a cool, moist place until ready to plant. Never permit the roots to become dry; and if some of them are long and naked, shorten them to two feet, so as to cause them to throw out side fibrous roots, which are the true feeders. Excavate holes of ample size, so that all the roots may be spread out naturally. If you have reason to think the ground is not very good, two or three quarts of fine bone−dust thoroughly mixed with the soil that is placed on and about the roots will give a fine send−off. Usually a good mulch of any kind of barnyard manure placed on the SURFACE after planting will answer all purposes. Before filling in the hole over the roots, place beside the vine a stout stake six or seven feet high. This will be all the support required the first year. Cut back the young vine to three buds, and after they get well started, let but one grow. If the planting is done in the fall, mound the earth up over the little vine at the approach of winter, so as to cover it at least six inches below the surface. In spring uncover again as soon as hard frosts are over—say early April in our latitude. Slow− growing varieties, like the Delaware, may be set out six feet apart; strong growers, like the Concord, eight feet. Vines can not be expected to thrive under the shade of trees, or to fight an unequal battle in ground filled with the roots of other plants.

Vines may be set out not only in the garden borders, but also in almost any place where their roots will not be interfered with, and where their foliage will receive plenty of light and air. How well I remember the old Isabella vines that clambered on a trellis over the kitchen door at my childhood's home! In this sunny exposure, and in the refleeted heat of the building, the clusters were always the sweetest and earliest ripe. A ton of grapes may be secured annually by erecting trellises against the sides of buildings, walls, and poultry yard, while at the same

time the screening vines furnish grateful shade and no small degree of beauty. With a little petting, such scattered vines are often enormously productive. An occasional pail of soapsuds gives them a drink which eventually flushes the thickly hanging clusters with exquisite color. People should dismiss from their minds the usual method of European cultivation, wherein the vines are tied to short stakes, and made to produce their fruit near the ground. This method can be employed if we find pleasure in the experiment. At Mr. Fuller's place I saw fine examples of it. Stubby vines with stems thick as one's wrist rose about three feet from the ground, then branched off on every side, like an umbrella, with loads of fruit. Only one supporting stake was required. This method evidently is not adapted to our climate and species of grape, since in that case plenty of keen, practical fruit−growers would have adopted it. I am glad this is true, for the vine−clad hills of France do not present half so pleasing a spectacle as an American cornfield. The vine is beautiful when grown as a vine, and not as a stub; and well−trained, well−fed vines on the Home Acre can be developed to almost any length required, shading and hiding with greenery every unsightly object, and hanging their finest clusters far beyond the reach of the predatory small boy.

We may now consider the vines planted and growing vigorously, as they will in most instances if they have been prepared for and planted according to the suggestions already given. Now begins the process of guiding and assisting Nature. Left to herself, she will give a superabundance of vine, with sufficient fruit for purposes of propagation and feeding the birds. Our object is to obtain the maximum of fruit from a minimum of vine. The little plant, even though grown from a single bud, will sprawl all over everything near it in three or four years, if unchecked. Pruning may begin even before midsummer of the first year. The single green shoot will by this time begin to produce what are termed "laterals." The careful cultivator who wishes to throw all the strength and growth into the main shoot will pinch these laterals back as soon as they form one leaf. Each lateral will start again from the axil of the leaf that has been left, and having formed another leaf, should again be cut off. By repeating this process during the growing season you have a strong single cane by fall, reaching probably beyond the top of the supporting stake. In our latitude I advise that this single cane—that is, the vine—be cut back to within fifteen inches of the surface when the leaves have fallen and the wood has well−ripened—say about the middle of November—and that the part left be bent over and covered with earth. When I say "bent over," I do not mean at right angles, so as to admit of the possibility of its being broken, but gently and judiciously. I cover with earth all my vines, except the Concords and Isabellas, just before hard freezing weather; and even these two hardy kinds I weight down close to the ground. I have never failed to secure a crop from vines so treated. Two men will protect over a hundred vines in a day.

In early April the young vine is uncovered again; and now the two uppermost buds are allowed to grow and form two strong canes, instead of one, and on this new growth four or five clusters of grapes may be permitted to mature if the vine is vigorous. If it is feeble, take off all the fruit, And stimulate the vine into greater vigor. Our aim is not to obtain half a dozen inferior clusters as soon as possible, but to produce a vine that will eventually almost supply a family by itself. If several varieties have been planted, some will be found going ahead rampantly; others will exhibit a feebler growth, which can be hastened and greatly increased by enriching the surface of the soil around them and by a pail of soap−suds now and then in May or June—but not later, unless there should be a severe drought. There should be no effort to produce much growth during the latter part of the summer and early autumn, for then both the wood and roots will be immature and unripened when frost begins, and thus the vine receive injury. For this reason it is usually best to apply fertilizers to vines in the fall; for if given in the spring, a late, unhealthful growth is often produced. Throughout all subsequent years manure must be applied judiciously. You may tell the hired man to top−dress the ground about the vines, and he will probably treat all alike; a vine that is already growing so strongly that it can scarcely be kept within bounds will receive as much as one that is slow and feeble in its development. This is worse than waste. Each vine should be treated in accordance with its condition and habit of growth. What would be thought of a physician who ordered a tonic for an entire family, giving as much to one who might need depleting, as to another who, as country people say, was "puny and ailin'?" With even an assortment of half a dozen varieties we shall find after the first good start that some need a curb, and others a spur.

Stakes will answer as supports to the vines during the first and second seasons; but thereafter trellises or arbors are needed. The latter will probably be employed over the central walk of the garden, and may be constructed after several simple and pretty designs, which I leave to the taste of the reader. If vines are planted

about buildings, fences, etc., trellises may be made of anything preferred—of galvanized wire, slats, or rustic poles fastened to strong, durable supports. If vines are to be trained scientifically in the open garden, I should recommend the trellises figured on pages 120 and 142 of Mr. Fuller's work, "The Grape Culturist." These, beyond anything I have seen, appear the best adapted for the following out of a careful system of pruning and training. Such a system Mr. Fuller has thoroughly and lucidly explained in the above−named book.

Unless the reader has had experience, or is willing to give time for the mastery of this subject, I should advise that he employ an experienced gardener to prune his vines after the second year. It is a brief task, but a great deal depends upon it. In selecting a man for the work I should require something more than exaggerated and personal assurances. In every village there are terrible butchers of vines and fruit−trees, who have some crude system of their own. They are as ignorant of the true science of the subject as a quack doctor of medicine, and, like the dispenser of nostrums, they claim to be infallible. Skilful pruning and training is really a fine art, which cannot be learned in a day or a year. It is like a surgical operation, requiring but little time, yet representing much acquired skill and experience. In almost every locality there are trustworthy, intelligent gardeners, who will do this work for a small sum until the proprietor has learned the art himself, if so inclined. I should also employ the same man in spring to tie up the vines and train them.

If one is not ambitious to secure the best results attainable, he can soon learn to perform both the tasks well enough to obtain fairly good fruit in abundance. It should be our constant aim not to permit long, naked reaches of wood, in one part of the vine, and great smothering bunches of fruit and foliage in another part. Of course the roots, stem, and leading arms should be kept free from useless shoots and sprouts; but having reached the trellis, the vine should be made to distribute bearing fruit−spurs evenly over it. Much can be learned about pruning from books and by watching an expert gardener while giving the annual pruning; but the true science of trimming a vine is best acquired by watching buds develop, by noting what they will do, where they go, and how much space they will take up in a single summer. In this way one will eventually realize how much is wrapped up in the insignificant little buds, and now great the folly of leaving too many on the vine.

In my next chapter I shall treat briefly of the propagation of the grape, its insect enemies, diseases, etc.; and also of some other fruits.

CHAPTER IV. THE VINEYARD AND ORCHARD

He who proposes to plant grape−vines will scarcely fail to take the sensible course of inspecting the varieties already producing fruit in his locality. From causes often too obscure to be learned with certainty, excellent kinds will prove to be well adapted to one locality, and fail in others. If, therefore, when calling on a neighbor during August, September, or October, we are shown a vine producing fruit abundantly that is suited to our taste, a vine also which manifests unmistakable vigor, we may be reasonably sure that it belongs to a variety which we should have, especially if it be growing in a soil and exposure somewhat similar to our garden plot. A neighbor worthy of the name will be glad to give us a few cuttings from his vine at the time of its annual pruning; and with, very little trouble we also may soon possess the desired variety. When the vine is trimmed, either make yourself or have your friend make a few cuttings of sound wood from that season's growth. About eight inches is a good length for these vine−slips, and they should contain at least two buds. Let each slip be cut off smoothly just under the lowest bud, and extend an inch or two above the uppermost bud. If these cuttings are obtained in November or December, they may be put into a little box with some of the moist soil of the garden, and buried in the ground below the usual frost−line—say a foot or eighteen inches in our latitude. The simple object is to keep them in a cool, even temperature, but not a frosty one. Early in April dig up the box, open a trench in a moist but not wet part of the garden, and insert the cuttings perpendicularly in the soil, so that the upper bud is covered barely one inch. In filling up the trench, press the soil carefully yet firmly about the cuttings, and spread over the surface just about them a little fine manure. The cuttings should be a foot apart from each other in the row. Do not let the ground become dry about them at any time during the summer. By fall these cuttings will probably have thrown out an abundance of roots, and have made from two to three feet of vine. In this case they can be taken up and set out where they are to fruit. Possibly but one or two of them have started vigorously. The backward ones had better be left to grow another year in the cutting bed. Probably we shall not wish to cultivate more than one or two vines of the variety; but it is just as easy to start several cuttings as one, and by this course we guard against failure, and are able to select the most vigorous plant for our garden. By taking good care of the others we soon derive one of the best pleasures which our acre can afford—that of giving to a friend something which will enhance the productiveness of his acre, and add to his enjoyment for years to come.

Not only on our neighbor's grounds, but also on our own we shall discover that some varieties are unusually vigorous, productive, and well−adapted to our locality; and we may very naturally wish to have more vines of the same sort, especially if the fruit is to our taste. We can either increase this kind by cuttings, as has been described, or we can layer part of the vine that has won our approval by well−doing. I shall take the latter course with several delicious varieties in my vineyard. Some kinds of grapes do not root readily as cuttings, but there is little chance of failure in layering. This process is simply the laying down of a branch of a vine in early spring, and covering it lightly with soil, so that some buds will be beneath the surface, and others just at or a little above it. Those beneath will form roots, the others shoots which by fall should be good vines for planting. Every bud that can reach the air and light will start upward, and thus there may be a thick growth of incipient vines that will crowd and enfeeble each other. The probabilities are that only two or three new vines are wanted; therefore all the others should be rubbed off at the start, so that the strength of the parent plant and of the new roots that are forming may go into those few shoots designed to become eventually a part of our vineyard. If we wish only one vine, then but one bud should grow from the layer; if two vines, then two buds. The fewer buds that are permitted to grow, the stronger vines they make.

It must be remembered that this layer, for the greater part of the growing season, is drawing its sustenance from the parent plant, to which it is still attached. Therefore the other branches of this vine thus called upon for unusual effort should be permitted to fruit but sparingly. We should not injure and enfeeble the original vine in order to get others like it. For this reason we advise that no more buds be permitted to grow from the layer than we actually need ourselves. To injure a good vine and deprive ourselves of fruit that we may have plants to give away, is to love one's neighbor better than one's self—a thing permitted, but not required. When our vines are pruned, we can make as many cuttings as we choose, either to sell or give away.

The ground in which a layer is placed should be very rich, and its surface round the young growing vines

always kept moist and free from weeds. In the autumn, after the leaves have fallen and the wood is ripe and hard, cut off the layered branch close to the vine, and with a garden−fork gently and carefully lift it, with all its roots and young vines attached, out of the soil. First cut the young vines back to three or four buds, then separate them from the branch from which they grew, being sure to give each plant plenty of roots, and the roots BACK of the point from which it grew; that is, those roots nearest the parent plant from which the branch was layered. All the old wood of the branch that is naked, free of roots, should be cut off. The young shoots thus separated are now independent vines, and may be set out at once where they are to fruit. If you have a variety that does not do well, or that you do not like, dig it out, enrich the soil, and put one of your favorites in its place.

We will now consider briefly the diseases and insect enemies of the grape. A vine way be doomed to ill−health from its very situation. Mr. Hussman, a grape−culturist of great experience and wide observation, writes: "Those localities may generally be considered safe for the grape in which there are no miasmatic influences. Where malaria and fevers prevail, there is no safety for the crop, as the vine seems to be as susceptible to such influences as human beings."

Taking this statement literally, we may well ask, Where, then, can grapes be grown? According to physicians, malaria has become one of the most generally diffused products of the country. When a man asserts that it is not in his locality, we feel sure that if pressed he will admit that it is "round the corner." Country populations still survive, however, and so does grape−culture. Yet there are low−lying regions which from defective drainage are distinctively and, it would almost seem, hopelessly malarial. In such localities but few varieties of the vine will thrive, The people who are compelled to live there, or who choose to do so, should experiment until they obtain varieties so hardy and vigorous that they will triumph over everything. The best course with grape−diseases is not to have them; in other words, to recognize the fact at once that certain varieties of the grape will not thrive and be productive of good fruit unless the soil and climate suit them. The proprietor of the Home Acre can usually learn by a little inquiry or observation whether grapes thrive in his locality. If there is much complaint of mildew, grape−rot, and general feebleness of growth, he should seek to plant only the most hardy and vigorous kinds.

As I have said before, our cultivated grapes are derived from several native species found growing wild, and some now valued highly for wine−making are nothing but wild grapes domesticated; as, for instance, Norton's Virginia, belonging to the oestivalis class. The original plant of this variety was found growing upon an island in the Potomac by Dr. Norton, of Virginia.

The species from which the greatest number of well−known grapes is obtained is the Vitis labrusca, the common wild or fox grape, found growing in woods and thickets, usually where the ground is moist, from Canada to the Gulf. The dark purple berries, averaging about three−quarters of an inch in diameter, ripen in September, and they contain a tough, musky pulp. Yet this "slip of wilderness" is the parent of the refined Catawba, the delicious Brighton, and the magnificent white grape Lady Washington—indeed, of all the black, red, and white grapes with which most people are familiar. Our earliest grapes, which ripen in August, as well as some of the latest, like the Isabella, come from the labrusca species. It is said that the labrusca class will not thrive in the extreme South; and with the exception of the high mountain slopes, this appears reasonable to the student of the vine. It is said that but few of this class will endure the long hot summers of France. But there are great differences among the varieties derived from this native species. For example, the Concord thrives almost anywhere, while even here upon the Hudson we can scarcely grow the Catawba with certainty. It is so good a grape, however, that I persist in making the effort, with varying success; but I should not recommend it, or many of its class, for those localities not specially suited to the grape.

I will now name a few varieties which have proved to be, or promise to be, the most thrifty and productive whereever grapes can be grown at all the labrusca class: Black—Concord, Wilder, Worden, Amenia, Early Canada, Telegraph or Christine, Moore's Early. Red−Wyoming, Goethe, Lindley, Beauty, Brighton, Perkins (pale red), and Agawam. White—Rebecca, Martha, Alien's Hybrid, Lady Pocklington, Prentiss, Lady Washington. These are all fine grapes, and they have succeeded throughout wide areas of country. Any and all are well worth a trial; but if the grower finds that some of them are weak and diseased in his grounds, I should advise that he root them out and replace them with those which thrive. The Niagara is highly praised, and may make good all that is claimed for it.

Of the aestivalis class I can recommend the Cynthiana and the Herbemont, or Warren, for the extreme South. Both of them are black. There are new varieties of this vigorous species which promise well.

The cordifolia species promises to furnish some fine, hardy, and productive grapes, of which the Amber is an example. The Elvira, a pale yellow grape, is highly praised by Mr. Hussman. Although the Bacchus is distinctively a wine grape, I have already said that its flavor, when fully ripe, was agreeable to me. The only difficulty in growing it is to keep the ground poor, and use the pruning−knife freely.

I have enlarged on this point, for I wish to direct the mind of the reader to the fact that there are many very hardy grapes. I congratulate those who, with the taste of a connoisseur, have merely to sample until they find just the varieties that suit them, and then to plant these kinds in their genial soil and favored locality.

At the same time I should like to prevent others from worrying along with unsatisfactory varieties, or from reaching the conclusion that they can not grow grapes in their region or garden. Let them rather admit that they can not raise some kinds, but may others. If a variety were persistently diseased, feeble, and unproductive under good treatment, I should root it out rather than continue to nurse and coddle it.

When mildew and grape−rot first appear, the evil can often be remedied in part by dusting the vines with sulphur, and continuing the process until the disease is cured, if it ever is. I have never had occasion to do this, and will not do it. A variety that often requires such nursing in this favored locality should be discarded.

There is one kind of disease, or feebleness rather, to which we are subject everywhere, and from which few varieties are exempt. It is the same kind of weakness which would be developed in a fine sound horse if we drove him until he dropped down every time we took him out. Cultivated vines are so far removed from their natural conditions that they will often bear themselves to death, like a peach−tree. To permit this is a true instance of avarice overreaching itself; or the evil may result from ignorance or neglect. Close pruning in autumn and thinning out the crowding clusters soon after they have formed is the remedy. If a vine had been so enfeebled, I should cut it back rigorously, feed it well, and permit it to bear very little fruit, if any, for a year.

Of insect enemies we have the phylloxera of bad eminence, which has so dismayed Europe. The man who could discover and patent an adequate remedy in France might soon rival a Rothschild in his wealth. The remedy abroad is also ours—to plant varieties which are phylloxera−proof, or nearly so. Fortunately we have many which defy this pestiferous little root−louse, and European vine−growers have been importing them by the million. They are still used chiefly as stocks on which to graft varieties of the vinifera species. In California, grapes of the vinifera or European species are generally cultivated; but the phylloxera is at its destructive work among them. The wine−grapes of the future throughout the world may be developed from the hardy cestivalis and cordifolia classes. In many localities, even in this new land, varieties like the Delaware succumb to this scourge of foreign vineyards.

The aphis, or plant−louse, sometimes attacks the young, tender shoots of the vine. The moment they appear, take off the shoot, and crush it on a board with the foot. Leaf−rollers, the grape− vine sphinx, and caterpillars in general must be caught by hand and killed. Usually they are not very numerous. The horrid little rose−chafers or rose−bugs are sometimes very destructive. Our best course is to take a basin of water and jar them off into it—they fall readily—and then scald them to death. We may discover lady− bugs—small red or yellow and black beetles—among our vines, and many persons, I fear, will destroy them with the rest. We should take off our hats to them and wish them godspeed. In their destruction of aphides and thrips they are among our best friends. The camel−cricket is another active destroyer of injurious insects. Why do not our schools teach a little practical natural history? Once, when walking in the Catskills, I saw the burly driver of a stage−load of ladies bound out of his vehicle to kill a garter−snake, the pallid women looking on, meanwhile, as if the earth were being rid of some terrible and venomous thing. They ought to have known that the poor little reptile was as harmless as one of their own garters, and quite as useful in its way. Every country boy and girl should be taught to recognize all our helpers in our incessant fight with insect enemies—a fight which must be maintained with more organized vigor and intelligence than at present, if horticulture is ever to reach its best development.

Wasps and hornets often swarm about the sweet and early ripe varieties. A wide−mouthed bottle partially filled with molasses and water will entrap and drown great numbers of these ugly customers. Some of our favorite birds try our patience not a little. During the early summer I never wearied of watching the musical orioles flashing with their bright hues in and out of the foliage about the house; but when the early grapes were ripe, they took pay for their music with the sang−froid of a favorite prima donna. On one occasion I saw three or four alight on a Diana vine, and in five minutes they had spoiled a dozen clusters. If they would only take a bunch and eat it up clean, one would readily share with them, for there would be enough for all; but the dainty little epicures

puncture an indefinite number of berries, merely taking a sip from each. Then the wasps and bees come along and finish the clusters. The cardinal, cat−bird, and our unrivalled songster the wood−thrush, all help themselves in the same wasteful fashion. One can't shoot wood−thrushes. We should almost as soon think of killing off our Nilssons, Nevadas, and Carys. The only thing to do is to protect the clusters; and this can be accomplished in several ways. The most expeditious and satisfactory method is to cover the vines of early grapes with cheap mosquito netting. Another method is to make little bags of this netting and inclose each cluster. Last fall, two of my children tied up many hundreds of clusters in little paper bags, which can be procured at wholesale for a trifling sum. The two lower corners of the paper bags should be clipped off to permit the rain to pass freely through them. Clusters ripen better, last longer on the vine, and acquire a more exquisite bloom and flavor in this retirement than if exposed to light as well as to birds and wasps. Not the fruit but the foliage of the grape−vine needs the sun.

Few of the early grapes will keep long after being taken from the vine; but some of the later ones can be preserved well into the winter by putting them in small boxes and storing them where the temperature is cool, even, and dry. Some of the wine−grapes, like Norton's Virginia, will keep under these conditions almost like winter apples. One October day I took a stone pot of the largest size and put in first a layer of Isabella grapes, then a double thickness of straw paper, then alternate layers of grapes and paper, until the pot was full. A cloth was next pasted over the stone cover, so as to make the pot water−tight. The pot was then buried on a dry knoll below the reach of frost, and dug up again on New Year's Day. The grapes looked and tasted as if they had just been picked from the vine.

For the mysteries of hybridizing and raising new seedlings, grafting, hot−house and cold grapery culture, the reader must look in more extended works than this, and to writers who have had experience in these matters.

We shall next consider three fruits which upon the Home Acre may be regarded as forming a natural group−peaches, plums, and raspberries, if any one expresses surprise that the last−named fruit should be given this relationship, I have merely to reply that the raspberry thrives in the partial shade produced by such small trees as the peach and plum. Where there is need of economy of space it is well to take advantage of this fact, for but few products of the garden give any satisfaction when contending with roots below and shade above.

We have taken it for granted that some grape−vines would be planted in the two borders extending through the centre of the garden, also that there would be spaces left which might be filled with peach and plum trees and small flowering shrubs. If there is to be a good−sized poultry−yard upon the acre, we should advise that plums be planted in that; but we will speak of this fruit later, and now give our attention to that fruit which to the taste of many is unrivalled—the peach.

With the exception of the strawberry, it is perhaps the only fruit for which I prefer spring planting. At the same time, I should not hesitate to set out the trees in autumn. The ground should be good, but not too highly fertilized. I prefer young trees but one year old from the bud. If set out in the fall, I should mound up the earth eighteen inches about them, to protect the roots and stem, and to keep the tree firmly in the soil. With this precaution, I am not sure but that fall planting has the greater advantage, except when the climate is very severe and subject to great alternations. Plant with the same care and on the same principles which have been already described. If a careful system of pruning is to be adopted, the trees may be set out twelve feet apart; but if they are to be left to grow at will, which I regret to say is the usual practice, they should be planted fifteen feet from each other.

There are many good reasons why the common orchard culture of the peach should not be adopted in the garden. There is no fruit more neglected and ill−treated than the beautiful and delicious peach. The trees are very cheap, usually costing but a few cents each; they are bought by the thousand from careless dealers, planted with scarcely the attention given to a cabbage−plant, and too often allowed to bear themselves to death. The land, trees, and cultivation cost so little that one good crop is expected to remunerate for all outlay. If more crops are obtained, there is so much clear gain. Under this slovenly treatment there is, of course, rapid deterioration in the stamina of the peach. Pits and buds are taken from enfeebled trees for the purpose of propagation, and so tendencies to disease are perpetuated and enhanced. Little wonder that, the fatal malady, the "yellows," has blighted so many hopes! I honestly believe that millions of trees have been sold in which this disease existed from the bud. If fine peaches were bred and propagated with something of the same care that is bestowed on blooded stock, the results would soon be proportionate. Gardeners abroad often give more care to one tree than hundreds

receive here. Because the peach has grown so easily in our climate, we have imposed on its good−nature beyond the limits of endurance, and consequently it is not easy to get sound, healthful trees that will bear year after year under the best of treatment, as they did with our fathers with no care at all. I should look to men who had made a reputation for sending out sound, healthful stock grown under their own eyes from pits and wood which they know to be free from disease. Do not try to save a few pennies on the first cost of trees, for the probabilities are that such economy will result in little more than the "yellows."

In large orchards, cultivated by horse−power, the stems of the trees are usually from four to six feet high; but in the garden this length of stem is not necessary, and the trees can be grown as dwarf standards, with stems beginning to branch two feet from the ground. A little study of the habit of growth in the peach will show that, to obtain the best results, the pruning−shears are almost as essential as in the case of the grape−vine. More than in any other fruit−tree, the sap tends strongly toward the ends of the shoots. Left to Nature, only the terminal buds of these will grow from year to year; the other buds lower down on the shoots fail and drop off. Thus we soon have long naked reaches of unproductive wood, or sucker−like sprouts starting from the bark, which are worse than useless. Our first aim should be to form a round, open, symmetrical head, shortening in the shoots at least one−half each year, and cutting out crossing and interlacing branches. For instance, if we decide to grow our trees as dwarf standards, we shall cut back the stems at a point two feet from the ground the first spring after planting, and let but three buds grow, to make the first three or leading branches. The following spring we shall cut back the shoots that have formed, so as to make six leading branches. Thereafter we shall continue to cut out and back so as to maintain an open head for the free circulation of air and light.

To learn the importance of rigorous and careful pruning, observe the shoots of a vigorous peach−tree, say three or four years old. These shoots or sprays are long and slender, lined with fruit− buds. You will often find two fruit−buds together, with a leaf−bud between them. If the fruit−buds have been uninjured by the winter, they will nearly all form peaches, far more than the slender spray can support or mature. The sap will tend to give the most support to all growth at the end of the spray or branch. The probable result will be that you will have a score, more or less, of peaches that are little beyond skin and stones. By midsummer the brittle sprays will break, or the limbs split down at the crotches. You may have myriads of peaches, but none fit for market or table. Thousands of baskets are sent to New York annually that do not pay the expenses of freight, commission, etc.; while the orchards from which they come are practically ruined. I had two small trees from which, one autumn, I sold ten dollars' worth of fruit. They yielded more profit than is often obtained from a hundred trees.

Now, in the light of these facts, realize the advantages secured by cutting back the shoots or sprays so as to leave but three or four fruit−buds on each. The tree can probably mature these buds into large, beautiful peaches, and still maintain its vigor. By this shortening−in process you have less tree, but more fruit. The growth is directed and kept within proper limits, and the tree preserved for future usefulness. Thus the peach−trees of the garden will not only furnish some of the most delicious morsels of the year, but also a very agreeable and light phase of labor. They can be made pets which will amply repay all kindness; and the attentions they most appreciate, strange to say, are cutting and pinching. The pruning−shears in March and early April can cut away forming burdens which could not be borne, and pinching back during the summer can maintain beauty and symmetry in growth. When the proprietor of the Home Acre has learned from experience to do this work judiciously, his trees, like the grape−vines, will afford many hours of agreeable and healthful recreation. If he regards it as labor, one great, melting, luscious peach will repay him. A small apple, pear, or strawberry usually has the flavor of a large one; but a peach to be had in perfection must be fully matured to its limit of growth on a healthful tree.

Let no one imagine that the shortening in of shoots recommended consists of cutting the young sprays evenly all round the trees as one would shear a hedge. It more nearly resembles the pruning of the vine; for the peach, like the vine, bears its fruit only on the young wood of the previous summer's growth. The aim should be to have this young bearing wood distributed evenly over the tree, as should be true of a grape−vine. When the trees are kept low, as dwarf standards, the fruit is more within reach, and less liable to be blown off by high winds. Gradually, however, if the trees prove healthful, they will get high enough up in the world.

Notwithstanding the rigorous pruning recommended, the trees will often overload themselves; and thinning out the young peaches when as large as hickory nuts is almost imperative if we would secure good fruit. Men of experience say that when a tree has set too much fruit, if two−thirds of it are taken off while little, the remaining

third will measure and weigh more than would the entire crop, and bring three times as much money. In flavor and beauty the gain will certainly be more than double.

Throughout its entire growth and fruiting life the peach−tree needs good cultivation, and also a good but not overstimulated soil. Well−decayed compost from the cow−stable is probably the best barnyard fertilizer. Wood−ashes are peculiarly agreeable to the constitution of this tree, and tend to maintain it in health and bearing long after others not so treated are dead. I should advise that half a peck be worked in lightly every spring around each tree as far as the branches extend. When enriching the ground about a tree, never heap the fertilizer round the trunk, but spread it evenly from the stem outward as far as the branches reach, remembering that the head above is the measure of the root extension below. Air−slacked lime is also useful to the peach in small quantities; and so, no doubt, would be a little salt from time to time. Bone−meal is highly recommended.

Like other fruit−trees, the peach does not thrive on low, wet ground, and the fruit−buds are much more apt to be winter−killed in such localities. A light, warm soil is regarded as the most favorable.

Of course we can grow this fruit on espaliers, as they do abroad; but there are few localities where any advantage is to be derived from this course. In our latitude I much prefer cool northern exposures, for the reason that the fruitbuds are kept dormant during warm spells in winter, and so late in spring that they escape injury from frost. Alternate freezing and thawing is more harmful than steady cold. The buds are seldom safe, however, at any time when the mercury sinks ten or fifteen degrees below zero.

As we have intimated, abuse of the peach−tree has developed a fatal disease, known as the "yellows." It manifests itself in yellow, sickly foliage, numerous and feeble sprouts along the larger limbs and trunk, and small miserable fruit, ripening prematurely. I can almost taste the yellows in much of the fruit bought in market. Some regard the disease as very contagious; others do not. It is best to be on the safe side. If a tree is affected generally, dig it out by the roots and burn it at once; if only a branch shows evidence of the malady, cut it off well back, and commit it to the flames. The only remedy is to propagate from trees in sound health and vigor.

Like the apple, the peach−tree is everywhere subject to injury from a borer, named "exitiosa, or the destructive." The eggs from which these little pests are hatched are laid by the moth during the summer upon the stem of the tree very near the root; the grubs bore through the outer bark, and devour the inner bark and sap−wood. Fortunately they soon reveal their evil work by the castings, and by the gum which exudes from the hole by which they entered. They can not do much harm, unless a tree is neglected; in this case, however, they will soon enfeeble, and probably destroy it. When once within a tree, borers must be cut out with a sharp− pointed knife, carefully yet thoroughly. The wounds from the knife may be severe, but the ceaseless gnawing of the grub is fatal. If the tree has been lacerated to some extent, a plaster of moistened clay or cow−manure makes a good salve. Keeping the borers out of the tree is far better than taking them out; and this can be effected by wrapping the stem at the ground—two inches below the surface, and five above—with strong hardware or sheathing paper. If this is tied tightly about the tree, the moth cannot lay its eggs upon the stem. A neighbor of mine has used this protection not only on the peach, but also on the apple, with almost complete success. Of course the pests will try to find their way under it, and it would be well to take off the wrapper occasionally and examine the trees. The paper must also be renewed before it is so far decayed as to be valueless. It should be remembered also that the borer will attack the trees from the first year of life to the end.

In order to insure an unfailing supply of this delicious fruit, I should advise that a few trees be set out every spring. The labor and expense are scarcely greater than that bestowed upon a cabbage patch, and the reward is more satisfactory.

For this latitude the following choice of varieties will prove, I think, a good one: Early Alexander, Early Elvers, Princess of Wales, Brandywine, Old Mixon Free, Stump the World, Picquet's Late, Crawford's Late, Mary's Choice, White Free Heath, Salway, and Lord Palmerston.

If the soil of one's garden is stiff, cold, adhesive clay, the peach would succeed much better budded or grafted on plum−stocks. Some of the finest fruit I have ever seen was from seedlings, the trees having been grown from pits of unusually good peaches. While the autumn planting of pits lightly m the soil and permitting them to develop into bearing trees is a pleasing and often profitable amusement, there is no great probability that the result will be desirable. We hear of the occasional prizes won in this way, but not of the many failures.

By easy transition we pass to the kindred fruit the plum, which does not generally receive the attention it deserves. If one has a soil suited to it—a heavy clay or loam—it can usually be grown very easily. The fruit is so

grateful to the taste and useful to the housekeeper that it should be given a fair trial, either in the garden borders or wherever a tree can be planted so as to secure plenty of light and air. The young trees may be one or two years old from the bud; I should prefer the former, if vigorous. Never be induced to purchase old trees by promises of speedy fruit. It is quite possible you may never get any fruit at all from them worth mentioning. I should allow a space of from ten to fifteen feet between the trees when they are planted together, and I should cut them back so that they would begin to branch at two feet from the ground. Long, naked stems are subject to the gum− disease.

In the place of general advice m regard to this fruit I shall give the experience of Mr. T. S. Force, of Newburgh, who exhibited seventy varieties at the last annual Orange County fair.

His plum−orchard is a large poultry−yard, containing half an acre, of which the ground is a good loam, resting on a heavy clay subsoil. He bought trees but one year from the bud, set them out in autumn, and cut them back so that they began to form their heads at two feet from the ground. He prefers starting with strong young plants of this age, and he did not permit them to bear for the first three years, his primal aim being to develop a healthy, vigorous tree with a round, symmetrical head. During this period the ground about them was kept mellow by good cultivation, and, being rich enough to start with, received no fertilizers. It is his belief that over−fertilization tends to cause the disease so well known as the "black knot," which has destroyed many orchards in this vicinity. If the garden has been enriched as I have directed, the soil will probably need little, if anything, from the stables, and certainly will not if the trees are grown in a poultry−yard. During this growing and forming period Mr. Force gave careful attention to pruning. Budded trees are not even symmetrical growers, but tend to send up a few very strong shoots that rob the rest of the tree of sustenance. Of course these must be cut well back in early spring, or we have long, naked reaches of wood and a deformed tree. It is far better, however, not to let these rampant shoots grow to maturity, but to pinch them back in early summer, thus causing them to throw out side−branches. By summer pinching and rubbing off of tender shoots a tree can be made to grow in any shape we desire. When the trees receive no summer pruning, Mr. Force advises that the branches be shortened in at least one half in the spring, while some shoots are cut back even more rigorously. At the age of four or five years, according to the vigor of the trees, he permits them to bear. Now cultivation ceases, and the ground is left to grow hard, but not weedy or grassy, beneath the boughs. Every spring, just as the blossoms are falling, he spreads evenly under the branches four quarts of salt. While the trees thrive and grow fruitful with this fertilizer, the curculio, or plum−weevil, does not appear to find it at all to its taste. As a result of his methods, Mr. Force has grown large and profitable crops, and his trees in the main are kept healthy and vigorous. His remedy for the black knot is to cut off and burn the small boughs and twigs affected. If the disease appears in the side of a limb or in the stem, he cuts out all trace of it, and paints the wound with a wash of gum shellac and alcohol.

Trees load so heavily that the plums rest against one another. You will often find in moist warm weather decaying specimens. These should be removed at once, that the infection may not spread.

In cutting out the interfering boughs, do not take off the sharp− pointed spurs which are forming along the branches, for on these are slowly maturing the fruit−buds. In this case, as in others, the careful observer, after he has acquired a few sound principles of action to start with, is taught more by the tree itself than from any other source.

Mr. Force recommends the following ten varieties, named in the order of ripening: Canada; Orleans, a red−cheeked plum; McLaughlin, greenish, with pink cheek; Bradshaw, large red, with lilac bloom; Smith's Orleans, purple; Green Gage; Bleeker's Gage, golden yellow; Prune d'Agen, purple; Coe's Golden Drop; and Shropshire Damson for preserves.

If we are restricted to very light soils, we shall probably have to grow some of the native varieties, of the Canada and Wild−Goose type. In regard to both this fruit and peaches we should be guided in our selection by information respecting varieties peculiarly suited to the region.

The next chapter will treat of small fruits, beginning with the raspberry.

CHAPTER V. THE RASPBERRY

The wide and favorable consideration given to small fruits clearly marks one of the changes in the world's history. This change may seem trifling indeed to the dignified chroniclers of kings and queens and others of high descent—great descent, it may be added, remembering the moral depths attained; but to those who care for the welfare of the people, it is a mutation of no slight interest. I am glad to think, as has been shown in a recent novel, that Lucrezia Borgia was not so black as she has been painted; yet in the early days of June and July, when strawberries and raspberries are ripening, I fancy that most of us can dismiss her and her kin from mind as we observe Nature's alchemy in our gardens. When we think of the luscious, health−imparting fruits which will grace millions of tables, and remember that until recent years they were conspicuous only by their absence, we may not slightingly estimate a great change for the better. Once these fruits were wildings which the vast majority of our forefathers shared sparingly with the birds. Often still, unless we are careful, our share will be small indeed; for the unperverted taste of the birds discovered from the first what men have been so slow to learn—that the ruby−like berries are the gems best worth seeking. The world is certainly progressing toward physical redemption when even the Irish laborer abridges his cabbage−patch for the sake of small fruits—food which a dainty Ariel could not despise.

We have said that raspberries thrive in partial shade; and therefore some advice in regard to them naturally follows our consideration of trees. Because the raspberry is not so exacting as are many other products of the garden, it does not follow that it should be marked out for neglect. As it is treated on many places, the only wonder is that even the bushes survive. Like many who try to do their best in adversity, it makes the most of what people term "a chance to get ahead."

Moreover, the raspberry is perhaps as often injured by mistaken kindness as by neglect. If we can imagine it speaking for itself, it would say: "It is not much that I want, but in the name of common−sense and nature give me just what I do want; then you may pick at me to your heart's content."

The first need of the raspberry is a well−drained but not a very dry, light soil. Yet such is its adaptability that certain varieties can be grown on any land which will produce a burdock or a mullien−stalk. In fact, this question of variety chiefly determines our chances of success and the nature of our treatment of the fruit. The reader, at the start, should be enabled to distinguish the three classes of raspberries grown in this country.

As was true of grapes, our fathers first endeavored to supply their gardens from foreign nurseries, neglecting the wild species with which our woods and roadsides abounded. The raspberry of Europe (Rubus idaeus) has been developed, and in many instances enfeebled, by ages of cultivation. Nevertheless, few other fruits have shown equal power to adapt themselves to our soil and climate, and we have obtained from foreign sources many valuable kinds—as, for instance, the Antwerp, which for weeks together annually taxed the carrying power of Hudson River steamers. In quality these foreign kinds have never been surpassed; but almost invariably they have proved tender and fastidious, thriving well in some localities, and failing utterly (except under the most skilful care) in others. The frosts of the North killed them in winter, and Southern suns shrivelled their foliage in summer. Therefore they were not raspberries for the million, but for those who resided in favored regions, and were willing to bestow upon them much care and high culture.

Eventually another process began, taking place either by chance or under the skilful manipulation of the gardener—that of hybridizing, or crossing these foreign varieties with our hardier native species. The best results have been attained more frequently, I think, by chance; that is, the bees, which get more honey from the raspberry than from most other plants, carried the pollen from a native flower to the blossom of the garden exotic. The seeds of the fruit eventually produced were endowed with characteristics of both the foreign and native strains. Occasionally these seeds fell where they had a chance to grow, and so produced a fortuitous seedling plant which soon matured into a bearing bush, differing from, both of its parents, and not infrequently surpassing both in good qualities. Some one horticulturally inclined having observed the unusually fine fruit on the chance plant, and believing that it is a good plan to help the fittest to survive, marked the bush, and in the autumn transferred it to his garden. It speedily propagated itself by suckers, or young sprouts from the roots, and he had plants to sell or give away. Such, I believe, was the history of the Cuthbert—named after the gentleman who found it, and now

probably the favorite raspberry of America.

Thus fortuitously, or by the skill of the gardener, the foreign and our native species were crossed, and a new and hardier class of varieties obtained. The large size and richness in flavor of the European berry has been bred into and combined with our smaller and more insipid indigenous fruit. By this process the area of successful raspberry culture has been extended almost indefinitely.

Within recent years a third step forward has been taken. Some localities and soils were so unsuited to the raspberry that no variety containing even a small percentage of the foreign element could thrive. This fact led fruit−growers to give still closer attention to our native species. Wild bushes were found here and there which gave fruit of such good quality and in such large quantities that they were deemed well worthy of cultivation. Many of these wild specimens accepted cultivation gratefully, and showed such marked improvement that they were heralded over the land as of wonderful and surpassing value. Some of these pure, unmixed varieties of our native species (Rubus strigosus) have obtained a wide celebrity; as, for instance, the Brandywine, Highland Hardy, and, best of all, the Turner. It should be distinctly understood, however, that, with the exception of the last−named kind, these native varieties are decidedly inferior to most of the foreign berries and their hybrids or crosses, like the Cuthbert and Marlboro. Thousands have been misled by their praise, and have planted them when they might just as easily have grown far better kinds. I suppose that many wealthy persons in the latitudes of New York and Boston have told their gardeners (or more probably were told by them): "We do not wish any of those wild kinds. Brinckle's Orange, Franconia, and the Antwerp are good enough for us." So they should be, for they are the best; but they are all foreign varieties, and scarcely will live at all, much less be productive, in wide areas of the country.

I trust that this preliminary discussion in regard to red raspberries will prepare the way for the advice to follow, and enable the proprietor of the Home Acre to act intelligently. Sensible men do not like to be told, "You cannot do this, and must not do that"—in other words, to be met the moment they step into their gardens by the arbitrary dictum of A, B, or C. They wish to unite with Nature in producing certain results. Understanding her simple laws, they work hopefully, confidently; and they cannot be imposed upon by those who either wittingly or unwittingly give bad advice. Having explained the natural principles on which I base my directions, I can expect the reader to follow each step with the prospect of success and enjoyment much enhanced.

The question first arising is, What shall we plant? As before, I shall give the selection of eminent authorities, then suggest to the reader the restrictions under which he should make a choice for his own peculiar soil and climate.

Dr. F. M. Hexamer, the well−known editor of a leading horticultural journal, is recognized throughout the land as having few, if any, superiors in recent and practical acquaintance with small fruits. The following is his selection: "Cuthbert, Turner, and Marlboro." The Hon. Marshall P. Wilder's choice: "Brinckle's Orange, Franconia, Cuthbert, Herstine, Shaffer." The Hon. Norman J. Colman, Commissioner of Agriculture: "Turner, Marlboro, Cuthbert." P. J. Berckmans, of Georgia: "Cuthbert, Hansel, Lost Rubies, Imperial Red." A. S. Fuller: "Turner, Cuthbert, Hansel."

In analyzing this list we find three distinctly foreign kinds named: the Orange, Franconia, and Herstine. If the last is not wholly of foreign origin, the element of our native species enters into it so slightly that it will not endure winters in our latitude, or the summer sun of the South. For excellence, however, it is unsurpassed.

In the Cuthbert, Marlboro, and Lost Rubies we have hybrids of the foreign and our native species, forming the second class referred to; in the Turner and Hansel, examples of our native species unmixed. To each of these classes might be added a score of other varieties which have been more or less popular, but they would serve only to distract the reader's attention. I have tested forty or fifty kinds side by side at one time, only to be shown that four or five varieties would answer all practical purposes. I can assure the reader, however, that it will be scarcely possible to find a soil or climate where some of these approved sorts will not thrive abundantly and at slight outlay.

Throughout southern New England, along the bank of the Hudson, and westward, almost any raspberry can be grown with proper treatment. There are exceptions, which are somewhat curious. For instance, the famous Hudson River Antwerp, which until within a very few years has been one of the great crops of the State, has never been grown successfully to any extent except on the west bank of the river, and within the limited area of Kingston on the north and Cornwall on the south. The Franconia, another foreign sort, has proved itself adapted to

more extended conditions of soil and climate.

I have grown successfully nearly every well−known raspberry, and perhaps I can best give the instruction I desire to convey by describing the methods finally adopted after many years of observation, reading, and experience. I will speak of the class first named, belonging to the foreign species, of which I have tested many varieties. I expect to set out this year rows of Brinckle's Orange, Franconia, Hudson River Antwerp, and others. For this class I should make the ground very rich, deep, and mellow. I should prefer to set out the plants in the autumn—from the middle of October to the tenth of November; if not then, in early spring—the earlier the better—while the buds are dormant. I should have the rows four feet apart; and if the plants were to be grown among the smaller fruit−trees, I should maintain a distance from them of at least seven feet. I should use only young plants, those of the previous summer's growth, and set them in the ground about as deeply as they stood when taken up—say three or four inches of earth above the point from which the roots branched. I should put two well−rooted plants in each hill, and this would make the hills four feet apart each way. By "hills" I do not mean elevations of ground. This should be kept level throughout all future cultivation. I should cut back the canes or stems of the plants to six inches. Thousands of plants are lost or put back in their growth by leaving two or three feet of the canes to grow the first year. Never do this. The little fruit gained thus prematurely always entails a hundred−fold of loss. Having set out the plants, I should next scatter over and about them one or two shovelfuls of old compost or decayed manure of some kind. If the plants had been set out in the fall, I should mound the earth over them before freezing weather, so that there should be at least four inches of soil over the tops of the stems. This little mound of earth over the plants or hill would protect against all injury from frost. In the spring I should remove these mounds of earth so as to leave the ground perfectly level on all sides, and the shortened canes projecting, as at first, six inches above the surface. During the remainder of the spring and summer the soil between the plants chiefly requires to be kept open, mellow, and free from weeds. In using the hoe, be careful not to cut off the young raspberry sprouts, on which the future crop depends. Do not be disappointed if the growth seems feeble the first year, for these foreign kinds are often slow in starting. In November, before there is any danger of the ground freezing, I should cut back the young canes at least one−third of their length, bend them gently down, and cover them with earth to the depth of four or five inches. It must be distinctly remembered that very few of the foreign kinds would endure our winter unprotected. Every autumn they must be covered as I have directed. Is any one aghast at this labor? Nonsense! Antwerps are covered by the acre along the Hudson. A man and a boy would cover in an hour all that are needed for a garden.

After the first year the foreign varieties, like all others, will send up too many sprouts, or suckers. Unless new plants are wanted, these should be treated as weeds, and only from three to five young canes be left to grow in each hill. This is a very important point, for too often the raspberry−patch is neglected until it is a mass of tangled bushes. Keep this simple principle in mind: there is a given amount of root−power; if this cannot be expended in making young sprouts all over the ground, it goes to produce a few strong fruit−bearing canes in the hill. In other words, you restrict the whole force of the plant to the precise work required—the giving of berries. As the original plants grow older, they will show a constantly decreasing tendency to throw up new shoots, but as long as they continue to grow, let only those survive which are designed to bear the following season.

The canes of cultivated raspberries are biennial. A young and in most varieties a fruitless cane is produced in one season; it bears in July the second year, and then its usefulness is over. It will continue to live in a half−dying way until fall, but it is a useless and unsightly life. I know that it is contended by some that the foliage on the old canes aids in nourishing the plants; but I think that, under all ordinary circumstances, the leaves on the young growth are abundantly sufficient. By removing the old canes after they have borne their fruit, an aspect of neatness is imparted, which would be conspicuously absent were they left. Every autumn, before laying the canes down, I should shorten them in one−third. The remaining two−thirds will give more fruit by actual measurement, and the berries will be finer and larger, than if the canes were left intact. From first to last the soil about the foreign varieties should be maintained in a high degree of fertility and mellowness. Of manures from the barnyard, that from the cow−stable is the best; wood−ashes, bone−dust, and decayed leaves also are excellent fertilizers. During all this period the partial shade of small trees will be beneficial rather than otherwise, for it should be remembered that sheltered localities are the natural habitat of the raspberry.

By a little inquiry the reader can learn whether varieties of the foreign class are grown successfully in his vicinity. If they are, he can raise them also by following the directions which have been given. Brinckle's

Orange—a buff−colored berry—is certainly one of the most beautiful, delicate, and delicious fruits in existence, and is well worth all the care it requires in the regions where it will grow; while the Franconia and others should never be permitted to die out by fruit connoisseurs. If the soil of your garden is light and sandy, or if you live much south of New York, I should not advise their trial. They may be grown far to the north, however. I am told that tender varieties of fruits that can be covered thrive even better in Canada than with us. There deep snow protects the land, and in spring and autumn they do not have long periods when the bare earth is alternately freezing and thawing.

In the second class of raspberries, the crosses between the foreign and native species, we now have such fine varieties that no one has much cause for regret if he can raise them; and I scarcely see how he can help raising them if he has sufficient energy to set out a few plants and keep them free from weeds and superabundant suckers. Take the Cuthbert, for instance; you may set it out almost anywhere, and in almost any latitude except that of the extreme Southern States. But you must reverse the conditions required for the foreign kinds. If the ground is very rich, the canes will threaten to grow out of sight. I advise that this strong−growing sort be planted in rows five feet apart. Any ordinary soil is good enough for the Cuthbert to start in, and the plants will need only a moderate degree of fertilizing as they begin to lose a little of their first vigor. Of course, if the ground is unusually light and poor, it should be enriched and maintained in a fair degree of fertility. The point I wish to make is that this variety will thrive where most others would starve; but there is plenty of land on which anything will starve. The Cuthbert is a large, late berry, which continues long in bearing, and is deserving of a place in every garden. I have grown it for many years, and have never given it any protection whatever. Occasionally there comes a winter which kills the canes to the ground. I should perhaps explain to the reader here that even in the case of the tender foreign kinds it is only the canes that are killed by the frost; the roots below the surface are uninjured, and throw up vigorous sprouts the following spring. The Cuthbert is so nearly hardy that we let it take its chances, and probably in eight winters out of ten it would stand unharmed. Its hardiness is greatly enhanced when grown on well−drained soils.

It now has a companion berry in the Marlboro—a variety but recently introduced, and therefore not thoroughly tested as yet. Its promise, however, is very fine, and it has secured the strong yet qualified approval of the best fruit critics. It requires richer soil and better treatment than the Cuthbert, and it remains to be seen whether it is equally hardy. It is well worth winter protection if it is not. It is not a suitable berry for the home garden if no other is grown, for the reason that it matures its entire crop within a brief time, and thus would give a family but a short season of raspberries. Cultivated in connection with the Cuthbert, it would be admirable, for it is very early, and would produce its fruit before the Cuthberts were ripe. Unitedly the two varieties would give a family six weeks of raspberries. There are scores of other kinds in this class, and some are very good indeed, well worth a place in an amateur's collection; but the two already named are sufficient to supply a family with excellent fruit.

Of the third class of red raspberries, representing our pure native species, I should recommend only one variety—the Turner; and that is so good that it deserves a place in every collection. It certainly is a remarkable raspberry, and has an unusual history, which I have given in my work "Success with Small Fruits." I doubt whether there is a hardier raspberry in America— one that can be grown so far to the north, and, what is still more in its favor, so far to the south. In the latter region it is known as the Southern Thornless. The fact that it is almost wholly without spines is a good quality; but it is only one among many others. The Turner requires no winter protection whatever, will grow on almost any soil in existence, and in almost any climate. It yields abundantly medium−sized berries of good flavor. The fruit begins to ripen early, and lasts throughout a somewhat extended season. It will probably give more berries, with more certainty and less trouble, than any other variety. Even its fault leans to virtue's side. Set out a single plant, leave it to Nature, and in time it will cover the place with Turner raspberries; and yet it will do this in a quiet, unobtrusive way, for it is not a rampant, ugly grower. While it will persist in living under almost any circumstances, I have found no variety that responded more gratefully to good treatment. This consists simply in three things: (1) rigorous restriction of the suckers to four or five canes in the hill; (2) keeping the soil clean and mellow about the bearing plants; (3) making this soil rich. Its dwarf habit of growth, unlike that of the Cuthbert, enables one to stimulate it with any kind of manure. By this course the size of the bushes is greatly increased, and enormous crops can be obtained.

I prefer to set out all raspberries in the fall, although as a matter of convenience I often perform the task in the

early spring. I do not believe in late spring planting, except as one takes up a young sprout, two or three inches high, and sets it out as one would a tomato−plant. By this course time is often saved. When it is our wish to increase the quality and quantity of the fruit, I should advise that the canes of all varieties be cut back one−third of their length. A little observation will teach us the reason for this. Permit a long cane to bear throughout its natural length, and you will note that many buds near the ground remain dormant or make a feeble growth. The sap, following a general law of nature, pushes to the extremities, and is, moreover, too much diffused. Cut away one−third, and all the buds start with redoubled vigor, while more and larger fruit is the result. If, however, earliness in ripening is the chief consideration, as it often is, especially with the market−gardener, leave the canes unpruned, and the fruit ripens a few days sooner.

In purveying for the home table, white raspberries offer the attractions of variety and beauty. In the case of Brinckle's Orange, its exquisite flavor is the chief consideration; but this fastidious foreign berry is practically beyond the reach, of the majority. There is, however, an excellent variety, the Caroline, which is almost as hardy as the Turner, and more easily grown. It would seem that Nature designed every one to have it (if we may say IT of Caroline), for not only does it sucker freely like the red raspberries, but the tips of the canes also bend over, take root, and form new plants. The one thing that Caroline needs is repression, the curb; she is too intense.

I am inclined to think, however, that she has had her day, even as an attendant on royalty, for a new variety, claiming the high− sounding title of Golden Queen, has mysteriously appeared. I say mysteriously, for it is difficult to account for her origin. Mr. Ezra Stokes, a fruit−grower of New Jersey, had a field of twelve acres planted with Cuthbert raspberries. In this field he found a bush producing white berries. In brief, he found an Albino of the Cuthbert. Of the causes of her existence he knows nothing. All we can say, I suppose, is that the variation was produced by some unknown impulse of Nature. Deriving her claims from such a source, she certainly has a better title to royalty than most of her sister queens, who, according to history, have been commonplace women, suggesting anything but nature. With the exception of the Philadelphians, perhaps, we as a people will not stand on the question of ancestry, and shall be more inclined to see how she "queens it."

Of course the enthusiastic discoverer and disseminators of this variety claim that it is not only like the Cuthbert, but far better. Let us try it and see; if it is as good, we may well be content, and can grace our tables with beautiful fruit.

There is another American species of raspberry (Rubus occidentalis) that is almost as dear to memory as the wild strawberry—the thimble−berry, or black−cap. I confess that the wild flavor of this fruit is more to my taste than that of any other raspberry. Apparently its seeds have been sown broadcast over the continent, for it is found almost everywhere, and there have been few children in America whose lips have not been stained by the dark purple juice of its fruit. Seeds dropped in neglected pastures, by fence and roadsides, and along the edges of the forest, produce new varieties which do not propagate themselves by suckers like red raspberries, but in a manner quite distinct. The young purple canes bend over and take root in the soil during August, September, and October. At the extreme end of the tip from which the roots descend a bud is formed, which remains dormant until the following spring. Therefore the young plant we set out is a more or less thick mass of roots, a green bud, and usually a bit of the old parent cane, which is of no further service except as a handle and a mark indicating the location of the plant. After the ground has been prepared as one would for corn or potatoes, it should be levelled, a line stretched for the row, and the plants set four feet apart in the row. Sink the roots as straight down as possible, and let the bud point upward, covering it lightly with merely one or two inches of soil. Press the ground firmly against the roots, but not on the bud. The soil just over this should be fine and mellow, so that the young shoot can push through easily, which it will soon do if the plants are in good condition. Except in the extreme South, spring is by far the best time for planting, and it should be done early, while the buds are dormant. After these begin to grow, keep the ground mellow and free from weeds. The first effort of the young plant will be to propagate itself. It will sprawl over the ground if left to its wild impulses, and will not make an upright bearing bush. On this account put a stake down by the young sprout, and as it grows keep it tied up and away from the ground. When the side−branches are eight or ten inches long, pinch them back, thus throwing the chief strength into the central cane. By keeping all the branches pinched back you form the plant into an erect, sturdy bush that will load itself with berries the following year. No fruit will be borne the first season. The young canes of the second year will incline to be more sturdy and erect in their growth; but this tendency can be greatly enhanced by clipping the long slender branches which are thrown out on every side. As soon as the old canes are through

bearing, they should be cut out and burned or composted with other refuse from the garden. Black−caps may be planted on any soil that is not too dry. When the plant suffers from drought, the fruit consists of little else than seeds. To escape this defect I prefer to put the black−caps in a moist location; and it is one of the few fruits that will thrive in a cold, wet soil. One can set out plants here and there m out−of−the−way corners, and they often do better than those in the garden. Indeed, unless a place is kept up very neatly, many such bushes will be found growing wild, and producing excellent fruit.

The question may arise in some minds, Why buy plants? Why not get them from the woods and fields, or let Nature provide bushes for us where she will? When Nature produces a bush on my place where it is not in the way, I let it grow, and pick the fruit in my rambles; but the supply would be precarious indeed for a family. By all means get plants from the woods if you have marked a bush that produces unusually fine fruit. It is by just this course that the finest varieties have been obtained. If you go a−berrying, you may light on something finer than has yet been discovered; but it is not very probable. Meanwhile, for a dollar you can get all the plants you want of the two or three best varieties that have yet been discovered, from Maine to California. After testing a great many kinds, I should recommend the Souhegan for early, and the Mammoth Cluster and Grregg for late. A clean, mellow soil in good condition, frequent pinchings back of the canes in summer, or a rigorous use of the pruning−shears in spring, are all that is required to secure an abundant crop from year to year. This species may also be grown among trees. I advise that every kind and description of raspberries be kept tied to stakes or a wire trellis. The wood ripens better, the fruit is cleaner and richer from exposure to air and sunshine, and the garden is far neater than if the canes are sprawling at will. I know that all horticulturists advise that the plants be pinched back so thoroughly as to form self−supporting bushes; but I have yet to see the careful fruit−grower who did this, or the bushes that some thunder−gusts would not prostrate into the mud with all their precious burden, were they not well supported. Why take the risk to save a two−penny stake?

If, just before the fruit begins to ripen, a mulch of leaves, cut grass, or any litter that will cover the ground slightly, is placed under and around the bushes, it may save a great deal of fruit from being spoiled. The raspberry season is also the hour and opportunity for thunder−showers, whose great slanting drops often splash the soil to surprising distances. Sugar−and−cream− coated, not mud−coated, berries, if you please.

In my remarks on raspberries I have not named many varieties, and have rather laid stress on the principles which may guide the reader in his present and future selections of kinds. Sufficient in number and variety to meet the NEEDS of every family have been mentioned. The amateur may gratify his taste by testing other sorts described in nurserymen's catalogues. Moreover, every year or two some new variety will be heralded throughout the land. The reader has merely to keep in mind the three classes of raspberries described and their characteristics, in order to make an intelligent choice from old and new candidates for favor.

It should also be remembered that the raspberry is a Northern fruit. I am often asked in effect, What raspberries do you recommend for the Gulf States? I suppose my best reply would be, What oranges do you think best adapted to New York? Most of the foreign kinds falter and fail in New Jersey and Southern Pennsylvania; the Cuthbert and its class can be grown much further south, while the Turner and the black−caps thrive almost to Florida.

Raspberries, especially those of our native species, are comparatively free from disease. Foreign varieties and their hybrids are sometimes afflicted with the curl−leaf. The foliage crimps up, the canes are dwarfed, and the whole plant has a sickly and often yellow appearance. The only remedy is to dig up the plant, root and branch, and burn it.

A disease termed the "rust" not infrequently attacks old and poorly nourished black−cap bushes. The leaves take on an ochreous color, and the plant is seen to be failing. Extirpate it as directed above. If many bushes are affected, I advise that the whole patch be rooted up, and healthy plants set out elsewhere.

It is a well−known law of Nature that plants of nearly all kinds appear to exhaust from the soil in time the ingredients peculiarly acceptable to them. Skill can do much toward maintaining the needful supply; but the best and easiest plan is not to grow any of the small fruits too long in any one locality. By setting out new plants on different ground, far better results are attained with much less trouble.

CHAPTER VI. THE CURRANT

Who that has ever lived in the country does not remember the old straggling currant−bushes that disputed their existence with grass, docks, and other coarse−growing weeds along some ancient fence? Many also can recall the weary task of gathering a quart or two of the diminutive fruit for pies, and the endless picking required to obtain enough for the annual jelly−making. Nor is this condition of affairs a thing of the past. Drive through the land where you will in early July, and you will see farmers mowing round the venerable Red Dutch currants "to give the women−folks a chance at 'em." The average farmer still bestows upon this fruit about as much attention as the aborigines gave to their patches of maize. This seems very absurd when we remember the important place held in the domestic economy by the currant, and how greatly it improves under decent treatment. If it demanded the attention which a cabbage−plant requires, it would be given; but the currant belongs to that small class of creatures which permit themselves to be used when wanted, and snubbed, neglected, and imposed upon at other times. It is known that the bushes will manage to exist, and do the Very best they can, no matter how badly treated; and average human nature has ever taken advantage of such traits, to its continuous loss.

The patience of the currant is due perhaps to its origin, for it grows wild round the northern hemisphere, its chief haunts being the dim, cold, damp woods of the high latitudes. You may tame, modify, and vastly change anything possessing life; but original traits are scarcely ever wholly eradicated. Therefore the natural habitat and primal qualities of the currant indicate the true lines of development, its capabilities and limitations. It is essentially a northern fruit, requiring coolness, moisture, and alluvial soils. It begins to falter and look homesick even in New Jersey; and one has not to go far down the Atlantic coast to pass beyond the range of its successful culture. I do not see why it should not thrive much further south on the northern slopes of the mountains. From Philadelphia northward, however, except on light dry soils and in sunny exposures, there is no reason why it should not give ample returns for the attention it requires.

I shall not lay stress on the old, well−known uses to which this fruit is put, but I do think its value is but half appreciated. People rush round in July in search of health: let me recommend the currant cure. If any one is languid, depressed in spirits, inclined to headaches, and generally "out of sorts," let him finish his breakfast daily for a month with a dish of freshly picked currants. He will soon, almost doubt his own identity, and may even begin to think that he is becoming a good man. He will be more gallant to his wife, kinder to his children, friendlier to his neighbors, and more open−handed to every good cause. Work will soon seem play, and play fun. In brief, the truth of the ancient pun will be verified, that "the power to live a good life depends largely upon the LIVER." Out upon the nonsense of taking medicine and nostrums during the currant−season! Let it be taught at theological seminaries that the currant is a "means of grace." It is a corrective; and that is what average humanity most needs.

The currant, like the raspberry, is willing to keep shady; but only because it is modest. It is one of the fruits that thrive better among trees than in too dry and sunny exposures. Therefore, in economizing space on the Home Acre it may be grown among smaller trees, or, better still, on the northern or eastern side of a wall or hedge. But shade is not essential, except as we go south; then the requisites of moisture and shelter from the burning rays of the sun should be complied with as far as possible. In giving this and kindred fruits partial shade, they should not be compelled to contend to any extent with the roots of trees. This will ever prove an unequal contest. No fruit can thrive in dense shade, or find sustenance among the voracious roots of a tree.

Select, therefore, if possible, heavy, deep, moist, yet well− drained soil, and do not fear to make and keep it very rich. If you are restricted to sandy or gravelly soils, correct their defects with compost, decayed leaves and sods, muck, manure from the cow−stable, and other fertilizers with staying rather than stimulating qualities. Either by plowing or forking, deepen as well as enrich the soil. It is then ready for the plants, which may be set out either in the fall or in early spring. I prefer the autumn—any time after the leaves have fallen; but spring answers almost as well, while buds are dormant, or partially so. It should be remembered that the currant starts very early, and is in full foliage before some persons are fairly wakened to garden interests. It would, in this case, be better to wait until October, unless the plants can be obtained from a neighbor on a cloudy day; then they should be cut back two−thirds of their length before being removed, and the transfer made as quickly as possible.

Under any circumstances, take off half of the wood from the plants bought. This need not be thrown away. Every cutting of young wood six inches long will make a new plant in a single season. All that is needful is to keep the wood moist until ready to put it in the ground, or, better still, a cool, damp place in the garden can be selected at once, and the cuttings sunk two− thirds of their length into the ground, and the soil pressed firm around them. By fall they will have a good supply of roots, and by the following autumn be ready to be set out wherever you wish them to fruit.

Currant−bushes may be planted five feet apart each way, and at the same distance, if they are to line a fence. They should be sunk a few inches deeper in the soil than they stood before, and the locality be such as to admit of good culture. The soil should never be permitted to become hard, weedy, or grass−grown. As a rule, I prefer two−year−old plants, while those of one year's growth answer nearly as well, if vigorous. If in haste for fruit, it may be well to get three−year−old plants, unless they have been dwarfed and enfeebled by neglect. Subsequent culture consists chiefly in keeping the soil clean, mellow, rich, and therefore moist. I have named the best fertilizers for the currant; but if the product of the horse−stable is employed, use it first as a mulch. It will thus gradually reach the roots. Otherwise it is too stimulating, and produces a rampant growth of wood rather than fruit.

Under any circumstances this tendency to produce an undue amount of wood must be repressed almost as rigorously as in the grape− vine. The secret of successful currant−culture is richness beneath, and restriction above. English gardeners are said to have as complete and minute systems of pruning and training currants as the grape; but we do not seem to have patience for such detail. Nor do I regard it as necessary. Our object is an abundant supply of excellent fruit; and this result can be obtained at a surprisingly small outlay of time and money, if they are expended judiciously.

The art of trimming a currant−bush, like that of pruning a grape− vine, is best learned by observation and experience. One can give principles rather than lay down rules. Like the vine, the currant tends to choke itself with a superabundance of wood, which soon becomes more or less barren. This is truer of some varieties than of others; but in all instances the judicious use of the pruning− knife doubles the yield. In view of the supposition that the leading shoot and all the branches were shortened in one−half when the plant was set out, I will suggest that early in June it will be observed that much more wood is forming than can be permitted to remain. There are weak, crowding shoots which never can be of any use. If these are cut out at this time, the sap which would go to mature them will be directed into the valuable parts of the forming bush. Summer pruning prevents misspent force, and it may be kept up with great advantage from year to year. This is rarely done, however; therefore early in spring the bushes must receive a good annual pruning, and the long shoots and branches be cut well back, so as to prevent naked reaches of wood. Observe a very productive bush, and you will see that there are many points abounding in little side−branches. It is upon these that the fruit is chiefly borne. A bush left to itself is soon a mass of long, slender, almost naked stalks, with a little fruit at the ends. The ideal bush is stocky, open, well branched, admitting light, air, and sun in every part. There is no crowding and smothering of the fruit by the foliage. But few clusters are borne on very young wood, and when this grows old and black, the clusters are small. Therefore new wood should always be coming on and kept well cut back, so as to form joints and side−branches; and as other parts grow old and feeble they should be cut out. Observation and experience will teach the gardener more than all the rules that could be written, for he will perceive that he must prune each bush according to its own individuality.

For practical purposes the bush form is the best in which to grow currants; but they can easily be made to form pretty little trees with tops shaped like an umbrella, or any other form we desire. For instance, I found, one autumn, a shoot about three feet long. I rubbed off all the buds except the terminal one and three or four just beneath it, then sunk the lower end of the shoot six inches into the soil, and tied the part above the ground to a short stake. The following spring the lower end took root, and the few buds at the top developed into a small bushy head. Clumps of miniature currant−trees would make as pretty an ornament for the garden border as one would wish to see. It should be remembered that there is a currant as well as an apple borer; but the pests are not very numerous or destructive, and such little trees may easily be grown by the hundred.

Clean culture has one disadvantage which must be guarded against. If the ground under bushes is loose, heavy rains will sometimes so splash up the soil as to muddy the greater part of the fruit. I once suffered serious loss in this way, and deserved it; for a little grass mown from the lawn, or any other litter spread under and around the

bushes just before the fruit ripened, would have prevented it. It will require but a very few minutes to insure a clean crop.

I imagine that if these pages are ever read, and such advice as I can give is followed, it will be more often by the mistress than the master of the Home Acre. I address him, but quite as often I mean her; and just at this point I am able to give "the power behind the throne" a useful hint. Miss Alcott, in her immortal "Little Women," has given an instance of what dire results may follow if the "jelly won't jell." Let me hasten to insure domestic peace by telling my fair reader (who will also be, if the jelly turns out of the tumblers tremulous yet firm, a gentle reader) that if she will have the currants picked just as soon as they are fully ripe, and before they have been drenched by a heavy rain, she will find that the jelly will "jell." It is overripe, water− soaked currants that break up families and demolish household gods. Let me also add another fact, as true as it is strange, that white currants make red jelly; therefore give the pearly fruit ample space in the garden.

In passing to the consideration of varieties, it is quite natural in this connection to mention the white sorts first. I know that people are not yet sufficiently educated to demand white currants of their grocers; but the home garden is as much beyond the grocer's stall as the home is better than a boarding−house. There is no reason why free people in the country should be slaves to conventionalities, prejudices, and traditions. If white currants ARE sweeter, more delicious and beautiful than the red, why, so they are. Therefore let us plant them abundantly.

If there is to be a queen among the currants, the White Grape is entitled to the crown. When placed upon the table, the dish appears heaped with translucent pearls. The sharp acid of the red varieties is absent, and you feel that if you could live upon them for a time, your blood would grow pure, if not "blue."

The bush producing this exquisite fruit is like an uncouth−looking poet who gives beauty from an inner life, but disappoints in externals. It is low−branching and unshapely, and must be forced into good form—the bush, not the poet—by the pruning−knife. If this is done judiciously, no other variety will bear more profusely or present a fairer object on a July day.

The White Dutch has the well−known characteristics in growth of the common Red Dutch currant, and is inferior only to the White Grape in size. The fruit is equally transparent, beautiful, mild, and agreeable in flavor, while the bush is enormously productive, and shapely in form, if properly trained and fertilized.

While the white currants are such favorites, I do not undervalue the red. Indeed, were I restricted to one variety, it should be the old Dutch Red of our fathers, or, more properly, of our grandmothers. For general house uses I do not think it has yet been surpassed. It is not so mild in flavor as the white varieties, but there is a richness and sprightliness in its acid that are grateful indeed on a sultry day. Mingled with the white berries, it makes a beautiful dish, while it has all the culinary qualities which the housekeeper can desire. If the bush is rigorously pruned and generously enriched, it is unsurpassed in productiveness, and the fruit approaches very nearly to the Cherry currant in size.

I do not recommend the last−named kind for the home garden, unless large, showy fruit counts for more than flavor. The acid of the Cherry currant, unless very ripe, is harsh and watery. At best it never acquires an agreeable mildness, to my taste. The bushes also are not so certainly productive, and usually require skilful pruning and constant fertilizing to be profitable. For the market, which demands size above all things, the Cherry is the kind to grow; but in the home garden flavor and productiveness are the more important qualities. Fay's Prolific is a new sort that has been very highly praised.

The Victoria is an excellent late variety, which, if planted in a sheltered place, prolongs the currant−season well into the autumn. Spurious kinds are sold under this name. The true Victoria produces a pale−red fruit with tapering clusters or racemes of berries. This variety, with the three others recommended, gives the family two red and two white kinds—all that are needed. Those who are fond of black currants can, at almost any nursery, procure the Black Naples and Lee's Prolific. Either variety will answer all practical purposes. I confess they are not at all to my taste.

From the currant we pass on naturally to the gooseberry, for in origin and requirements it is very similar. Both belong to the Ribes family of plants, and they are to be cultivated on the same general principles. What I have written in regard to partial shade, cool, sheltered localities, rich, heavy soils, good culture, and especially rigorous pruning, applies with even greater force to this fruit, especially if we endeavor to raise the foreign varieties, in cultivating this fruit it is even more important than was true of raspberries that the reader should distinguish between the native and foreign species. The latter are so inclined to mildew in almost every locality that there is

rarely any certainty of satisfactory fruit. The same evil pursues the seedling children of the foreign sorts, and I have never seen a hybrid or cross between the English and native species that was with any certainty free from a brown disfiguring rust wholly or partially enveloping the berries. Here and there the fruit in some gardens will escape year after year; again, on places not far away, the blighting mildew is sure to appear before the berries are fully grown. Nevertheless, the foreign varieties are so fine that it is well to give them a fair trial. The three kinds which appear best adapted to our climate are Crown Bob, Roaring Lion, and Whitesmith. A new large variety, named Industry, is now being introduced, and if half of what is claimed for it is true, it is worth a place in all gardens.

In order to be certain of clean, fair gooseberries every year, we must turn to our native species, which has already given us several good varieties. The Downing is the largest and best, and the Houghton the hardiest, most productive and easily raised. When we remember the superb fruit which English gardeners have developed from wild kinds inferior to ours, we can well understand that the true American gooseberries are yet to be developed. In my work "Success with Small Fruits" those who are interested in this fruit will find much fuller treatment than is warranted in the present essay.

Not only do currants and gooseberries require similar treatment and cultivation, but they also have a common enemy that must be vigilantly guarded against, or the bushes will be defoliated in many localities almost before its existence is known. After an absence of a few days I have found some of my bushes stripped of every leaf. When this happens, the fruit is comparatively worthless. Foliage is as necessary to a plant as are lungs to a man. It is not essential that I should go into the natural history of the currant worm and moth. Having once seen the yellowish−green caterpillars at their destructive work, the reader's thoughts will not revert to the science of entomology, but will at once become bloody and implacable. I hasten to suggest the means of rescue and vengeance. The moment these worms appear, be on your guard, for they usually spread like fire in stubble. Procure of your druggist white hellebore, scald and mix a tablespoonful in a bowl of hot water, and then pour it in a full watering−can. This gives you an infusion of about a tablespoonful to an ordinary pail of water at its ordinary summer temperature. Sprinkle the infected bushes with this as often as there is a worm to be seen. I have never failed in destroying the pests by this course. It should be remembered, however, that new eggs are often hatched out daily. You may kill every worm to−day, yet find plenty on the morrow. Vigilance, however, will soon so check the evil that your currants are safe; and if every one would fight the pests, they would eventually be almost exterminated. The trouble is that, while you do your duty, your next−door neighbor may grow nothing on his bushes but currant−worms. Thus the evil is continued, and even increased, in spite of all that you can do; but by a little vigilance and the use of hellebore you can always save YOUR currants. I have kept my bushes green, luxuriant, and loaded with fruit when, at a short distance, the patches of careless neighbors were rendered utterly worthless. Our laws but half protect the birds, the best insecticides, and there is no law to prevent a man from allowing his acres to be the breeding−place of every pest prevailing.

There are three species of the currant−borer, and their presence is indicated by yellow foliage and shrivelling fruit. The only remedy is to cut out and burn the affected stems. These pests are not often sufficiently numerous to do much harm.

I earnestly urge that virulent poisons like Paris green, London purple, etc., never be used on fruit or edible vegetables. There cannot be safety in this course. I never heard of any one that was injured by white hellebore, used as I have directed; and I have found that if the worms were kept off until the fruit began to ripen, the danger was practically over. If I had to use hellebore after the fruit was fit to use, I should first kill the worms, and then cleanse the bushes thoroughly by spraying them with clean water.

In treating the two remaining small fruits, blackberries and strawberries, we pass wholly out of the shade and away from trees. Sunshine and open ground are now required. Another important difference can also be mentioned, reversing former experience. America is the home of these fruits. The wild species of the blackberry abroad has never, as far as I can learn, been developed into varieties worthy of cultivation; and before importations from North and South America began, the only strawberry of Europe was the Alpine, with its slight variations, and the musky Hautbois.

I do not know whether any of our fine varieties of blackberries are cultivated abroad, but I am perfectly certain that they are worthy of the slight attention required to raise them in perfection here.

Like the blackcaps, all our best varieties are the spontaneous products of Nature, first discovered growing

wild, and transferred to the garden. The blackberry is a fruit that takes kindly to cultivation, and improves under it.

The proper treatment is management rather than cultivation and stimulation. It requires a sunny exposure and a light, warm soil, yet not so dry as to prevent the fruit from maturing into juicy berries. If possible, set the blackberries off by themselves, for it is hard to prevent the strong roots from travelling all over the garden. The blackberry likes a rich, moist, mellow soil, and, finding it, some varieties will give you canes sixteen feet high. You do not want rank, thorny brambles, however, but berries. Therefore the blackberry should be put where it can do no harm, and, by a little judicious repression, a great deal of good. A gravelly or sandy knoll, with a chance to mow all round the patch, is the best place. The blackberry needs a deep, loose soil rather than a rich one. Then the roots will luxuriate to unknown depths, the wood ripen thoroughly, and the fruit be correspondingly abundant.

Let the rows be six feet apart; set out the plants in the fall, if possible, or EARLY spring; put two plants in the hills, which may be four feet apart. If the ground is very poor, give the young plants a shovelful of old compost, decayed leaves, etc. Any fertilizer will answer, so that it is spread just over the roots to give the plants a good send−off.

As a rule, complete success in blackberry culture consists in a little judicious work performed in May, June, and July. The plants, having been set out as I have advised in the case of raspberries, throw up the first season strong green shoots. When these shoots are three feet high, pinch off the top, so as to stop upward growth. The result of this is that branches start on every side, and the plant forms a low, stocky, self−supporting bush, which will be loaded with fruit the following season.

The second year the plants in the hill will send up stronger canes, and there will be plenty of sprouts or suckers in the intervening spaces. When very young, these useless sprouts can be pulled out with the least possible trouble. Left to mature, they make a thorny wilderness which will cause bleeding hands and faces when attacked, and add largely to the family mending. That which a child could do as play when the suckers were just coming through the ground, is now a formidable task for any man. In early summer you can with the utmost ease keep every useless blackberry sprout from growing. More canes, also, will usually start from the hill than are needed. Leave but three strong shoots, and this year pinch them back as soon as they are four feet high, thus producing three stocky, well−branched bushes, which in sheltered places will be self−supporting. Should there be the slightest danger of their breaking down with their load of fruit, tie them to stakes by all means. I do not believe in that kind of economy which tries to save a penny at the risk of a dollar.

I believe that better and larger fruit is always secured by shortening in the side branches one−third of their length in spring. Fine varieties like the Kittatinny are not entirely hardy in all localities. The snow will protect the lower branches, and the upper ones can usually be kept uninjured by throwing over them some very light litter, like old pea or bean vines, etc.—nothing heavy enough to break them down. As soon as the old canes are through bearing, they should be cut out. If the blackberry patch has been left to its own wild will, there is nothing left for us but to attack it, well−gloved, in April, with the pruning−shears, and cut out everything except three or four young canes in the hill. These will probably be tall, slender, and branchless, therefore comparatively unproductive. In order to have any fruit at all, we must shorten them one−third, and tie them to stakes. It thus may be clearly seen that with blackberries "a stitch in time" saves almost ninety−nine. Keep out coarse weeds and grass, and give fertilizers only when the plants show signs of feebleness and lack of nutrition.

A rust similar to that which attacks the black−cap is almost the only disease we have to contend with. The remedy is the same— extirpation of the plant, root and branch.

After testing a great many kinds, I recommend the three following varieties, ripening in succession for the family—the Early Harvest, Snyder, and Kittatinny. These all produce rich, high− flavored berries, and, under the treatment suggested, will prove hardy in nearly all localities. This fruit is not ripe as soon as it is black, and it is rarely left on the bushes until the hard core in the centre is mellowed by complete maturity. I have found that berries picked in the evening and stood in a cool place were in excellent condition for breakfast. To have them in perfection, however, they must be so ripe as to drop into the basket at the slightest touch; then, as Donald Mitchell says, they are "bloated bubbles of forest honey."

I fancy the reader is as impatient to reach the strawberry as I am myself. "Doubtless God could have made a better berry"—but I forbear. This saying has been quoted by the greater part of the human race, and attributed to nearly every prominent man, from Adam to Mr. Beecher. There are said to be unfortunates whom the strawberry

poisons. The majority of us feel as if we could attain Methuselah's age if we had nothing worse to contend with. Praising the strawberry is like "painting the lily;" therefore let us give our attention at once to the essential details of its successful culture.

As we have intimated before, this fruit as we find it in our gardens, even though we raise foreign kinds, came originally from America. The two great species, Fragaria chilensis, found on the Pacific slope from Oregon to Chili, and Fragaria virginiana, growing wild in all parts of North America east of the Rocky Mountains, are the sources of all the fine varieties that have been named and cultivated. The Alpine strawberry (Fragaria vesca), which grows wild throughout the northern hemisphere, does not appear capable of much variation and development under cultivation. Its seeds, sown under all possible conditions, reproduce the parent plant. Foreign gardeners eventually learned, however, that seeds of the Chili and Virginia strawberry produced new varieties which were often much better than their parents. As time passed, and more attention was drawn to this subject, superb varieties were originated abroad, many of them acquiring a wide celebrity. In this case, as has been true of nearly all other fruits, our nursery−men and fruit−growers first looked to Europe for improved varieties. Horticulturists were slow to learn that in our own native species were the possibilities of the best success. The Chili strawberry, brought directly from the Pacific coast to the East, is not at home in our climate, and is still more unfitted to contend with it after generations of culture in Europe. Even our hardier Virginia strawberry, coming back to us from England after many years of high stimulation in a moist, mild climate, is unequal to the harsher conditions of life here. They are like native Americans who have lived and been pampered abroad so long that they find this country "quite too rude, you know— beastly climate." Therefore, in the choice varieties, and in developing new ones, the nearer we can keep to vigorous strains of our own hardy Virginia species the better. From it have proceeded and will continue to come the finest kinds that can be grown east of the Rockies. Nevertheless, what was said of foreign raspberries is almost equally true of European strawberries like the Triomphe de Gand and Jucunda, and hybrids like the Wilder. In localities where they can be grown, their beauty and fine flavor repay for the high culture and careful winter protection required. But they can scarcely be made to thrive on light soils or very far to the south.

So many varieties are offered for sale that the question of choice is a bewildering one. I have therefore sought to meet it, as before, by giving the advice of those whose opinions are well entitled to respect.

Dr. Hexamer, who has had great and varied experience, writes as follows: "A neighbor of mine who has for years bought nearly every new strawberry when first introduced, has settled on the Duchess and Cumberland as the only varieties he will grow in the future, and thinks it not worth while to seek for something better. Confined to two varieties, a more satisfactory selection could scarcely be made. But you want six or seven, either being, I think, about the right number for the home garden. I will give them in the order of desirability according to my judgment— Cumberland, Charles Downing, Duchess, Mount Vernon, Warren, Sharpless, Jewell."

The selection which places the Cumberland Triumph at the head of the list is but another proof how kinds differ under varied conditions. On my place this highly praised sort is but moderately productive and not high−flavored, although the fruit is very large and handsome. I regard the list, however, as a most excellent one for most localities.

The Hon. Marshall P. Wilder's choice for the latitude of Massachusetts: "Charles Downing, Wilder, Hervey Davis, Sharpless, Cumberland, Kentucky. Jewell is very promising." A. S. Fuller, for latitude of New York: "Charles Downing, Sharpless, Miner's Prolific, Wilson's Albany, Champion." P. C. Berckmans, for the latitude of Georgia: "Wilson, Sharpless, Charles Downing, Triomphe de Gand, Glendale." The Hon. Norman J. Colman's choice for Missouri and the West: "Crescent, Captain Jack, Cumberland, Champion, Hart's Minnesota, Cornelia."

If I gave a hundred other lists, no two of them probably would agree in all respects. Mr. Downing often said to me, "Soil, climate, and locality make greater differences with the strawberry than with any other fruit." This is far more true of some varieties than others. I believe that the excellent kind named after Mr. Downing, if given proper treatment, will do well almost anywhere on the continent. It will be noted that it is on all the lists except one. I should place it at the head of garden strawberries. It is a kind that will endure much neglect, and it responds splendidly to generous, sensible treatment. Its delicious flavor is its chief recommendation, as it should be that of every berry for the home garden.

I have tested many hundreds of kinds, and have grown scores and scores that were so praised when first sent out that the novice might be tempted to dig up and throw away everything except the wonderful novelty pressed

upon his attention. There is one quiet, effective way of meeting all this heralding and laudation, and that is to make trial beds. For instance, I have put out as many as seventy kinds at nearly the same time, and grown them under precisely the same conditions. Some of the much−vaunted new−comers were found to be old varieties re−named; others, although sold at high prices and asserted to be prodigies, were seen to be comparatively worthless when growing by the side of good old standard sorts; the majority never rose above mediocrity under ordinary treatment; but now and then one, like the Sharpless, fulfilled the promises made for it.

In my next chapter I shall venture to recommend those varieties which my own experience and observation have shown to be best adapted to various soils and localities, and shall also seek to prove that proper cultivation has more to do with success than even the selection of favored kinds.

Nor would I seek to dissuade the proprietor of the Home Acre from testing the many novelties offered. He will be sure to get a fair return in strawberries, and to his interest in his garden will add the pleasure and anticipation which accompany uncertain experiment. In brief, he has found an innocent form of gambling, which will injure neither pocket nor morals. In slow−maturing fruits we cannot afford to make mistakes; in strawberries, one prize out of a dozen blanks repays for everything.

CHAPTER VII. STRAWBERRIES

There is a very general impression that light, dry, sandy soils are the best for the strawberry. Just the reverse of this is true. In its desire for moisture it is almost an aquatic plant. Experienced horticulturists have learned to recognize this truth, which the Hon. Marshall P. Wilder has suggested in the following piquant manner: "In the first place, the strawberry's chief need is a great deal of water. In the second place, it needs more water. In the third place, I think I should give it a great deal more water."

While emphasizing this truth the reader should at the same time be warned against land whereon water stands above the surface in winter and spring, or stagnates beneath the surface at any time. Moisture is essential to the best results; good drainage is equally so. The marvellous crops of strawberries raised in California under well−directed systems of irrigation should teach us useful lessons. The plants, instead of producing a partially developed crop within a few brief days, continue in bearing through weeks and months. It may often be possible to supply abundantly on the Home Acre this vital requirement of moisture, and I shall refer to this point further on.

My first advice in regard to strawberries is to set them out immediately almost anywhere except upon land so recently in grass that the sod is still undecayed. This course is better than not to have the fruit at all, or to wait for it A year without strawberries is a lost year in one serious respect. While there is a wide difference between what plants can do under unfavorable conditions and what they can be made to do when their needs are fully met, they will probably in any event yield a fair supply of delicious fruit. Secure this as soon as possible. At the same time remember that a plant of a good variety is a genius capable of wonderful development. In ordinary circumstances it is like the "mute, inglorious" poets whose enforced limitations were lamented by the poet Gray; but when its innate powers and gifts are fully nourished it expands into surprising proportions, sends up hundreds of flowers, which are followed by ruby gems of fruit whose exquisite flavor is only surpassed by its beauty. No such concentrated ambrosia ever graced the feasts of the Olympian gods, for they were restricted to the humble Fragaria vesca, or Alpine species. In discovering the New World, Columbus also discovered the true strawberry, and died without the knowledge of this result of his achievement.

I can imagine the expression on the faces of those who buy the "sour, crude, half−ripe Wilsons," against which the poet Bryant inveighed so justly. The market is flooded with this fruit because it bears transportation about as well as would marbles. Yes, they are strawberries; choke−pears and Seckels belong to the same species. There is truth enough in my exaggeration to warrant the assertion that if we would enjoy the possible strawberry, we must raise it ourselves, and pick it when fully matured—ready for the table, and not for market. Then any man's garden can furnish something better than was found in Eden.

Having started a strawberry−patch without loss of time wherever it is handiest, we can now give our attention to the formation of an ideal bed. In this instance we must shun the shade of trees above, and their roots beneath. The land should be open to the sky, and the sun free to practice his alchemy on the fruit the greater part of the day. The most favorable soil is a sandy loam, verging toward clay; and it should have been under cultivation sufficiently long to destroy all roots of grass and perennial weeds. Put on the fertilizer with a free hand. If it is barnyard manure, the rate of sixty tons to the acre is not in excess. A strawberry plant has a large appetite and excellent digestion. It prefers decidedly manure from the cow−stable, though that from the horse−stable answers very well; but it is not advisable to incorporate it with the soil in its raw, unfermented state, and then to plant immediately. The ground can scarcely be too rich for strawberries, but it may easily be overheated and stimulated. In fertilizing, ever keep in mind the two great requisites—moisture and coolness. Manure from the horse−stable, therefore, is almost doubled in value as well as bulk if composted with leaves, muck, or sods, and allowed to decay before being used.

Next to enriching the soil, the most important step is to deepen it. If a plow is used, sink it to the beam, and run it twice in a furrow. If a lifting subsoil−plow can follow, all the better. Strawberry roots have been traced two feet below the surface.

If the situation of the plot does not admit the use of a plow, let the gardener begin at one side and trench the area to at least the depth of eighteen inches, taking pains to mix the surface, subsoil, and fertilizer evenly and

thoroughly. A small plot thus treated will yield as much as one three or four times as large. One of the chief advantages of thus deepening the soil is that the plants are insured against their worst enemy—drought. How often I have seen beds in early June languishing for moisture, the fruit trusses lying on the ground, fainting under their burden, and the berries ripening prematurely into little more than diminutive collections of seeds! When ground has been deepened as I have said, the drought must be almost unparalleled to arrest the development of the fruit. Even in the most favorable seasons, hard, shallow soils give but a brief period of strawberries, the fruit ripens all at once, and although the first berries may be of good size, the later ones dwindle until they are scarcely larger than peas. Be sure to have a deep, mellow soil beneath the plants.

Such a bed can be made in either spring or fall—indeed, at any time when the soil is free from frost, and neither too wet nor dry. I do not believe in preparing and fertilizing ground during a period of drought.

We will suppose the work has been done in the spring, as early as the earth was dry enough to crumble freely, and that the surface of the bed is smooth, mellow, and ready for the plants. Stretch a garden line down the length of the plot two feet from the outer edge, and set the plants along the line one foot apart from each other. Let the roots be spread out, not buried in a mat, the earth pressed FIRMLY against them, and the crown of the plant be exactly even with the surface of the soil, which should also be pressed closely around it with the fingers. This may seem minute detail, yet much dismal experience proves it to be essential. I have employed scores of men, and the great majority at first would either bury the crowns out of sight, or else leave part of the roots exposed, and the remainder so loose in the soil that a sharp gale would blow the plants away. There is no one so economical of time as the hired man whose time is paid for. He is ever bent on saving a minute or half−minute in this kind of work. On one occasion I had to reset a good part of an acre on which my men had saved time in planting. If I had asked them to save the plants in the year of '86, they might have "struck."

The first row having been set out, I advise that the line be moved forward three feet. This would make the rows three feet apart—not too far in ground prepared as described, and in view of the subsequent method of cultivation. The bed may therefore be filled up in this ratio, the plants one foot apart in the row, and the rows three feet apart. The next point in my system, for the kind of soil named (for light, sandy soils another plan will be indicated), is to regard each plant as an individual that is to be developed to the utmost. Of course only young plants of the previous season's growth should be used. If a plant has old, woody, black roots, throw it away. Plants set out in April will begin to blossom in May. These buds and blossoms should be picked off ruthlessly as soon as they appear. Never does avarice overreach itself more completely than when plants are permitted to bear the same season in which they are set out. The young, half− established plant is drained of its vitality in producing a little imperfect fruit; yet this is permitted even by farmers who would hold up their hands at the idea of harnessing a colt to a plow.

The plants do not know anything about our purpose in regard to them. They merely seek to follow the law of Nature to propagate themselves, first by seeds which, strictly speaking, are the fruit, and then by runners. These slender, tendril−like growths begin to appear early in summer, and if left unchecked will mat the ground about the parent with young plants by late autumn. If we wish plants, let them grow by all means; but if fruit is our object, why should we let them grow? "Because nearly every one seems to do it," would be, perhaps, the most rational answer. This is a mistake, for many are beginning to take just the opposite course even when growing strawberries by the acre.

Let us fix our attention on a single plant. It has a certain amount of root pasturage and space in which to grow. Since it is not permitted to produce an indefinite number of young plants, it begins to develop itself. The soil is rich, the roots are busy, and there must be an outlet. The original plant cannot form others, and therefore begins to produce fruit−crowns for the coming year. All the sap, all the increasing power of root and foliage, are directed to preparation for fruit. In brief, we have got the plant in traces; it is pulling in the direction we wish, it will eventually deliver a load of berries which would surprise those who trust simply to Nature unguided.

Some one may object that this is a troublesome and expensive way of growing strawberries. Do not the facts in the case prove the reverse? A plant restricted to a single root can be hoed and worked around like a hill of corn or a currant−bush. With comparatively little trouble the ground between the rows can be kept clean and mellow. Under the common system, which allows the runners to interlace and mat the ground, you soon have an almost endless amount of hand−weeding to do, and even this fails if white clover, sorrel, and certain grasses once get a start. The system I advocate forbids neglect; the runners must be clipped off as fast as they appear, and they

continue to grow from June till frost; but the actual labor of the year is reduced to a minimum. A little boy or girl could keep a large bed clipped by the occasional use of a shears or knife before breakfast; and if the ground between the plants is free of runners, it can be hoed over in an hour. Considering, therefore, merely the trouble and expense, the single−plant system has the facts in its favor. But our object is not to grow strawberry plants with the least trouble, but to have strawberries of the largest and finest quality.

In addition to ease and thoroughness of cultivation, there are other important advantages. The single narrow row of plants is more easily protected against winter's frosts. Light, strawy manure from the horse−stable serves well for this purpose; but it should be light and free from heat. I have seen beds destroyed by too heavy a covering of chunky, rank manure. It is not our purpose to keep the beds and plants from freezing, but from alternately freezing and thawing. If snow fell on the bed in December and lasted till April, no other protection would be needed. Nature in this latitude has no sympathy for the careless man. During the winter of 1885, in January, and again in February and March, the ground was bare, unprotected plants were badly frozen, and in many instances lifted partly out of the ground by midday thawing and night freezing. The only safe course is to cover the rows thoroughly, but not heavily, early in December. If then light stable−manure is not at hand, leaves, old bean−vines, or any dry refuse from the garden not containing injurious seeds will answer. Do not employ asparagus−tops, which contain seed. Of course we want this vegetable, but not in the strawberry bed. Like some persons out of their proper sphere, asparagus may easily become a nuisance; and it will dispossess other growths of their rights and places as serenely as a Knight of Labor. The proper balance must be kept in the garden as well as in society; and therefore it is important to cover our plants with something that will not speedily become a usurper. Let it be a settled point, then, that the narrow rows must be covered thoroughly out of sight with some light material which will not rest with smothering weight on the plants or leave among them injurious seeds. Light stable−manure is often objected to for the reason that employing it is like sowing the ground with grass−seed. If the plants had been allowed to grow in matted beds, I would not use this material for a winter covering, unless it had been allowed to heat sufficiently to destroy the grass and clover seed contained in it. I have seen matted beds protected with stable−manure that were fit to mow by June, the plants and fruit having been over run with grass. No such result need follow if the plants are cultivated in a single line, for then the manure can be raked off in early spring—first of April in our latitude—and the ground cultivated. There is a great advantage in employing light manure if the system I advocate is followed, for the melting snows and rains carry the richness of the fertilizer to the roots, and winter protection serves a double purpose.

We will now consider the proper management for the second year, when a full crop should be yielded. I know that many authorities frown upon cultivation during the second spring, before plants bear their fruit. I can not agree with this view, except in regard to very light soils, and look upon it as a relic of the old theory that sandy land was the best for strawberries. Take the soil under consideration, a sandy loam, for instance. After the frost is out, the earth settled, and the winter covering raked off, the soil under the spring sun grows hard, and by June is almost as solid as a roadbed. Every one knows that land in such condition suffers tenfold more severely from drought than if it were light and mellow from cultivation. Perennial weeds that sprouted late in the fall or early spring get a start, and by fruiting−time are rampant. I do advocate EARLY spring cultivation, and by it I almost double my crop, while at the same time maintaining a mastery over the weeds.

As soon as the severe frosts are over, in April, I rake the coarsest of the stable−manure from the plants, leaving the finer and decayed portions as a fertilizer. Then, when the ground is dry enough to work, I have a man weed out the rows, and if there are vacant spaces, fill in the rows with young plants. The man then forks the ground lightly between the rows, and stirs the surface merely among the plants. Thus all the hard, sodden surface is loosened or scarified, and opened to the reception of air and light, dew and rain. The man is charged emphatically that in this cultivation he must not lift the plants or disturb the roots to any extent. If I find a plant with its hold upon the ground loosened, I know there has been careless work. Before digging along the row the fork is sunk beside the plants to prevent the soil from lifting in cakes, and the plants with them. In brief, pains are taken that the plants should be just as firm in the soil after cultivation as before. Let the reader carefully observe that this work is done EARLY in April, while the plants are comparatively DORMANT. Most emphatically it should not be done in May, after the blossoms begin to appear. If the bed has been neglected till that time, the SURFACE MERELY can be cultivated with a hoe. When the plants have approached so near to the fruiting, the roots must not be disturbed at all. EARLY cultivation gives time for new roots to grow, and stimulates such

growth. Where the rows are sufficiently long, and the ground permits it, this early loosening of the soil is accomplished with a horse−cultivator better than with a fork, the hoe following and levelling the soil and taking out all weeds.

My next step during the second season is to mulch the plants, in order to keep the fruit clean. Without this mulch the fruit is usually unfit for the table. A dashing shower splashes the berries with mud and grit, and the fruit must be washed before it is eaten; and strawberries with their sun−bestowed beauty and flavor washed away are as ridiculous as is mere noise from musical instruments. To be content with such fruit is like valuing pictures by the number of square inches of canvas! In perfecting a strawberry, Nature gives some of her finest touches, and it is not well to obliterate them with either mud or water. Any light clean material will keep the fruit clean. I have found spring rakings of the lawn—mingled dead grass and leaves—one of the best. Leaves from a grove would answer, were it not for their blowing about in an untidy way. Of course there is nothing better than straw for the strawberry; but this often costs as much as hay. Any clean litter that will lie close to the ground and can be pushed up under the plants will answer. Nor should it be merely under the plants. A man once mulched my rows in such a way that the fruit hung over the litter on the soil beyond. A little common−sense will meet the requirement of keeping the berries well away from the loose soil, while at the same time preserving a neat aspect to the bed. Pine−needles and salt−hay are used where these materials are abundant.

Make it a rule to mulch as soon as possible after the plants begin to blossom, and also after a good soaking rain. In this case the litter keeps the ground moist. If the soil immediately about the plants is covered when dry, the mulch may keep it dry—to the great detriment of the forming berries. It is usually best to put on the mulch as soon as the early cultivation is over in April, and then the bed may be left till the fruit is picked. Of course it may be necessary to pull out some rank−growing weeds from time to time. If the hired man is left to do the mulching very late in the season, he will probably cover much of the green fruit and blossoms as well as the ground.

After the berries have been picked, the remaining treatment of the year is very simple. Rake out the mulch, cultivate the soil, and keep the plants free of weeds and runners as during the previous year. Before hard freezing weather, protect again as before, and give the plants similar treatment the following spring and summer. Under this system the same plants may be kept in bearing three, four, and five years, according to the variety. Some kinds maintain their vigor longer than others. After the first year the disposition to run declines, and with the third year, in most instances, deterioration in the plant itself begins. I would therefore advise that under this system a new bed be made, as described, every third year; for, it should be remembered, the new bed is unproductive the first year. This should never be forgotten if one would maintain a continuous supply of berries, otherwise he will be like those born on the 29th of February, and have only occasional birthdays.

If the old bed is just where you wish, and has been prepared in the thorough manner described, it can be renewed in the following manner: When the old plants begin to decline in vigor—say the third or fourth spring—a line of well−decayed compost and manure from the cow−stable a foot wide may be spread thickly down between the rows, dug under deeply, and young plants set out just over the fertilizer. The old plants can be treated as has already been described, and as soon as they are through bearing, dug under. This would leave the young plants in full possession of the ground, and the cultivation and management for three or more years would go on as already directed. This course involves no loss of time or change of ground for a long periods. If, however, a new bed can be made somewhere else, the plants will thrive better upon it. Unless there are serious objections, a change of ground is always advantageous; for no matter how lavishly the plot is enriched, the strawberry appears to exhaust certain required constituents in the soil. Continued vigor is better maintained by wood−ashes perhaps than by any other fertilizer, after the soil is once deepened and enriched, and it may be regarded as one of the very best tonics for the strawberry plant. Bone−meal is almost equally good. Guano and kindred fertilizers are too stimulating, and have not the staying qualities required.

As has been intimated before, the strawberry bed may often be so located on the Home Acre as to permit of irrigation. This does not mean sprinkling and splattering with water, but the continuous maintenance of abundant moisture during the critical period from the time the fruit begins to form until it ripens. Partial watering during a drought is very injurious; so also would be too frequent watering. If the ground could be soaked twice a week in the evening, and then left to the hardening and maturing influence of the sun and wind, the finest results would be secured. I am satisfied that in most localities the size of the berries and the number of quarts produced might be doubled by judicious irrigation.

The system given above applies not only to sandy loam, but also to all varieties of clay, even the most stubborn. In the latter instance it would be well to employ stable−manure in the initial enriching, for this would tend to lighten and warm the soil. Care must also be exercised in not working clay when it is too wet or too dry. Mulch also plays an important part on heavy clay, for it prevents the soil from baking and cracking. One of the best methods of preventing this is to top−dress the ground with stable− manure, and hoe it in from time to time when fighting the weeds. This keeps the surface open and mellow—a vital necessity for vigorous growth. Few plants will thrive when the surface is hard and baked. Nevertheless, if I had to choose between heavy clay and light sand for strawberries, I should much prefer the clay. On the last−named soil an abundant winter protection is absolutely necessary, or else the plants will freeze entirely out of the ground.

The native strain of cultivated strawberries has so much vigor and power of adaptation that plenty of excellent varieties can be grown on the lightest soil. In this instance, however, we would suggest important modifications in preparation and culture. The soil, as has been already shown, must be treated like a spendthrift. Deep plowing or spading should be avoided, as the subsoil is too loose and leachy already. The initial enriching of the bed should be generous, but not lavish. You cannot deposit fertilizers for long−continued use. I should prefer to harrow or rake in the manure, leaving it near the surface. The rains will carry it down fast enough. One of the very best methods is to open furrows, three feet apart, with a light corn−plow, half fill them with decayed compost, again run the plow through to mix the fertilizer with the soil, then level the ground, and set out the plants immediately over the manure. They thus get the benefit of it before it can leach away. The accomplished horticulturist Mr. P. T. Quinn, of Newark, N. J., has achieved remarkable success by this plan.

It is a well−known fact that on light land strawberry plants are not so long−lived and do not develop, or "stool out," as it is termed, as on heavier land. In order to secure the largest and best possible crop, therefore, I should not advise a single line of plants, but rather a narrow bed of plants, say eighteen inches wide, leaving eighteen inches for a walk. I would not allow this bed to be matted with an indefinite number of little plants crowding each other into feeble life, but would leave only those runners which had taken root early, and destroy the rest. A plant which forms in June and the first weeks in July has time to mature good−sized fruit−buds before winter, especially if given space in which to develop. This, however, would be impossible if the runners were allowed to sod the ground thickly. In principle I would carry out the first system, and give each plant space in which to grow upon its own root as large as it naturally would in a light soil, and I would have a sufficient number of plants to supply the deficiency in growth. On good, loamy soil, the foliage of single lines of plants, three feet apart, will grow so large as to touch across the spaces; but this could scarcely be expected on light soil unless irrigation were combined with great fertility. Nevertheless, a bed with plants standing not too thickly upon it will give an abundance of superb fruit.

Strawberries grown in beds may not require so much spring mulching to keep the fruit clean, but should carefully receive all that is needed. Winter protection also is not so indispensable as on heavier soils, but it always well repays. A thick bed of plants should never be protected by any kind of litter which would leave seeds of various kinds, for under this system of culture weeds must be taken out by hand; and this is always slow, back−aching work.

When plants are grown in beds it does not pay to continue them after fruiting the third year. For instance, they are set out in spring, and during the first season they are permitted to make a limited number of runners, and prepare to fruit the following year. After the berries are picked the third year, dig the plants under, and occupy the ground with something else. On light soils, and where the plants are grown in beds instead of narrow rows, new beds should be set out every alternate year.

In order to have an abundant supply of young plants it is only necessary to let one end of a row or a small portion of a bed run at will. Then new plants can be set out as desired.

While more strawberries are planted in spring than at any other time, certain advantages are secured by summer and fall setting. This is especially true of gardens wherein early crops are maturing, leaving the ground vacant. For instance, there are areas from which early peas, beans, or potatoes have been gathered. Suppose such a plot is ready for something else in July or August, the earlier the better. Unless the ground is very dry, a bed can be prepared as has been described. If the soil is in good condition, rich and deep, it can be dug thoroughly, and the plants set out at once in the cool of the evening, or just before a shower. During the hot season a great advantage is secured if the plants are set immediately after the ground is prepared, and while the surface is still moist. It is

unfortunate if ground is made ready and then permitted to dry out before planting takes place, for watering, no matter how thorough, has not so good an influence in starting new growth as the natural moisture of the soil. It would be better, therefore, to dig the ground late in the afternoon, and set out the plants the same evening. Watering, however, should never be dispensed with during warm weather, unless there is a certainty of rain; and even then it does no harm.

Suppose one wishes to set a new bed in July. If he has strawberries growing on his place, his course would be to let some of his favorite varieties make new runners as early as possible. These should be well−rooted young plants by the middle of the month. After the new ground is prepared, these can be taken up, with a ball of earth attached to their roots, and carried carefully to their new starting−place. If they are removed so gently as not to shake off the earth from the roots, they will not know that they have been moved, but continue to thrive without wilting a leaf. If such transplanting is done immediately after a soaking rain, the soil will cling to the roots so tenaciously as to ensure a transfer that will not cause any check of growth. But it is not necessary to wait for rain. At five in the afternoon soak with water the ground in which the young plants are standing, and by six o'clock you can take up the plants with their roots incased in clinging earth, just as successfully as after a rain. Plants thus transferred, and watered after being set out, will not wilt, although the thermometer is in the nineties the following day. If young plants are scarce, take up the strongest and best− rooted ones, and leave the runner attached; set out such plants with their balls of earth four feet apart in the row, and with a lump of earth fasten down the runners along the line. Within a month these runners will fill up the new rows as closely as desirable. Then all propagation in the new bed should be checked, and the plants compelled to develop for fruiting in the coming season. In this latitude a plant thus transferred in July or August will bear a very good crop the following June, and the berries will probably be larger than in the following years. This tendency to produce very large fruit is characteristic of young plants set out in summer. It thus may be seen that plants set in spring can not produce a good crop of fruit under about fourteen months, while others, set in summer, will yield in nine or ten months. I have set out many acres in summer and early autumn with the most satisfactory results. Thereafter the plants were treated in precisely the same manner as those set in spring.

If the plants must be bought and transported from a distance during hot weather, I should not advise the purchase of any except those grown in pots. Nurserymen have made us familiar with pot− grown plants, for we fill our flowerbeds with them. In like manner strawberry plants are grown and sold. Little pots, three inches across at the top, are sunk in the earth along a strawberry row, and the runners so fastened down that they take root in these pots. In about two weeks the young plant will fill a pot with roots. It may then be severed from the parent, and transported almost any distance, like a verbena. Usually the ball of earth and roots is separated from the pot, and is then wrapped in paper before being packed in the shallow box employed for shipping purposes. A nurseryman once distributed in a summer throughout the country a hundred thousand plants of one variety grown in this manner. The earth encasing the roots sustained the plants during transportation and after setting sufficiently to prevent any loss worth mentioning. This method of the plant−grower can easily be employed on the Home Acre. Pots filled with earth may be sunk along the strawberry rows in the garden, the runners made to root in them, and from them transferred to any part of the garden wherein we propose to make a new bed. It is only a neater and more certain way of removing young plants with a ball of earth from the open bed.

Some have adopted this system in raising strawberries for market. They prepare very rich beds, fill them with pot−grown plants in June or July, take from these plants one crop the following June, then plow them under. As a rule, however, such plants cannot be bought in quantities before August or September.

As we go south, September, October, or November, according to lowness of latitude, are the favorite months for planting. I have had excellent success on the Hudson in late autumn planting. My method has been to cover the young plants, just before the ground froze, with two or three inches of clean earth, and then to rake it off again early in April. The roots of such plants become thoroughly established during the winter, and start with double vigor. Plants set out in LATE autumn do best on light, dry soils. On heavy soils they will be frozen out unless well covered. They should not be allowed to bear the following season. A late−set plant cannot before winter in our climate become strong and sturdy enough to produce much fruit the following season. I make it a rule not to permit plants set out after the first of October to bear fruit until a year from the following June.

In setting out plants, the principle of sex should be remembered. The majority of our favorite varieties are bisexual; that is, the blossoms are furnished with both stamens and pistils. A variety with this organization, as the

Sharpless, for instance, will bear alone with no other kind near it. But if one set out a bed of Champions—another fine variety—well apart from any staminate kind, it would blossom profusely, but produce no fruit. When I was a boy, Hovey's Seedling was the great strawberry of the day, and marvellous stories were told of the productiveness of the plants and the size of the berries. How well I remember the disappointment and wrath of people who bought the plants at a high price, and set them out with no staminate varieties near to fertilize the pistillate blossoms. Expectations were raised to the highest pitch by profuse blossoming in May, but not a berry could be found the ensuing June. The vigorous plants were only a mockery, and the people who sold them were berated as humbugs. To− day the most highly praised strawberry is the Jewell. The originator, Mr. P. M. Augur, writes me that "plants set two feet by eighteen inches apart, August 1, 1884, in June, 1885, completely covered the ground, touching both ways, and averaged little over a quart to the plant for the centre patch." All runners were kept off, in accordance with the system advocated in this paper. "At Boston a silver medal was awarded to this variety as the best new strawberry introduced within five years." People reading such laudation—well deserved, I believe—might conclude the best is good enough for us, and send for enough Jewell plants to set out a bed. If they set no others near it, their experience would be similar to that which I witnessed in the case of Hovey's Seedling thirty odd years ago. The blossom of the Jewell contains pistils only, and will produce no fruit unless a staminate variety is planted near. I have never considered this an objection against a variety; for why should any one wish to raise only one variety of strawberry? All danger of barrenness in pistillate kinds is removed absolutely by planting staminate sorts in the same bed. In nurserymen's catalogues pistillate varieties are marked "P.," and the purchaser has merely to set out the plants within a few feet of some perfect flowering kind to secure abundant fruit.

As a result of much experience, I will now make some suggestions as to varieties. In a former paper I have given, the opinions of others upon this important subject, and one can follow the advice of such eminent authorities without misgiving. The earliest strawberry that I have ever raised, and one of the best flavored, is the Crystal City. It is evidently a wild variety domesticated, and it has the exquisite flavor and perfume of the field−berry. It rarely fails to give us fruit in May, and my children, with the unerring taste of connoisseurs, follow it up until the last berry is picked. It would run all over the garden unchecked; and this propensity must be severely curbed to render a bed productive. Keeping earliness and high flavor in view, I would next recommend the Black Defiance. It is not remarkably productive on many soils, but the fruit is so delicious that it well deserves a place. The Duchess and Bidwell follow in the order of ripening. On my grounds they have always made enormous plants, and yielded an abundance of good−flavored berries. The Downing is early to medium in the season of ripening, and should be in every collection. The Indiana is said to resemble this kind, and to be an improvement upon it. Miner's Prolific is another kindred berry, and a most excellent one. Among the latest berries I recommend the Sharpless Champion, or Windsor Chief, and Parry. If one wishes to raise a very large, late, showy berry, let him try the Longfellow. The Cornelia is said to grow very large and ripen late, but I have not yet fruited it. As I said fifteen or twenty years ago, if I were restricted to but one variety, I should choose the Triomphe de Gand, a foreign kind, but well adapted to rich, heavy soils. The berries begin to ripen early, and last very late. The Memphis Late has always been the last to mature on my grounds, and, like the Crystal City, is either a wild variety, or else but slightly removed. The Wilson is the great berry of commerce. It is not ripe when it is red, and therefore is rarely eaten in perfection. Let it get almost black in its ripeness, and it is one of the richest berries in existence. With a liberal allowance of sugar and cream, it makes a dish much too good for an average king. It is also the best variety for preserving.

It should be remembered that all strawberries, unlike pears, should be allowed to mature fully before being picked. Many a variety is condemned because the fruit is eaten prematurely. There is no richer berry in existence than the Windsor Chief, yet the fruit, when merely red, is decidedly disagreeable.

The reader can now make a selection of kinds which should give him six weeks of strawberries. At the same time he must be warned that plants growing in a hard, dry, poor soil, and in matted beds, yield their fruit almost together, no matter how many varieties may have been set out. Under such conditions the strawberry season is brief indeed.

While I was writing this paper the chief enemy of the strawberry came blundering and bumping about my lamp—the May beetle. The larva of this insect, the well−known white grub, has an insatiable appetite for strawberry roots, and in some localities and seasons is very destructive. One year I lost at least one hundred

thousand plants by this pest. This beetle does not often lay its egg in well−cultivated ground, and we may reasonably hope to escape its ravages in a garden. If, when preparing for a bed, many white grubs are found in the soil, I should certainly advise that another locality be chosen. The only remedy is to dig out the larves and kill them. If you find a plant wilting without apparent cause, you may be sure that a grub is feeding on the roots. The strawberry plant is comparatively free from insect enemies and disease, and rarely disappoints any one who gives it a tithe of the attention it deserves.

There are many points in connection with this fruit which, in a small treatise like this, must be merely touched upon or omitted altogether. I may refer those who wish to study the subject more thoroughly to my work, "Success with Small Fruits."

CHAPTER VIII. THE KITCHEN−GARDEN

The garden should be open to the sky, and as far as possible unshaded by adjacent trees from the morning and afternoon sun. It is even more essential that the trees be not so near that their voracious roots can make their way to the rich loam of the garden.

Now for the soil. We should naturally suppose that that of Eden was a deep sandy loam, with not too porous a subsoil. As we have already seen again and again, such a soil appears to be the laboratory in which we can assist Nature to develop her best products. But Nature has a profound respect for skill, and when she recognizes it, "lends a hand" in securing excellent crops from almost drifting sand or stubborn clay. She has even assisted the Hollander in wresting from the ocean one of the gardens of the world.

We must again dwell on the principles already emphasized, that soils must be treated according to their nature. If too damp, they must be drained; if of the fortunate quality of a sandy loam resting on a clay subsoil, they can be abundantly deepened and enriched from the start, if of a heavy clay, inclined to be cold and wet in spring, and to bake and crack in summer, skill should aim to lighten it and remove its inertia; finally, as we have shown, a light, porous soil should be treated like a spendthrift. All soils, except the last−named, are much the better for being enriched and deeply plowed or forked in October or November. This exposes the mould to the sweetening and mechanical action of frost, and the fertilizers incorporated with it are gradually transformed into just that condition of plant food which the rootlets take up with the greatest ease and rapidity. A light soil, on the contrary, should not be worked in autumn, but be left intact after the crops are taken from it.

In one respect a light soil and a stiff, heavy one should be treated in the same way, but for different reasons. In the first instance, fertilizers should be applied in moderation to the surface, and rains and the cultivation of the growing crops depended upon to carry the richness downward to the roots. The porous nature of the earth must ever be borne in mind; fertilizers pass through it and disappear, and therefore are applied to the surface, to delay this process and enable the roots to obtain as much nutriment as possible during the passage. Equal and even greater advantages are secured by a top−dressing of barnyard manures and composts to the heaviest of clay. The surface of such soils, left to Nature, becomes in hot, dry weather like pottery, baking and cracking, shielding from dew and shower, and preventing all circulation of air about the roots. A top−dressing prevents all this, keeps the surface open and mellow, and supplies not only fertility, but the mechanical conditions that are essential.

If we are now ready to begin, let us begin right. I have not much sympathy with finical, fussy gardening. One of the chief fascinations of gardening is the endless field it affords for skilful sleight of hand, short−cuts, unconventional methods, and experiments. The true gardener soon ceases to be a man of rules, and becomes one of strategy, of expedients. He is prompt to act at the right moment. Like the artist, he is ever seeking and acting upon hints from Nature. The man of rules says the first of July is the time to set out winter cabbage; and out the plants go, though the sky be brazen, and the mercury in the nineties. The gardener has his plants ready, and for a few days watches the sky. At last he perceives that rain is coming; then he sets out his plants, and Nature's watering starts them, unwilted, on their new growth.

At the same time I protest against careless, slovenly gardening— ground imperfectly prepared, crooked rows, seed half covered, or covered so deeply that the germs are discouraged long before they reach light. One of the best aids to success is a small compost− heap composed equally of manure from the horse−stable, the cow−stable, and of leaves. This should be allowed to stand so long, and be cut down and turned so often, that it becomes like a fine black powder, and is much the better for being kept under shelter from sun and rain.

All who hope to have a permanent garden will naturally think first of asparagus—one of the vegetables that have bee a longest in cultivation, and one which is justly among the most valued. It was cultivated hundreds of years before the Christian era, and is to− day growing in popular esteem among civilized peoples.

In the matter of preparation I shall take issue with many of the authorities. I have read and known of instances wherein extraordinary expense and pains have been bestowed upon the asparagus−bed. The soil has been dug out to the depth of two or more feet, the bottom paved, and the homely, hardy roots, accustomed to roughing it the world over, set out and tended with a care which, if given to a potato, would make it open its eyes. There are few more hardy or widely distributed species of vegetables than asparagus. It is "a native of the sea−coasts of various

countries of Europe and Asia." According to Loudon, it is abundant on the sandy steppes in the interior of Russia. In Southern Russia and Poland the horses and cows feed upon it. It grows freely in the fens of Lincolnshire, and is indigenous to Cornwall. On the borders of the Euphrates the shoots are so extraordinarily large and vigorous that Thompson thinks it would be to the advantage of gardeners to import roots from that region. These facts may indicate that too much stress may have been laid on its character as a marine plant. Yet it is true that it grows naturally on the coast of Holland, in the sandy valleys and on the downs, while off Lizard Point it flourishes naturally on an island where, in gales, the sea breaks over the roots. In this country also it has escaped cultivation, and is establishing itself along our coasts, The truth is that it is a plant endowed with a remarkable power of adaptation to all soils and climates, and does not need the extravagant petting often given it. On different portions of my place chance seeds have fallen, and annually produce almost as fine heads as are cut from the garden. Nature therefore teaches what experience verifies—that asparagus is one of the most easily grown and inexpensive vegetables of the garden. From two small beds we have raised during the past eight years twice as much as we could use, and at the cost of very little trouble either in planting or cultivation.

In my effort to show, from the hardy nature of the asparagus plant, that extravagant preparation is unnecessary, let no one conclude that I am opposed to a good, thorough preparation that accords with common−sense. It is not for one year's crop that you are preparing, but for a vegetable that should be productive on the same ground thirty or forty years. What I said of strawberries applies here. A fair yield of fruit may be expected from plants set out on ordinary corn−ground, but more than double the crop would be secured from ground generously prepared.

When I first came to Cornwall, about twelve years ago, I determined to have an asparagus bed as soon as possible. I selected a plot eighty feet long by thirty wide, of sandy loam, sloping to the southwest. It had been used as a garden before, but was greatly impoverished. I gave it a good top−dressing of barnyard manure in the autumn, and plowed it deeply; another top− dressing of fine yard manure and a deep forking in the early spring. Then, raking the surface smooth, I set a line along its length on one side. A man took a spade, sunk its length in the soil, and pushed it forward strongly. This action made an almost perpendicular wedge−shaped aperture just back of the spade. The asparagus plant, with its roots spread out fan−shape, was sunk in this opening to a depth that left the crown of the plant between three and four inches below the surface. Then the spade was drawn out, and the soil left to fall over the crown of the plant. Rapidly repeating this simple process, the whole plot was soon set out. The entire bed was then raked smooth. The rows were three feet apart, and plants one foot apart in the row. A similar plot could scarcely have been planted with potatoes more quickly or at less expense, and a good crop of potatoes could not have been raised on that poor land with less preparation. A few years later I made another and smaller bed in the same way. The results have been entirely satisfactory. I secured my object, and had plenty of asparagus at slight cost, and have also sold and given away large quantities. A bit of experience is often worth much more than theory.

At the same time it is proper that some suggestions should follow this brief record. The asparagus bed should be in well−drained soil; for while the plant will grow on wet land, it will start late, and our aim is to have it early.

Again, with asparagus as with nearly everything else, the deeper and richer the soil, the larger and more luxuriant the crop. Listen to Thompson, the great English gardener: "If the ground has been drained, trenched, or made good to the depth of THREE feet, as directed for the kitchen−garden generally [!], that depth will suffice for the growth of asparagus." We should think so; yet I am fast reaching the conclusion that under most circumstances it would in the end repay us to secure that depth of rich soil throughout our gardens, not only for asparagus, but for everything else. Few of the hasty, slipshod gardeners of America have any idea of the results secured by extending root pasturage to the depth of three feet instead of six or seven inches; soil thus prepared would defy flood and drought, and everything planted therein would attain almost perfection, asparagus included. But who has not seen little gardens by the roadside in which all the esculents seemed growing together much as they would be blended in the pot thereafter? Yet from such patches, half snatched from barrenness, many a hearty, wholesome dinner results. Let us have a garden at once, then improve it indefinitely.

I will give in brief just what is essential to secure a good and lasting asparagus bed. We can if we choose grow our own plants, and thus be sure of good ones. The seed can be sown in late October or EARLY spring on light, rich soil in rows eighteen inches apart. An ounce of seed will sow fifty feet of drill. If the soil is light, cover the seed one inch deep; if heavy, half an inch; pack the ground lightly, and cover the drill with a good dusting of that

fine compost we spoke of, or any fine manure. This gives the young plants a good send−off. By the use of the hoe and hand−weeding keep them scrupulously clean during the growing season, and when the tops are killed by frost mow them off. I should advise sowing two or three seeds to the inch, and then when the plants are three inches high, thinning them out so that they stand four inches apart. You thus insure almost the certainty of good strong plants by autumn; for plants raised as directed are ready to be set out after one season's growth, and by most gardeners are preferred.

In most instances good plants can be bought for a small sum from nurserymen, who usually offer for sale those that are two years old. Strong one−year−olds are just as good, but under ordinary culture are rarely large enough until two years of age. I would not set out three−year−old plants, for they are apt to be stunted and enfeebled. You can easily calculate how many plants you require by remembering that the rows are to be three feet apart, and the plants one foot apart in the row.

Now, whether you have raised the plants yourself, or have bought them, you are ready to put them where they will grow, and yield to the end of your life probably. Again I substantiate my position by quoting from the well−known gardener and writer, Mr. Joseph Harris: "The old directions for planting an asparagus bed were well calculated to deter any one from making the attempt. I can recollect the first I made. The labor and manure must have cost at the rate of a thousand dollars an acre, and, after all was done, no better results were obtained than we now secure at one−tenth of the expense."

If the ground selected for the bed is a well−drained sandy loam, is clean, free from sod, roots, stones, etc., I would give it a top−dressing of six inches of good barnyard manure, which by trenching or plowing I would thoroughly mix with the soil to the depth of at least two feet. If the ground is not free from stones, roots, and sod, I should put on the manure, as directed, in the autumn, and begin on one side of the prospective bed and trench it all over, mingling the fertilizer through the soil. The trencher can throw out on the surface back of him every stone, root, and weed, so that by the time he is through there is a sufficient space of ground amply prepared.

On all soils except a wet, heavy clay I prefer autumn planting. During the latter part of October or early November put in the plants as explained above, or else make a straight trench that will give room for the spreading of the roots, and leave the crowns between three and four inches below the surface. Then level the ground, and cover the row with a light mulch of stable−manure as you would strawberries. If more convenient to set out the plants in spring, do so as soon as the ground is dry enough to crumble freely when worked. In the spring rake off the mulch, and as early as possible fork the ground over lightly, taking pains not to touch or wound the crowns of the plants. The young, slender shoots will soon appear, and slender enough they will be at first. Keep them free of weeds and let them grow uncut all through the first year; mow off the tops in late October, and cover the entire bed with three or four inches of coarse barnyard manure. In spring rake off the coarsest of this mulch, from which the rains and melting snows have been carrying down richness, dig the bed over lightly once (never wounding the roots or crowns of the plants), and then sow salt over the bed till it is barely white. Let the tops grow naturally and uncut the second year, and merely keep clean. Take precisely the same action again in the autumn and the following spring. During the latter part of April and May a few of the strongest shoots may be cut for the table. This should be done with a sharp knife a little below the surface, so that the soil may heal the wound, and carefully, lest other heads just beneath the surface be clipped prematurely. Cut from the bed very sparingly, however, the third year, and let vigorous foliage form corresponding root−power. In the autumn of the third and the spring of the fourth year the treatment is precisely the same. In the fourth season, however, the shoots may be used freely to, say, about June 20, after which the plants should be permitted to grow unchecked till fall, in order to maintain and increase the root− power. Every year thereafter there should be an abundant top−dressing of manure in the fall, and a careful digging of the ground in the early spring. Light, sandy soil, clear of stones, is well adapted to asparagus, but should be treated on the principles already indicated in this work. There should be no attempt, by trenching, to render a porous subsoil more leaky. It is useless to give the bed a thorough initial enriching. Put on a generous top− dressing every autumn and leave the rains to do their work, and good crops will result.

If, on the contrary, a cold, heavy clay must be dealt with, every effort should be made to ameliorate it. Work in a large quantity of sand at first, if possible; employ manures from the horse− stable, or other light and exciting fertilizers, and there will be no failure.

In regard to the use of salt, Mr. Harris writes: "It is a popular notion that common salt is exceedingly

beneficial to asparagus. I do not know that there is any positive proof of this, but, at any rate, salt will do no harm, even if applied thick enough to kill many of our common weeds. Salt is usually sown broadcast, at the rate of ten bushels to the acre."

Until recently I have grown asparagus without salt. Hereafter I shall employ it in sufficient degree to kill all weeds except the strongest. I shall sow it every spring after the bed is dug until the ground is as white as if a flurry of snow had passed over it. I think salt is a good manure for asparagus, and many other things. At any rate, we secure a great advantage in keeping our beds free of weeds.

I have written thus fully of asparagus because when a man makes a bed as directed he makes it for a lifetime. He can scarcely find another investment that will yield a larger return. We have asparagus on our table every day, from the middle of April to July 1; and the annual care of the crop is far less than that of a cabbage−patch. I do not advise severe cutting, however, after the middle of June, for this reason: it is well known that the most pestiferous perennial weed can be killed utterly if never allowed to make foliage. As foliage depends upon the root, so the root depends on foliage. The roots of asparagus may therefore be greatly enfeebled by too severe and long−continued cutting. Avarice always overreaches itself.

In some localities the asparagus beetle destroys whole plantations. Thompson, the English authority, says: "The larvae, beetles, and eggs are found from June to the end of September. Picking off the larvae and beetles, or shaking them into receptacles, appears to be the only remedy."

Peter Henderson, in his valuable book, "Gardening for Profit," figures this insect and its larvas accurately, and says: "Whenever the eggs or larvae appear, cut and burn the plants as long as any traces of the insect are seen. This must be done if it destroys every vestige of vegetation." He and other authorities speak of the advantage of cooping a hen and chickens in the bed. Most emphatically would I recommend this latter course, for I have tried it with various vegetables. Active broods of little chickens here and there in the garden are the best of insecticides, and pay for themselves twice over in this service alone.

We will next speak of the ONION, because it is so hardy that the earlier it is planted in spring the better. Indeed, I have often, with great advantage, sown the seed on light soils the first of September, and wintered over the young plants in the open ground. Nature evidently intended the onion for humanity in general, for she has endowed the plant with the power to flourish from the tropics to the coldest limit of the temperate zone.

While onions are grown in all sorts of careless ways, like other vegetables, it is by far the best plan to select a space for an annual and permanent bed, just as we do for asparagus. Unlike most other crops, the onion does not require change of ground, but usually does better on the same soil for an indefinite number of years. Therefore I would advise that upon the Home Acre the onion, like the asparagus bed, should be made with a view to permanence.

Not much success can be hoped for on rough, poor land. The onion, like the asparagus bed, should be made and maintained with some care. If possible, select a light, well−drained, but not dry plot. Make the soil rich, deep, mellow, to the depth of twenty inches, taking out all stones, roots, etc.; cover the land with at least six inches of good strong barnyard manure. This should be done in the autumn. Sow the ground white with salt, as in the case of asparagus, and then mingle these fertilizers thoroughly with the soil, by forking or plowing it at once, leaving the surface as rough as possible, so that the frost can penetrate deeply. Just as soon as the ground is dry enough to work in the spring, fork or plow again, breaking every lump and raking all smooth, so that the surface is as fine as the soil in a hot−bed. You cannot hope for much in heavy, lumpy ground. Sow at least three seeds to the inch in a shallow drill one inch deep, and spat the earth firmly over the seed with the back of a spade or with your hand. In subsequent culture little more is required than keeping the MERE SURFACE stirred with a hoe, and the rows clean of weeds. Onions are not benefited by deep stirring of the soil, but the surface, from the start, should be kept clean and scarified an inch or two deep between the rows during the growing season. I prefer to have my onions growing at the rate of one or two to every inch of row, for I do not like large bulbs. I think that moderate−sized onions are better for the table. Those who value largeness should thin out the plants to three or four inches apart; but even in the market there is less demand for large, coarse onions. When the tops begin to fall over from their own weight, in August or September, leave them to mature and ripen naturally. When the tops begin to dry up, pull them from the soil, let them dry thoroughly in the sun, and then spread them thinly in a dry loft till there is danger of their freezing. Even there they will keep better, if covered deeply with straw, hay, etc., than in a damp cellar. Wherever the air is damp and a little too warm, onions will speedily start to grow again, and soon become

worthless. After the crop has been taken, the ground should be treated as at first—thoroughly enriched and pulverized late in autumn, and left to lie in a rough state during the winter, then prepared for planting as early as possible. I prefer March sowing of the seed to April, and April, by far, to May. In England they try to plant in February. Indeed, as I have said, I have had excellent success by sowing the seed early in September on light soils, and letting the plants grow during all the mild days of fall, winter, and early spring. By this course we have onions fit for the table and market the following May. In this latitude they need the protection of a little coarse litter from December 1 to about the middle of March. Only the very severest frost injures them. Most of us have seen onions, overlooked in the fall gathering, growing vigorously as soon as the thaws began in spring. This fact contains all the hint we need in wintering over the vegetable in the open ground. If the seed is sown late in September, the plants do not usually acquire sufficient strength in this latitude to resist the frost. It is necessary, therefore, to secure our main crop by very early spring sowings, and it may be said here that after the second thorough pulverization of the soil in spring, the ground will be in such good condition that, if well enriched and stirred late in autumn, it will only need levelling down and smoothing off before the spring sowing. Onions appear to do best on a compact soil, if rich, deep, and clean. It is the SURFACE merely that needs to be stirred lightly and frequently.

If young green onions with thin, succulent tops are desired very early in spring, it will be an interesting experiment to sow the seed the latter part of August or early in September. Another method is to leave a row of onions in the garden where they ripened. When the autumn rains begin, they will start to grow again. The winter will not harm them, and even in April there will be a strong growth of green tops. The seed stalk should be picked off as soon as it appears in spring, or else the whole strength will speedily go to the formation of seed.

It should be remembered that good onions can not be produced very far to the south by sowing the small gunpowder−like seed. In our own and especially in warmer climates a great advantage is secured by employing what are known as "onion sets." These are produced by sowing the ordinary black seed very thickly on light poor land. Being much crowded, and not having much nutriment, the seed develop into little onions from the size of a pea to that of a walnut, the smaller the better, if they are solid and plump. These, pressed or sunk, about three inches apart, into rich garden soil about an inch deep, just as soon as the frost is out, make fine bulbs by the middle of June. For instance, we had in our garden plenty of onions three inches in diameter from these little sets, while the seed, sown at the same time, will not yield good bulbs before August. There is but little need of raising these sets, for it is rather difficult to keep them in good condition over the winter. Any seedsman will furnish them, and they are usually on sale at country stores. Three or four quarts, if in good condition, will supply a family abundantly, and leave many to be used dry during the autumn. Insist on plump little bulbs. If you plant them early, as you should, you will be more apt to get good sets. Many neglect the planting till the sets are half dried up, or so badly sprouted as to be wellnigh worthless. They usually come in the form of white and yellow sets, and I plant an equal number of each.

The chief insect enemies are onion maggots, the larvae of the onion fly. These bore through the outer leaf and down into the bulb, which they soon destroy. I know of no remedy but to pull up the yellow and sickly plants, and burn them and the pests together. The free use of salt in the fall, and a light top− dressing of wood−ashes at the time of planting, tend to subdue these insects; but the best course is prevention by deeply cultivating and thoroughly enriching in the fall, leaving the ground rough and uneven for the deep action of frost, and by sowing the seed VERY early in spring. I have found that the insect usually attacks late−sown and feeble plants. If the maggot were in my garden, I should use the little sets only.

Some special manures have been employed in attaining the greatest success with this vegetable. In England, pigeon−dung and the cleanings of the pigsty are extensively employed. In this country the sweepings of the hen−roost are generally recommended. It should be remembered that all these are strong agents, and if brought in contact with the roots of any vegetable while in a crude, undiluted state, burn like fire, especially in our climate. What can be done in safety in England will not answer under our vivid sun and in our frequent droughts. These strong fertilizers could be doubled in value as well as bulk by being composted with sods, leaves, etc., and then, after having been mixed, allowed to decay thoroughly. Then the compost can be used with great advantage as a top−dressing directly over the drills when either sets or seeds are planted. The spring rains will carry the richness from the surface to the roots, and insure a very vigorous growth. When the compost named in the early part of this paper is used, I sow it thickly IN the drill, draw a pointed hoe through once more, to mingle the fertilizer with the

soil, and then forthwith sow the seeds or put in the sets one inch deep; and the result is immediate and vigorous growth. Wood−ashes and bone−dust are excellent fertilizers, and should be sown on the surface on the row as soon as planted, and gradually worked in by weeding and cultivation during the growing season. Manure from the pigsty, wherein weeds, litter, sods, muck, etc., have been thrown freely during the summer, may be spread broadcast over the onion bed in the autumn, and worked in deeply, like the product of the barnyard. The onion bed can scarcely be made too rich as long as the manure is not applied in its crude, unfermented state at the time of planting. Then, if the seed is put in very early, it grows too strongly and quickly for insects to do much damage.

Varieties.—Thompson in his English work names nineteen varieties with many synonyms; Henderson offers the seed of thirteen varieties; Gregory, of seventeen kinds. There is no need of our being confused by this latitude of choice. We find it in the great majority of fruits and vegetables offered by nurserymen and seedsmen. Each of the old varieties that have survived the test of years has certain good qualities which make it valuable, especially in certain localities. Many of the novelties in vegetables, as among fruits, will soon disappear; a few will take their place among the standard sorts. In the case of the kitchen, as well as in the fruit, garden, I shall give the opinion of men who have a celebrity as wide as the continent for actual experience, and modestly add occasionally some views of my own which are the result of observation.

As a choice for the home−garden, Mr. Henderson recommends the following varieties of onions: Extra Early Red, Yellow Globe Danvers, White Portugal or Silver Skin, and Southport Yellow Globe. Mr. Joseph Harris, the well−known and practical author: Yellow Danvers, Extra Early Large Bed, and White Globe. Mr. J. J. H. Gregory: New Queen, Early Yellow Acker, Yellow Danvers, Early Red Globe Danvers, Large Red Wethersfield. They all recommend onion sets. The Queen onion is quite distinct. For the home table, where earliness, as well as quality, size and quantity is desired, I think the Queen deserves a place. It is admirably fitted for pickling. I have tried all the varieties named, with good success, and grown some of the largest kinds to six inches in diameter.

CHAPTER IX. THE KITCHEN−GARDEN (concluded)

In the last chapter I dwelt somewhat at length on two vegetables for which thorough and enduring preparation is profitable. There is one other very early garden product which requires our attention during the first warm days of spring—rhubarb; sold in some instances under the name of "wine−plant." Wine is made from the juicy stalks, but it is an unwholesome beverage. The people call rhubarb "pie−plant;" and this term suggests its best and most common use, although when cooked as if it were a fruit, it is very grateful at a season when we begin to crave the subacid in our food.

Its cultivation is very simple. Those who propose to produce it largely for market will find it to their advantage to raise this plant from the seed; but for the Home Acre enough plants can be procured, at a moderate cost, from almost any nurseryman. In this instance, also, thorough preparation of the soil is essential, for the rhubarb bed, under good care, will last eight or ten years. A rich, deep, clean, warm soil is the chief essential. It belongs to that class of vegetables known as "gross feeders." During the first year, however, I would apply the fertiliser directly to the hills or plants. These are obtained by dividing the old roots, which may be cut to pieces downward so as to leave a single bud or "eye" surmounting a long tapering portion of root. Each division will make a new, vigorous plant, which should be set out so that the bud or crown is three inches below the surface in light soils, and two inches in heavy soils. The plants should be four feet apart each way, and two or three shovelfuls of rich compost worked into the soil where the plant is to stand. You cannot make the ground too rich; only remember that in this, as in all other instances, light, fermenting manures should not be brought into immediate contact with the roots. Plant in either autumn or spring. In this latitude and southward I should prefer autumn; northward, perhaps spring is the best season. Keep the intervening ground clean and mellow, and pull no stalks the first year, unless it be in the autumn if the plants have become very strong. In the fall, when the foliage has died down, cover the crowns with two or three shovelfuls of rich manure—any kind will do in this instance—and work in a heavy top−dressing all over the ground early in spring. Unless seed is required, always cut down the seed−stalks as soon as they appear. The best early variety is the Linnaeus. The Victoria is a little later, but much larger, and is the kind that I have usually grown.

Radish−seed may be sown one inch deep as soon as the ground is dry enough in spring, and if the vegetable is a favorite, the sowing may be repeated every two weeks. A common error is to sow the seed too thickly. A warm, RICH soil is all that is necessary to secure a crop.

What has been said about radishes applies equally to early turnips, with the exception that the plants when three inches high should be thinned so as to stand four inches apart. The ground for these vegetables should be very rich, so as to secure a very rapid growth; for otherwise they are attacked by a little white worm which soon renders them unfit for use. Mr. Harris recommends the following varieties of early radishes, and his selection coincides with my own experience: Bound Scarlet Turnip, French Breakfast, Rose (olive−shaped), Long Scarlet Short−top. Winter radishes: California Mammoth White, and Chinese Rose. For spring sowing of turnips, Mr. Henderson recommends Red−top Strap−leaf, and Early Flat Dutch. The earlier they are sown the better.

Beets—a much more valuable vegetable—require similar treatment. The ground should be clean, well pulverized, and very rich. I prefer to sow the seed the first week in April, unless the soil is frozen, or very cold and wet. The seed may be sown, however, at any time to the first of July; but earliness is usually our chief aim. I sow two inches deep and thickly, pressing the soil firmly over the seed. Let the rows be about fifteen inches apart. Referring to the manure which had been left to decay in a sheltered place until it became like fine dry powder, let me say here that I have always found it of greater advantage to sow it with the beet−seed and kindred vegetables. My method is to open the drill along the garden−line with a sharp−pointed hoe, and scatter the fertilizer in the drill until the soil is quite blackened by it; then draw the pointed hoe through once more, to mingle the powdery manure with the soil and to make the drill of an even depth; then sow the seed at once. This thoroughly decayed stable−manure has become the best of plant−food; it warms the ground, and carries the germinating seed and young plants with vigor through the first cold, wet weeks.

In the home garden there are several reasons for sowing beet−seed thickly. Unfavorable weather and insects will be less apt to cause a thin, broken stand of plants. In order to produce good roots, however, the plants should

be thinned out so as to stand eventually three or four inches apart I do not advise very large, coarse roots for the table. For home use I think only three varieties are essential. The Egyptian Turnip Beet is the best very early variety, and can be planted closely, as it has a small top; the Bassano is next in earliness, and requires more room; the Early Blood Turnip is the best for a general crop and winter use. The beet is a root which deteriorates rapidly from age; I therefore advise that the seed of the winter supply be sown the last of June or first of July in our latitude.

Parsnips should be sown at the same time with early beets and in the same way, with the exception that the seed should be covered only an inch deep. I doubt whether there are any marked distinctions in variety, and would advise that only the Long Smooth or Hollow−crowned be sown.

The carrot is not quite so hardy as the parsnip, and the seed may be sown a week or two later, or indeed at any time up to the middle of June. Its culture and treatment are precisely like those of the parsnip; but the roots should be gathered and stored before a severe frost occurs. For home use a short row of the Early Horn will answer; for the general crop, sow the Long Orange.

Vegetable−oyster, or salsify, is another root−crop which may be treated precisely like the parsnip, and the seed sown at the same time. The seed should be sown in a deep, rich, mellow soil, which is all the better for being prepared in autumn. Plant, as early in April as possible, in the same manner as described for beets, thin out to four inches apart, and keep the soil clean and mellow throughout the entire season; for this vegetable grows until the ground freezes. There is only one variety.

The pea is another crop which may be put into the ground as soon as the frost is out—the earlier the better, if the smooth, hardy varieties are sown. There are so many varieties that the novice to−day may well be excused for perplexity in choice. Thompson, the English authority, gives forty kinds, and one hundred and forty− eight synonyms. Mr. Gregory recommends the American Wonder, Bliss's Abundance, Bliss's Ever−bearing, McLean's Advancer, Yorkshire Hero, Stratagem, and Champion of England. Mr. Henderson's list includes Henderson's First of All, American Wonder, Bliss's Abundance, Champion of England, and Pride of the Market. Mr. Harris in his catalogue marks first and best, American Wonder, and also says, "For the main crop there is nothing better than the Champion of England." My own experience would lead me to plant the Tom Thumb either just before the ground froze in the fall, or as early in March as possible. It is almost perfectly hardy, and gives me the earliest picking. I should also plant Henderson's First of All as soon as the frost was out, on a warm, well−drained soil. For second crops, American Wonder and Premium Gem; and for the main and most satisfactory crop of all, Champion of England. The Champion requires brush as a support, for it grows from four to six feet high; but it is well worth the trouble. I plant the other kinds named because they are much earlier, and so dwarf as to need no brush; they are also productive, and excellent in quality if not left to grow too old. For the dwarf kinds the soil cannot be too rich, and the warmer the ground and exposure, the earlier the crop. For the tall late sorts the soil may easily be made too fertile; they should also be planted in cooler, moister, and heavier ground. In the case of the dwarfs I put a fertilizer in with the seed as I have already explained. Cover the dwarfs about two and a half inches deep, and the tall late sorts from three to four inches according to the nature of the soil. Plant the Champion of England every ten days until the middle of June, and thus secure a succession of the best of all.

We all know how numerous have been the varieties of potato introduced into this country of late years—many kinds sent out at first at the rate of one or more dollars per pound. I amuse myself by trying several of these novelties (after they become cheap) every year, and one season raised very early crops of excellent potatoes from the Vanguard and Pearl of Savoy. The Early Rose and Early Vermont have long been favorites. They resemble each other very closely. I have had excellent success with the Beauty of Hebron. It is a good plan to learn what varieties succeed well in our own neighborhood, and then to plant chiefly of such kinds; we may then add to our zest by trying a few novelties.

Not only much reading on the subject, but also my own observation, and the general law that "like produces like," lead me to indorse the practice of planting large tubers cut into sets containing one or more eyes, or buds. The eye of a potato is a bud from which the plant grows; and the stronger backing it has, the stronger and more able is the plant to evolve new fine tubers through the action of its roots and foliage. A small potato has many immature buds, which as a rule produce feeble plants.

The potato will grow on almost any soil; but a dry, rich, sandy loam gives the best, if not the largest, yield. I do not think the potato can be planted too early after the ground is fit to work. One spring I was able to get in

several rows the 15th of March, and I never had a finer yield. I observe that Mr. Harris strongly indorses this plan.

Nearly every one has his system of planting. There is no necessity for explaining these methods. I will briefly give mine, for what it is worth. I prefer warm, well−drained soils. Plow deeply in autumn, also in spring; harrow and pulverize the ground as completely as possible; then open the furrows with the same heavy plow, sinking it to the beam, and going twice in the furrow. This, of course, would make too deep a trench in which to place the sets, but the soil has been deepened and pulverized at least fourteen inches. A man next goes along with a cart or barrow of well−decayed compost (not very raw manure), which is scattered freely in the deep furrows; then through these a corn−plow is run, to mingle the fertilizer with the soil. By this course the furrows are partially filled with loose, friable soil and manure, and they average four or five inches in depth. The sets are planted at once eight inches apart, the eye turned upward, and the cut part down. The sets are then covered with three or four inches of fine soil, not with sods and stones. When the plants are two or three inches high, they receive their first hoeing, which merely levels the ground evenly. The next cultivation is performed by both corn−plow and hoe. In the final working I do not permit a sharp−slanting slope from the plants downward, so that the rain is kept from reaching the roots. There is a broad hilling up, so as to have a slope inward toward the plants, as well as away from them. This method, with the deep, loosened soil beneath the plants, secures against drought, while the decayed fertilizers give a strong and immediate growth.

Of course we have to fight the potato, or Colorado, beetle during the growing season. This we do with Paris green applied in liquid form, a heaping teaspoonful to a pail of water.

In taking up and storing potatoes a very common error is fallen into. Sometimes even growing tubers are so exposed to sun and light that they become green. In this condition they are not only worthless, but poisonous. If long exposed to light after being dug, the solanine principle, which exists chiefly in the stems and leaves, is developed in the tubers. The more they are in the light, the less value they possess, until they become worse than worthless. They should be dug, if possible, on a dry day, picked up promptly and carried to a dry, cool, DARK cellar. If stored on floors of outbuldings, the light should be excluded. Potatoes that are long exposed to light before the shops of dealers are injured. Barrels, etc., containing them should be covered; if spread on the barn−floor, or in places which can not be darkened, throw straw or some other litter over them.

There is no occasion to say much about lettuce. It is a vegetable which any one can raise who will sow the seed a quarter of an inch deep. I have sowed the seed in September, wintered the plants over in cold−frames, and by giving a little heat, I had an abundance of heads to sell in February and March. For ordinary home uses it is necessary only to sow the seed on a warm, rich spot as soon as the frost is out, and you will quickly have plenty of tender foliage. This we may begin to thin out as soon as the plants are three or four inches high, until a foot of space is left between the plants, which, if of a cabbage variety, will speedily make a large, crisp head. To maintain a supply, sowings can be made every two weeks till the middle of August. Hardy plants, which may be set out like cabbages, are to be obtained in March and April from nurserymen. Henderson recommends the following varieties: Henderson's New York, Black−seeded Simpson, Salamander, and All the Year Round. I would also add the Black−seeded Butter Lettuce.

We have now, as far as our space permits, treated of those vegetables which should be planted in the home garden as early in spring as possible. It is true the reader will think of other sorts, as cabbage, cauliflower, spinach, etc. To the professional gardener these are all−the−year−round vegetables. If the amateur becomes so interested in his garden as to have cold−frames and hot−beds, he will learn from more extended works how to manage these. He will winter over the cabbage and kindred vegetables for his earliest supply, having first sown the seed in September. I do not take the trouble to do this, and others need not, unless it is a source of enjoyment to them. As soon as the ground is fit to work in spring, I merely write to some trust−worthy dealer in plants and obtain twenty−five very early cabbage, and twenty−five second early, also a hundred early cauliflower. They cost little, and are set out in half an hour as soon as the ground is fit to work in spring. I usually purchase my tomato, late cabbage, and cauliflower, celery and egg−plants, from the same sources. Cabbages and cauliflowers should be set out in RICH warm soils, free from shade, as soon as the frost is out. After that they need only frequent and clean culture and vigilant watchfulness, or else many will fall victims to a dirty brown worm which usually cuts the stem, and leaves the plant lying on the ground. The worm can easily be found near the surface the moment it begins its ravages, and the only remedy I know is to catch and kill it at once. In this latitude winter cabbage is set out about the fourth of July. I pinch off half the leaves before setting. Good seed, deep plowing or spading, rich

soil, and clean culture are usually the only requisites for success. Experience and consultation of the books and catalogues enable me to recommend the Jersey Wakefield for first early, and Henderson's Summer Cabbage and Winningstadt as second early. As a late root I ask for nothing better than Premium Flat Dutch. The Savoy is the best flavored of the cabbage tribe. Henderson recommends the Netted Savoy, which may be treated like other late cabbage.

The cauliflower is ranked among the chief delicacies of the garden, and requires and repays far more attention than cabbage. Even the early sorts should have a richer, moister soil than is required for very early cabbage. I advise two plantings in spring, of first and second early; I also advise that late varieties be set out on RICH ground the last of June. As with cabbage, set out the plants from two and a half to three feet apart, according to the size of the variety, from trial I recommend Early Snowball, Half−early Paris, and Large Late Algiers.

Spinach thrives in a very rich, well−drained, fine, mellow soil. I prefer a sunny slope; but this is not necessary. Sow the seed from the first to the fifteenth of September, so as to give the plants time to become half grown by winter. Cover the seeds—three to an inch—two inches deep, and pack the ground well over them; let the rows be three inches apart. When the plants are three inches high, thin out to three inches apart, and keep the soil clean and mellow about them. Just before hard freezing weather, scatter about three inches of straw, old pea−vines, or some light litter over the whole bed. As soon as the days begin to grow warm in spring, and hard frost ceases, rake this off. The hardy vegetable begins to grow at once, and should be cut for use so as to leave the plants finally six inches apart, for as fast as space is given, the plants fill it up. By those who are fond of spinach it may be sown in spring as soon as the frost is out. It quickly runs to seed in hot weather, and thinnings of young beets may take its place where space is limited. The Round or Summer is good for fall or spring planting.

Those who need much instruction in regard to bush−beans should remain in the city and raise cats in their paved back yards. We shall only warn against planting too early—not before the last of April in our region. It does not take much frost to destroy the plants, and if the soil is cold and wet, the beans decay instead of coming up. If one has a warm, sheltered slope, he may begin planting the middle of April. As a rule, however, bush−beans may be planted from the first of May till the middle of July, in order to keep up a succession. Cover the first seed planted one inch deep; later plantings two inches deep. I think that earliest Red Valentine, Black Wax or Butter, Golden Wax, and the late Refugee are all the varieties needed for the garden.

The delicious pale Lima bean requires and deserves more attention. I have always succeeded with it, and this has been my method: I take a warm, rich, but not dry piece of ground, work it deeply early in spring, again the first of May, so that the sun's rays may penetrate and sweeten the ground. About the tenth of May I set the poles firmly in the ground. Rough cedar−poles, with the stubs of the branches extending a little, are the best. If smooth poles are used, I take a hatchet, and beginning at the butt, I make shallow, slanting cuts downward, so as to raise the bark a little. These slight raisings of the bark or wood serve as supports to the clambering vines. After the poles are in the ground I make a broad, flat hill of loose soil and a little of the black powdery fertilizer. I then allow the sun to warm and dry the hill a few days, and if the weather is fine and warm, I plant the seed about the fifteenth, merely pressing the eye of the bean downward one inch. If planted lower than this depth, they usually decay. If it is warm and early, the seed may be planted by the fifth of May. After planting, examine the seed often. If the beans are decaying instead of coming up, plant over again, and repeat this process until there are three or four strong plants within three or four inches of each pole. Let the hills be five feet apart each way, hoe often, and do not tolerate a weed. The Long White Lima and Dreer's Improved Lima are the only sorts needed.

The Indians in their succotash taught us long ago to associate corn with beans, and they hit upon a dish not surpassed by modern invention. This delicious vegetable is as easily raised as its "hail−fellow well met," the bean. We have only to plant it at the same time in hills from three to four feet apart, and cover the seed two inches deep. I have used the powdery fertilizers and wood−ashes in the hill to great advantage, first mingling these ingredients well with the soil. We make it a point to have sweet− corn for the table from July 1 until the stalks are killed by frost in October. This is easily managed by planting different varieties, and continuing to plant till well into June. Mr. Gregory writes: "For a succession of corn for family use, to be planted at the same time, I would recommend Marblehead Early, Pratt's, Crosley's, Moore's, Stowell's Evergreen, and Egyptian Sweet." Mr. Harris names with praise the Minnesota as the best earliest, and Hickox Improved as an exceedingly large and late variety. Mr. Henderson's list is Henderson Sugar, Hickox Improved, Egyptian, and Stowell's Evergreen. Let me add Burr's Mammoth and Squantum Sugar—a variety in great favor with the Squantum Club, and used by them in their

famous clam−bakes.

The cucumber, if grown in the home garden and used fresh, is not in league with the undertaker. The seed may be planted early in May, and there are many ways of forcing and hastening the yield. I have had cucumbers very early in an ordinary hotbed. Outdoors, I make hills in warm soil the first of May, mixing a little of my favorite fertilizer with the soil. After leaving the hill for a day or two to become warm in the sun, I sow the seed in a straight line for fifteen inches, so that the hoe can approach them closely. The seed is covered an inch deep, and the soil patted down firmly. It is possible that a cold storm or that insects may make partial planting over necessary; if so, this is done promptly. I put twenty seeds in the hill, to insure against loss. For a succession or long−continued crop, plant a few hills in rich moist land about the last of May. The young plants always run a gauntlet of insects, and a little striped bug is usually their most deadly enemy. These bugs often appear to come suddenly in swarms, and devour everything before you are aware of their presence. With great vigilance they may be kept off by hand, for their stay is brief. I would advise one trial of a solution of white hellebore, a tablespoonful to a pail of water. Paris green— in solution, of course—kills them; but unless it is very weak, it will kill or stunt the plants also. My musk and watermelons were watered by too strong a solution of Paris green this year, and they never recovered from it. Perhaps the best preventive is to plant so much seed, and to plant over so often, that although the insects do their worst, plenty of good plants survive. This has usually been my method. When the striped bug disappears, and the plants are four or five inches high, I thin out to four plants in the hill. When they come into bearing, pick off all the fruit fit for use, whether you want it or not. If many are allowed to become yellow and go to seed, the growth and productiveness of the vines are checked. The Early White Spine and Extra Long White Spine are all the varieties needed for the table. For pickling purposes plant the Green Prolific on moist rich land. The other varieties answer quite as well, if picked before they are too large.

The cultivation of the squash is substantially the same as that of the cucumber, and it has nearly the same enemies to contend with. Let the hills of the bush sorts be four feet apart each way, and eight feet for the running varieties. The seed is cheap, so use plenty, and plant over from the first to the twenty−fifth of May, until you have three good strong plants to the hill. Three are plenty, so thin out the plants, when six or seven inches high, to this number, and keep the ground clean and mellow. I usually raise my running squashes among the corn, giving up one hill to them completely every seven or eight feet each way. Early bush sorts: White Bush Scalloped, Yellow Bush Scalloped. The Perfect Gem is good for both summer and winter, and should be planted on rich soil, six feet apart each way. The Boston Marrow is one of the best fall sorts; the Hubbard and Marblehead are the best winter varieties.

When we come to plant musk−melons we must keep them well away from the two above−named vegetables, or else their pollen will mix, producing very disagreeable hybrids. A squash is very good in its way, and a melon is much better; but if you grow them so near each other that they become "'alf and 'alf," you may perhaps find pigs that will eat them. The more completely the melon−patch is by itself, the better, and the nearer the house the better; for while it is liable to all the insects and diseases which attack the cucumber, it encounters, when the fruit is mature, a more fatal enemy in the predatory small boy. Choose rich, warm, but not dry ground for musk−melons, make the hills six feet apart each way, and treat them like cucumbers, employing an abundance of seed. As soon as the plants are ready to run, thin out so as to leave only four to fruit. Henderson recommends Montreal Market, Hackensack, and Netted Gem. Gregory: Netted Gem, Boston Pet, Bay View, Sill's Hyrbid, Casaba, and Ward's Nectar. He also advocates a remarkable novelty known as the "Banana." Harris: Early Christiana and Montreal Market.

Water−melons should be planted eight feet apart; but if one has not a warm, sandy soil, I do not advise their culture. The time of planting and management do not vary materially from those of the musk variety. The following kinds will scarcely fail to give satisfaction where they can be grown: Phinney's Early, Black Spanish, Mammoth Ironclad, Mountain Sprout, Scaly Bark, and Cuban Queen.

The tomato has a curious history. Native of South America like the potato, it is said to have been introduced into England as early as 1596. Many years elapsed before it was used as food, and the botanical name given to it was significant of the estimation in which it was held by our forefathers. It was called Lycopersicum— a compound term meaning wolf and peach; indicating that, notwithstanding its beauty, it was regarded as a sort of "Dead Sea fruit." The Italians first dared to use it freely; the French followed; and after eying it askance as a novelty for unknown years, John Bull ventured to taste, and having survived, began to eat with increasing gusto.

To our grandmothers in this land the ruby fruit was given as "love−apples," which, adorning quaint old bureaus, were devoured by dreamy eyes long before canning factories were within the ken of even a Yankee's vision. Now, tomatoes vie with the potato as a general article of food, and one can scarcely visit a quarter of the globe so remote but he will find that the tomato−can has been there before him. Culture of the tomato is so easy that one year I had bushels of the finest fruit from plants that grew here and there by chance. Skill is required only in producing an early crop; and to secure this end the earlier the plants are started in spring, the better. Those who have glass will experience no difficulty whatever. The seed may be sown in a greenhouse as early as January, and the plants potted when three inches high, transferred to larger pots from time to time as they grow, and by the middle of May put into the open ground full of blossoms and immature fruit. Indeed, plants started early in the fall will give in a greenhouse a good supply all winter. Tomatoes also grow readily in hot−beds, cold−frames, or sunny windows. We can usually buy well−forwarded plants from those who raise them for sale. If these are set out early in May on a sunny slope, they mature rapidly, and give an early yield. The tomato is very sensitive to frost, and should not be in the open ground before danger from it is over. Throughout May we may find plants for sale everywhere. If we desire to try distinct kinds with the least trouble, we can sow the seed about May 1, and in our climate enjoy an abundant yield in September, or before. In the cool, humid climate of England the tomato is usually grown en espalier, like the peach, along sunny walls and fences, receiving as careful a summer pruning as the grape−vine. With us it is usually left to sprawl over the ground at will. By training the vines over various kinds of supports, however, they may be made as ornamental as they are useful. The ground on which they grow should be only moderately fertile, or else there is too great a growth of vine at the expense of fruit. This is especially true if we desire an early yield, and in this case the warmest, driest soil is necessary.

But comparatively a few years ago the tomato consisted of little more than a rind, with seeds in the hollow centre. Now, the only varieties worth raising cut as solid as a mellow pear. The following is Gregory's list of varieties: Livingston's Beauty, Alpha, Acme, Canada Victor, Arlington, General Grant. I will add Trophy and Mikado. If a yellow variety is desired, try Golden Trophy.

If the tomato needs warm weather in which to thrive, the egg−plant requires that both days and nights should be hot. It is an East Indiaman, and demands curry in the way of temperature before it loses its feeble yellow aspect and takes on the dark green of vigorous health. My method is simply this: I purchase strong potted plants between the twentieth of May and the first of June, and set them out in a rich, warm soil. A dozen well−grown plants will supply a large family with egg−fruit. Of course one can start the young plants themselves, as in the case of tomatoes; but it should be remembered that they are much more tender and difficult to raise than is the tomato. Plants from seed sown in the open ground would not mature in our latitude, as a rule. The best plan is to have the number you need grown for you by those who make it their business. Eggplants are choice morsels for the potato− beetle, and they must be watched vigilantly if we would save them. There is no better variety than the New York Improved.

The pepper is another hot−blooded vegetable that shivers at the suggestion of frost. It is fitting that it should be a native of India. Its treatment is usually the same as that of the egg−plant. It matures more rapidly, however, and the seed can be sown about the middle of May, half an inch deep, in rows fifteen inches apart. The soil should be rich and warm. When the plants are well up, they should be thinned so that they will stand a foot apart in the row. The usual course, however, is to set out plants which have been started under glass, after all danger from frost is over. Henderson recommends New Sweet Spanish and Golden Dawn, The Large Bell is a popular sort, and Cherry Red very ornamental.

From the okra is made the famous gumbo soup, which ever calls to vision a colored aunty presiding over the mysteries of a Southern dinner. If Aunt Dinah, so well known to us from the pages of "Uncle Tom's Cabin," could have left her receipt for this compound, her fame might have lasted as long as that of Mrs. Stowe. The vegetable furnishing this glutinous, nutritious, and wholesome ingredient is as easily raised as any product of the garden. We have only to sow the seed, from the first to the tenth of May, two inches deep, and let the plants stand from two to three feet apart each way, in order to have an abundant supply. The new Dwarf Prolific is about the best variety.

Fall turnips are so easily grown that they require but few words. They are valuable vegetables for utilizing space in the garden after early crops, as peas, beans, potatoes, etc., are removed. The seed of ruta−baga, or Swedish turnips, should be planted earliest—from the twentieth of June to the tenth of July in our latitude. This

turnip should be sown in drills two feet apart, and the plants thinned to eight inches from one another. It is very hardy, and the roots are close−grained, solid, and equally good for the table and the family cow. The Yellow Aberdeen is another excellent variety, which may be sown EARLY in July, and treated much the same as the foregoing. The Yellow Stone can be sown on good ground until the fifteenth of July in any good garden soil, and the plants thinned to six inches apart. It is perhaps the most satisfactory of all the turnip tribe both for table use and stock. The Bed−top Strap−leaf may be sown anywhere until the tenth of August. It is a general custom, in the middle of July, to scatter some seed of this hardy variety among the corn: hoe it in lightly, and there is usually a good crop. Every vacant spot may be utilized by incurring only the slight cost of the seed and the sowing. It may be well, perhaps, to remember the advice of the old farmer to his son. He said, "Stub your toe and spill half the seed before sowing it; for scattered broadcast it is usually much too thick." If this proves true, thin out the plants rigorously. This turnip is good for table and stock as long as it is solid and crisp; but it grows pithy toward spring. There are other kinds well worth a trial.

Perhaps no vegetable is more generally appreciated than celery. Like asparagus, it was once, and is still by some, regarded as a luxury requiring too much skill and labor for the ordinary gardener. This is a mistake. Few vegetables in my garden repay so amply the cost of production. One can raise turnips as a fall crop much easier, it is true; but turnips are not celery, any more than brass is gold. Think of enjoying this delicious vegetable daily from October till April! When cooked, and served on toast with drawn butter sauce, it is quite ambrosial. In every garden evolved beyond the cabbage and potato phase a goodly space of the best soil should be reserved for celery, since it can be set out from the first to the twentieth of July in our latitude; it can be grown as the most valuable of the second crops, reoccupying space made vacant by early crops. I find it much easier to buy my plants, when ready for them, than to raise them. In every town there are those who grow them in very large quantities, and, if properly packed, quickly transported, and promptly set out in the evening following their reception, and watered abundantly, they rarely fail.

There are decided advantages, however, in raising our own plants, especially if midsummer should prove dry and hot, or the plants must be long in transit. When they are growing in our own garden, they can be moved with very slight check to their growth. In starting the seed there is no necessity for hot−bed or cold−frame. It may be put in the ground the first week of April, and the best plants are thus secured. Much is gained by preparing a warm but not dry plot of ground in autumn, making it very rich with short, half−decayed stable−manure. This preparation should be begun as soon as possible after the soaking September rains. Having thoroughly incorporated and mixed evenly in the soil an abundance of the manure described, leave the ground untouched for three weeks. The warm fertilizer will cause great numbers of weed−seeds to germinate. When these thrifty pests are a few inches high, dig them under and bring up the bottom soil. The warmth and light will immediately start a new and vigorous growth of weeds, which in turn should be dug under. If the celery seed bed be made early enough, this process can be repeated several times before winter— the oftener the better; for by it the great majority of weed−seeds will be made to germinate, and thus are destroyed. The ground also becomes exceedingly rich, mellow, and fine—an essential condition for celery seed, which is very small, and germinates slowly. This thorough preparation does not involve much labor, for the seed−bed is small, and nothing more is required in spring but to rake the ground smooth and fine as soon as the frost is out. The soil has already been made mellow, and certainly nothing is gained by turning up the cold earth in the bottom of the bed. Sow the seed at once on the sunwarmed surface. The rows should be nine inches apart, and about twelve seeds sown to every inch of row. The drills should be scarcely an eighth of an inch deep. Indeed, a firm patting with the back of a spade would give covering enough. Since celery germinates so slowly, it is well to drop a lettuce− seed every few inches, to indicate clearly just where the rows are. Then the ground between the rows can be hoed lightly as soon as the weeds start, also after heavy rains, so as to admit the vivifying sun−rays and air. Of course when the celery plants are clearly outlined, the lettuce should be pulled out.

If the bed is made in spring, perform the work as early as possible, making the bed very rich, mellow, and fine. Coarse manures, cold, poor, lumpy soil, leave scarcely a ghost of a chance for success. The plants should be thinned to two inches from one another, and when five inches high, shear them back to three inches. When they have made another good growth, shear them back again. The plants are thus made stocky. In our latitude I try to set out celery, whether raised or bought, between the twenty− fifth of June and the fifteenth of July. This latitude enables us to avoid a spell of hot, dry weather.

There are two distinct classes of celery—the tall−growing sorts, and the dwarf varieties. A few years ago the former class was grown generally; trenches were dug, and their bottoms well enriched to receive the plants. Now the dwarf kinds are proving their superiority, by yielding a larger amount of crisp, tender heart than is found between long coarse stalks of the tall sorts. Dwarf celery requires less labor also, for it can be set on the surface and much closer together, the rows three feet apart, and the plants six inches in the row. Dig all the ground thoroughly, then, beginning on one side of the plot, stretch a line along it, and fork under a foot−wide strip of three or four inches of compost, not raw manure. By this course the soil where the row is to be is made very rich and mellow. Set out the plants at once while the ground is fresh and moist. If the row is ten feet long, you will want twenty plants; if fifteen, thirty plants; or two plants to every foot of row. Having set out one row, move the line forward three feet, and prepare and set out another row in precisely the same manner. Continue this process until the plot selected is occupied. If the plants have been grown in your own garden, much is gained by SOAKING the ground round them in the evening, and removing them to the rows in the cool of the morning. This abundant moisture will cause the soil to cling to the roots if handled gently, and the plants will scarcely know that they have been moved. When setting I usually trim off the greater part of the foliage. When all the leaves are left, the roots, not established, cannot keep pace with the evaporation. Always keep the roots moist and unshrivelled, and the heart intact, and the plants are safe. If no rain follows setting immediately, water the plants thoroughly—don't be satisfied with a mere sprinkling of the surface—and shade from the hot sun until the plants start to grow. One of the chief requisites in putting out a celery plant, and indeed almost any plant, is to press the soil FIRMLY ROUND, AGAINST, AND OVER THE ROOTS. This excludes the air, and the new rootlets form rapidly. Neither bury the heart nor leave any part of the root exposed.

Do not be discouraged at the rather slow growth during the hot days of July and early August. You have only to keep the ground clean and mellow by frequent hoeings until the nights grow cooler and longer, and rains thoroughly moisten the soil. About the middle of August the plants should be thrifty and spreading, and now require the first operation, which will make them crisp and white or golden for the table. Gather up the stalks and foliage of each plant closely in the left hand, and with the right draw up the earth round it. Let no soil tumble in on the heart to soil or cause decay. Press the soil firmly, so as to keep all the leaves in an upright position. Then with a hoe draw up more soil, until the banking process is begun. During September and October the plants will grow rapidly, and in order to blanch them they must be earthed up from time to time, always keeping the stalks close and compact, with no soil falling in on the developing part. By the end of October the growth is practically made, and only the deep green leaves rest on the high embankments. The celery now should be fit for use, and time for winter storing is near. In our region it is not safe to leave celery unprotected after the tenth of November, for although it is a very hardy plant, it will not endure a frost which produces a strong crust of frozen soil. I once lost a fine crop early in November. The frost in one night penetrated the soil deeply, and when it thawed out, the celery never revived. NEVER HANDLE CELERY WHEN IT IS FROZEN. My method of preserving this vegetable for winter use is simply this. During some mild, clear day in early November I have a trench ten inches wide dug nearly as deep as the celery is tall. This trench is dug on a warm dry slope, so that by no possibility can water gather in it. Then the plants are taken up carefully and stored in the trench, the roots on the bottom, the plants upright as they grew, and pressed closely together so as to occupy all the space in the excavation. The foliage rises a little above the surface, which is earthed up about four inches, so that water will be shed on either side. Still enough of the leaves are left in the light to permit all the breathing necessary; for plants breathe as truly as we do. As long as the weather keeps mild, this is all that is needed; but there is no certainty now. A hard black frost may come any night. I advise that an abundance of leaves or straw be gathered near. When a bleak November day promises a black frost at night, scatter the leaves, etc., thickly over the trenched celery, and do not take them off until the mercury rises above freezing−point. If a warm spell sets in, expose the foliage to the air again. But watch your treasure vigilantly. Winter is near, and soon you must have enough covering over your trench to keep out the frost—a foot or more of leaves, straw, or some clean litter. There is nothing better than leaves, which cost only the gathering. From now till April, when you want a head or more of celery, open the trench at the lower end, and take out the crisp white or golden heads, and thank the kindly Providence that planted a garden as the best place in which to put man, and woman also.

GARNISHING AND POT HERBS

"There's fennel for you; there's rue for you." Strange and involuntary is the law of association! I can never see

the garnishing and seasoning herbs of the garden without thinking of the mad words of distraught Ophelia. I fancy, however, that we are all practical enough to remember the savory soups and dishes rendered far more appetizing than they could otherwise have been by these aromatic and pungent flavors. I will mention only a few of the popular sorts.

The seeds of fennel may be sown in April about three−quarters of an inch deep, and the plants thinned to fifteen inches apart. Cut off the seed−stalks to increase the growth of foliage.

Parsley, like celery seed, germinates slowly, and is sometimes about a month in making its appearance. The soil should therefore be made very rich and fine, and the seed sown half an inch deep, as early in spring as possible. When the plants are three inches high, thin them to eight inches apart.

Sweet−basil may be sown in early May, and the plants thinned to one foot apart. The seeds of sweet−marjoram are very minute, and must be covered very thinly with soil finely pulverized; sow in April or May, when the ground is in the best condition. Sage is easily raised from seeds gown an inch deep the latter part of April; let the soil be warm and rich; let the plants stand about one foot apart in the row. Thyme and summer−savory require about the same treatment as sage. I find that some of the mountain mints growing wild are quite as aromatic and appetizing as many of these garden herbs.

THE END