

FOOD FRUIT & FLOWERS

BY
WALTER P. WRIGHT

AUTHOR OF
EVERYMAN'S ENCYCLOPEDIA
OF GARDENING



1917
LONDON AND TORONTO
J. M. DENT & SONS LTD.
PARIS: J. M. DENT ET FILS
NEW YORK: E. P. DUTTON & CO.

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STRAWBERRY, KING GEORGE V.

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PREFACE

GARDENING has to adjust itself to changed circumstances. Flower culture developed in a remarkable manner during the ten years preceding the outbreak of war and then suffered a severe setback, from which it is still suffering. Perhaps it grew too fast for health. The cult was inflated. Particular flowers were specialised without restraint and discrimination, with the result that forcing and unnatural methods of culture caused the spread of virulent diseases. Moreover, the demand for costly new varieties of plants, which were already represented in gardens by numerous cheap varieties of great merit, became almost a craze. The same term might be applied to the eagerness to acquire expensive new exotic plants, for which the world was ransacked. Food crops had to play a subordinate part. Although there were many special societies devoted to particular flowers, organisations for furthering the interests of fruit and vegetables were non-existent, most people troubling little about the food-producing capacity of their gardens while crops from foreign soil were pouring into our markets from all parts of the world.

Nominally built on a sound foundation—the culture, under natural conditions, of good hardy plants—flower-gardening was really based on extreme specialisation, alike with hardy and tender, native and exotic plants. There was no sign of any national system of gardening. As to this, it is perhaps impossible for a style of gardening which is definitely national to develop among an island people with catholic tastes and a habit of self-depreciation; but at least a conception of gardening may be looked for which values plants for their beauty and utility rather than for their rarity, and which refuses to sacrifice the interests of the garden to those of the show-room.

. In anticipation of food scarcity and of a long period of national impoverishment after the war, it is desirable that our systems of gardening should be carefully reviewed. Flower-gardening must

be pursued in a more simple and economical spirit, and I have made it my business to show in these pages that a change can be made without causing any loss of beauty or interest, but on the contrary with positive gain. It would be a grave error to abandon flower-gardening entirely, sacrificing thereby all the capital and accumulated skill which have been invested in both public and private gardens, nor is so extreme a course advocated by any person who has considered the beneficent part which flowers play in the national life, and particularly in times of stress. Flowers, fruit, and vegetables can be happily blended in a new and better system than has prevailed hitherto. If no other flower were grown we should still cultivate the Rose on national grounds, and it is significant that during the worst days of the war, Roses were in great demand in the nurseries, although other ornamental trees and shrubs were not asked for. As the floral emblem of the national spirit, the Rose holds an unassailable place in the affection of the British people, and for that reason special attention is devoted to it in these pages. But an endeavour has been made to show that the cultivation of other ornamental plants is desirable under certain conditions. With respect to food crops, the case for fuller attention, not only at present but for many years to come, is overwhelming. We are told by agricultural experts that one reason why the German farmer is able to feed 70 to 75 persons per hundred acres of land against the 45 to 50 of the British farmer is that pig-meat and Potatoes enter more largely into the German than into the British dietary; to which the reply may be made that in years gone by every cottage garden had its pigsty and would have it to-day but for the restrictions of the local sanitary authorities: furthermore, that if more pigs were kept more Potatoes would be grown, because there is a profitable outlet for the inferior portions of the crop. It is quite time for the garden to take a hand and show what it can do. Not only pigs and Potatoes, but poultry and Potatoes, may be made to react on each other to advantage in British gardens.

A stimulus to grow more fruit and vegetables in home gardens may perhaps be found in the fact that, in 1915, fresh fruit was imported to the value of £11,396,000 and fresh vegetables to the

value of £4,821,100. In addition, dried fruits and vegetables were imported to the value of more than six and a half millions. Now, the climate and soil of the United Kingdom are eminently adapted to the culture of all the most important vegetables, and of practically every great fruit except the banana and the orange. Moreover, the principles and practice of the intensive culture of vegetables, and of the pruning and general management of fruit trees, are full of interest. While dealing sympathetically, therefore, with flower-gardening, I have given considerable space to food crops.

In order to avoid pedagogic dullness, I have embodied a good deal of the vegetable-growing part of my subject in the records of an actual War Garden brought into being by myself in a London suburb in 1916. Situated under the walls of a great military prison, and adjoining one of the general military hospitals, the movements of prisoners and patients gave a special and poignant interest to the operations of the gardener. But plain plans and tables are provided for the cultivator who wants to acquire information at a glance.

The book takes into account the wants of the thousands of people, untrained in practical gardening, who are patriotically devoting their leisure to the acquisition and cultivation of rough neglected land with a view to increasing the national food supply; consequently, such elementary things as the selection and handling of tools, the best methods of digging and manuring, and the details of sowing, planting, and pruning—so often omitted by horticultural writers—are dealt with in minute but I hope not wearisome detail.

For the rest, an attempt has been made to find a plan for the book which, without sacrificing sympathy and sense of style, nevertheless makes for the simplicity, clearness, comprehensiveness, and economy which I ask for in the British gardening of the future.

WALTER P. WRIGHT.

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PART I
THE GARDEN OF BEAUTY

FOOD, FRUIT, AND FLOWERS

PART I

THE GARDEN OF BEAUTY

CHAPTER I

GARDENING IN WAR AND PEACE

ON a brilliant morning of late May in the year 1912 the writer stood in the grounds of Chelsea Hospital, thoughtfully watching a little group of men and women who walked slowly through the miniature gardens which formed one of the most popular features of the great horticultural show that had drawn flower-lovers from all parts of the world. The group consisted of four persons: an English duke, an English florist, a middle-aged man with an air of quiet distinction who examined shrubs in what to all appearances was complete absorption, and a woman in subdued grey whose face lit up responsively when in abstracted silence or with a murmured word the engrossed man indicated a particular plant with outstretched finger. And the reason for the contemplative attitude of the looker-on was that he—a modest student of world-politics as well as a gardener—had that moment been informed that the man in the ordinary morning attire of an English gentleman who scrutinised shrubs so earnestly was more than a mere visitor from the provinces—was, indeed, the Archduke Franz Ferdinand of Austria.

The love of plants is all-embracing, and the fact that it obviously operated powerfully on one of the greatest of European personages did not in itself contain any cause for wonder; the striking fact was that it had sufficed to detach from the troubled arena of

the secret strife between Teuton and Slav the figure which perhaps was more intimately affected by it than any other and to carry him to the calm and peaceful garden in London where racial rivalry and dynastic ambitions were unknown. There, all cares of state, all political anxieties evidently forgotten, walked the ill-fated prince, with the Countess Sophie Chotek beside him. They were on English soil, amid English flowers, bathed in the gracious sunshine of the English spring. The sinister shadow which hangs over the House of Hapsburg was forgotten.

Many readers will remember the wonderful International Horticultural Exhibition of 1912, and those among their number who were particularly interested in the progress of gardening greeted the show as the ultimate expression of that horticultural spirit which had spread with such wonderful rapidity throughout every class of society, making horticulture one of the essential influences of social life. They had rejoiced the day before in the presence of our own king and queen. They had seen a potent meaning in the flocking to the show of thousands of people of all classes. Gardening, advancing on a wave of prosperity, had risen to unimagined heights and yet seemed to be moving forward on an inexhaustible flood tide. There were few people in the gardens at the early hour when the Archduke paid his visit, but the majority of those who were present were enthusiasts, and they would certainly derive added satisfaction from the coming of this illustrious and powerful being—recognition, as it was, from an august quarter of the success of British gardening.

Looking backward, it is impossible for any person with the slightest claim to sensibility to remain without an impulse of sympathy as well as of regret, in spite of everything that has passed, for the fate of the hapless prince. What part he would have played in the future of Europe had the tragedy of Serajevo never been enacted none can say, but it is permitted to those who saw him in an hour of horticultural interest and relaxation to believe that he would have had both sagacity and strength enough to maintain peace between his country and our own.¹

¹ These words were written several months before the death of the Emperor Francis Joseph, on which occasion Mr. Frederick Wile wrote: "Berlin war-mongers did not contemplate with equanimity the day when



Economical Flowers

MICHAELMAS DAISIES

Perennial Asters are among the best of hardy herbaceous perennials for the border, because they grow fast in almost any soil, and may be increased rapidly. The variety illustrated is William Marshall.

(See page 55)



Economical Flowers

PAEONIES

Once planted in good soil, deeply dug and liberally manured, herbaceous Paeonies need no attention. They are among the most beautiful and fragrant of border plants.

(See pages 239, 242, etc.)

In the face of the great tragedy of the nations which sprang from the crime of which he and his wife were the victims, the severe check to the advance of gardening which has been experienced in this country seems to be of small account, yet it is permissible, with the recollection of the visit of the Austrian heir-apparent to the greatest of our shows still fresh, thus to show how closely bound up with his fate was the future of gardening here, strange and extravagant as such an association would have appeared to be then.

Gardening flourishes in days of peace, it languishes in times of war. The wit of man cannot devise conditions under which sword and pruning-hook may swing in a productive union. From garden and farm and holding, from peasant's cottage and yeoman's homestead, the young men go in their millions to the battlefields. Rich connoisseurs of plants go too, or pour out alike the blood of their sons and the wealth of their estates if they themselves are too old to bear arms. The surpluses which extended shrubberies and rockeries are dissipated in munitions of war. The most ardent lover of ornamental gardening as it prevailed up to the end of July 1914 must have seen that it had no place when the country became convulsed in a vital struggle. It must change to meet the changed conditions or come nigh to perishing.

Peace gardening had many virtues and some vices. In so far as it expressed a pure and simple love for beautiful objects, the indulgence of creative instincts, the brightening of dull and in some cases perhaps squalid homes, the cheering of shadowed lives, there was nothing about it which might not operate with even greater benefit in war. It is in its other aspects: unwholesome craving for the rare merely because of its rarity, feverish desire for participation in a fashionable craze, ill-concealed

he would be succeeded by the resolute and independent Archduke Francis Ferdinand. William II. secretly hated the Archduke because of the latter's many manifestations that Vienna would be the capital of Austria-Hungary in more than name when Francis Ferdinand's time came. Serajevo gladdened the hearts of the Crown Prince-Tirpitz-Falkenhayn-Mindenbourg-Reventlow-Bernhardi clique, not only because it afforded a pretext for "The Day," but also because it removed the one Austrian competent to save the Dual Monarchy from complete Prussian vassalage."

contempt for food plants, neglect of useful medicinal herbs, adoration for any weed provided it was new—in these and other respects it is less to be admired.

When we make a measured survey of every aspect of gardening as it prevailed in Great Britain at the time of the outbreak of war we see many ugly things. We realise with a shock how much of insincerity there was in the manifestations of interest in gardening which were observable on every side. It is doubtful whether with the majority gardening was pursued out of a genuine love of plants and a real insight into Nature, especially when we consider the worship of weedy exotic Alpines and commonplace shrubs from Thibetan-wilds. Under what was really a mere affectation of Nature-love, ground was twisted and torn about at enormous expense, monstrous rockeries were concocted in ridiculous imitation of Swiss mountains, and beautiful trees, such as our native fruits, were ejected in order to make room for Chinese uglinesses and Japanese contortions.

Moreover, a false cult grew up in connection with our great flowers. They were exploited by "societies"—bodies with perverted tastes, most of the members of which were out to line their pockets at the expense of a gullible public. These societies took flowers of great inherent beauty and made them the victims of a lust for silver cups or of trading greed, according to the position in life of the member. By overbreeding and cultural excesses, pursued with the object of forcing flowers of a particular standard, the constitution of the plants was so weakened that they fell a prey to devastating diseases. Almost every important plant has been injured in this way. The public has paid. It has paid in several ways. In the first place it has paid extortionate sums for so-called "improved" varieties, which, exhibited at shows by interested parties, have appeared under special culture to be superior to existing varieties. But in hundreds of cases there has been imposture, the pretended novelty proving under ordinary amateur culture to be merely an old variety under a fresh name. And even where the flower, as forced for exhibition, has been superior, too often the constitution of the variety has proved to be weak. Thus, the public has paid a further price in the cost of

cultivating a weak plant and in the disappointment which failure has brought.

Modern Carnations, Sweet Peas, and other popular flowers are so much the prey of diseases that amateurs have no confidence that when they have faced the risk of paying a high price for a "novelty" they have acquired a plant which can be trusted to grow healthfully in the garden with proper treatment. On the contrary, bitter experience has taught them that the probabilities are in the other direction and that if the flower is genuinely different and superior the plant is likely to be highly susceptible to disease.

Flower gardening will revive in the fullness of time and we can but hope that when its day comes again a new spirit will reign. Although followers of the art may be fewer in numbers, horticulture will be stronger rather than weaker so long as its devotees are animated by the spirit of pure gardening and unsullied plant-love. And more especially will it be stronger if with the braced national spirit of our people more attention is given to our beautiful native plants. When these receive the love and admiration which they merit, partly because they are beautiful, partly because they are British, our country will be the better, because it will be evidence that a virile spirit of nationhood and patriotism is allied with a love of Nature.

There has never been anything in the vast erections of imported stones, alien soil, and exotic plants—childish and futile imitations of the natural features of other lands—to vie in sheer beauty with the exquisite pictures which Nature shows in the hedgerows, copses, and ditchsides of Britain. Thousands of the people who in the past postured in an insincere and pedantic ecstasy over an ounce or two of scraggy Saxifrage, mounted on a ton or more of stone, would have passed with indifference a patch of *Stellaria* in the grass of a cool bank, pure as the breath of an arctic solitude. The snowy thanksoffering of the Wayfaring Tree, stretched forth on widespread arms from the swelling bosom of a chalk-down hedge on the eve of nesting time, would have been left unheeded.

We can have for the seeking lessons in the beauty of a hundred

lovely and charming plants at no greater cost than that of a healthful country walk on the matchless countryside of our isles. And we can apply these lessons when putting plants into our own gardens, for what is of our country harmonises with its character, its air, and its genius. While we ransack the earth for plants which are as likely as not to look out of place after great expense has been devoted to their importation, we shall remain a self-depreciatory nation, bemoaning, with a lamentation which enemy nations denounce as hypocritical and which friendly peoples find puzzling and disconcerting, our shortcomings. But when, in an inspired upspringing of that pride of race and achievement which made the English of Elizabeth and Cromwell mighty and respected, we form worthy conceptions of our accomplishments and our destiny, then our national sports, our national song, our national dances, will share with the exquisite flora of our land the love and devotion of a great and victorious people.

CHAPTER II

THE OLD GARDENING AND THE NEW

A LOVE for native flora and a keen appreciation of the charming pictures which the wanderer may find on the countryside will not in themselves make satisfactory gardens; but they will at least teach the wholesome lesson that beauty is not inconsistent with simplicity.

The modern garden has become over-elaborated; by injudicious straining after effects, that class which likes to call itself the Nature School has missed the mark and produced effects the like of which neither true art nor true Nature ever saw or is likely to see. Scorn has been heaped on the bedding-out system of the middle of the nineteenth century, but at least it was coherent and inexpensive. There was a certain simplicity about it—one might even say a certain dignity, since it was clear-cut, bold, and direct. No one could pretend that he did not understand it, or was incapable of measuring its scope and effect.

A system of gardening must be found for the lean days of the immediate future which contains the virtues of the bedding system without its crudeness and glare. Here come in the lessons of our countryside. Gardens that are in the main food gardens to meet the demands of a period of national impoverishment may still have their flowers, but they will be flowers of inexpensive kinds which lend themselves to simple grouping and colonising in the secluded byeways of the garden, in such stone-strewn banks and paths as we sometimes find in our wanderings, on the borders of the kitchen garden, beside lawns, by the boundary hedges or fences, under trees, among shrubs, and at the waterside. We deal more fully with such plants elsewhere in the volume. Meanwhile, it would be doing injustice to the old garden to assume that it was bedding-out and nothing else. The gardens of fifty years ago, which sustained the heat of a passing craze for Zonal Geraniums almost invariably contained features which

modern gardens might envy; real old perennials, Roses with fragrance, aromatic herbs, beds of sweet things like Heliotrope, Verbena, Carnation, and old-fashioned Sweet Pea, tufts of Bergamot in the borders (for even the formal garden had borders), clusters of white Lilies, clumps of common but beautiful Irises, perfumed ramblers like Honeysuckle and Clematis in place of modern scentless species—these and many other desirable things. There is nothing coarse or vulgar in these loves of the old despised school, who were good gardeners in spite of a passing aberration. We might, indeed, draw upon such things with advantage to-day. Many of the modern Roses are inferior in true garden essentials, such as vigour, healthful constitution, and odour, to the old varieties, while old Carnations were at least growable by non-experts, which few modern sorts are.

In the old garden one found bright colour—sometimes, alas! too much—and abundant fragrance. Cheerfulness reigned. There was no such thing as dullness in the gardens of the past century. They could be enjoyed in a hearty way, as beef and punch were. They fitted the plain tastes of a plain people. Our grandfathers, who “did themselves well” at table, gave themselves gardens which many gardeners of a later and nominally wiser and better-educated generation might envy. The breed that saw the Indian Mutiny and the Crimean War through may have seen things in narrow grooves, but they saw them clearly. They had been schooled by adversities and braced by realities. They tackled gardening as they had tackled rebellious sepoy—“seeing red.” The system of gardening which found favour with them developed as a natural sequence of war. It was defective, but it was intelligible. Can it be expected that a world of warriors will be content in the next generation with so finicking a style of gardening as satisfied the last? Will they tolerate the big-rock-small-plant puerilities? Those who build on such a thing are probably in for a rude awakening.

If kitchen and fruit gardens are to be larger, as it would seem that they are, so that more food can be grown at home, we may yet see the garden which certain far-seeing gardeners had given glimpses of before the war—gardens which were really kitchen

gardens, inasmuch as the greater part of them was devoted to vegetables and fruit, but so cunningly disguised with broad flower borders as to appear to be flower gardens. Let us remember that herbaceous borders are just as successful when skirting a Potato patch as when skirting a lawn, if the soil and other conditions are satisfactory. Still more let us remember that no beauty of tree or shrub which the most costly exotic can show excels the beauty of our native fruits.

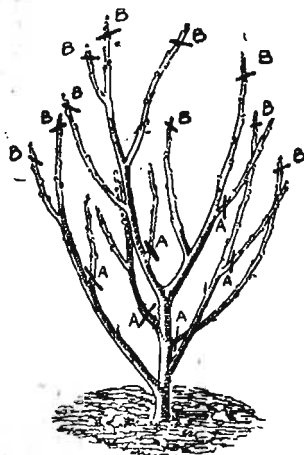
The ideal garden for the years of economy which lie ahead of the nation must be one in which beauty and utility are united. Although the new garden must be useful it need not necessarily be ugly. Objectionable everywhere, ugliness in the garden is unthinkable. Kitchen gardens are associated in many minds with unpleasant smells and unsightly rubbish heaps. But a properly managed kitchen garden is pleasing to every sense. If a superabundance of coarse greens is avoided, if fragrant flowers are grown in the borders, if soot is used freely about the Onion bed by those who (differing from the writer) find the odour of that interesting plant disagreeable, there should be no crop smells except pleasant ones. The blossom of the broad Bean is sweet, as all know well who have passed a Bean field in bloom. The flowers of other Beans and of Peas are practically odourless to the inferior olfactory nerves of poor humans, although potent enough to the bees. The crops which do not flower (except, of course, when grown for seed purposes) have their characteristic odours, but few are other than agreeable while they are young and healthy. In decay or in disease they may be unpleasant, as Potatoes, for instance, are when they are attacked by the disease which is so common in wet summers. Celery, Cucumbers, Carrots—yes, and even Leeks and Onions—have a piquant and refreshing smell, which any healthy-minded person ought to be capable of enjoying. And all the time they are plants, winning our interest and affection because they need our help.

The herb bed finds its legitimate place in the kitchen garden and most of its denizens are delightfully perfumed. One need hardly do more than mention Sage, Thyme, Marjoram, Basil, Lavender, and Rosemary, but even the humble Parsley may claim a word.

The garden must have its rubbish corner, but that corner should be a corner, adequately screened, not a conspicuous and inconvenient place. And the rubbish should be kept only long enough to become dry and burnable, when it should be promptly converted into manure.

Let the kitchen garden be made attractive, as it may be with a little trouble, and people will lose that species of contempt for vegetables which is so mistaken and so unfortunate. They will learn to like the food quarters, to go there with interest and

pleasure, to cultivate that part of the place with as much zest as they have ever done their rock garden.



PRUNING BLACK CURRANTS

All weak and soft shoots must be cut out at the bars A. The strong young shoots only need their tips removed as at B. Any very old wood must be cut out from the base. See also Chapter XX.

And they will find the training of fruit trees fully as interesting as the training of Roses. When spring begins to spread her mantle of virgin leaf and tender bloom over the garden, the blossom of Cherry and Plum, Apple and Pear, will be a revelation of the possibilities of beauty in association with utility. Thereafter will come the crops: delicious Apples, Pears, Greengages, Apricots, Strawberries, and perhaps Peaches and Nectarines for the table, Damsons, Plums, Gooseberries, Currants, Raspberries, and Apples for tarts, dumplings, puddings, and preserves.

Nearly every garden will grow useful fruit of some kind or other and there is no housewife but will find good use for everything that the trees and bushes yield. What is not eaten as dessert or cooked will be made into jam or, if sugar is scarce and glucose is not liked (although it is wholesome enough and is inexpensive), will be bottled. What we fail to realise in connection with fruit is that it can be made to fit in

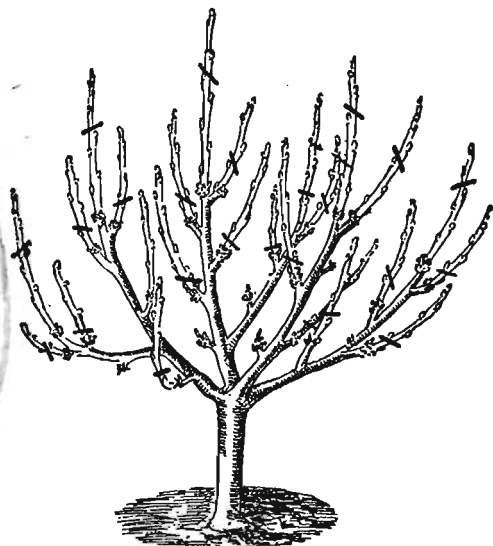
with the amenities of the garden. Do we favour orchard? Then let us have the turf among the trees planted with groups of Daffodils, which will give cheerfulness while the fruit buds are still dormant, but may linger until Cherry and Plum have burst into bloom, albeit over before the Apples have opened. An inviting place, this orchard, when the grass is in its first tender tint and colour is spreading fast over the limbs of the trees. Sheep will keep the grass down with benefit to the trees, or in the absence of stock, hay can be made.

Or perhaps we prefer plantation culture, with open soil instead of grass, for the sake of earlier fruitfulness? We can then use different types of tree in order to make the most of the space, for instance, half-standard or bush or pyramid trees (the merits of each are considered in detail in Part II.) set 15 feet apart, and including Apples, Plums, and Pears, with bushes of Currants and Gooseberries and lines of Strawberries and Raspberries between them. Thus we can grow on one square all the most important kinds. The Strawberries will bear in the second year at latest and a limited quantity of fruit can also be taken off the more precocious Apples, especially if cordon trees are included. In the third year the soft fruits will yield useful crops. Last, probably, to start bearing, but subsequently steadfast in yield with proper management, will be the Pears and Plums. The plantation will be beautiful with the fruit blossom alone in its season, but it can be made attractive for the whole of the summer by putting plants round the outsides. In fact, with fruit as with vegetables, we can adopt a system which combines beauty with utility.

It is not the fact that great skill and long experience are necessary to success in fruit-growing. All questions of stock and varieties may, if desired, be left to the nurseryman from whom the trees are purchased, for his experience will teach him what to select if the soil and situation are stated, especially if his grounds are in the same county. The remaining matter of importance is pruning, but an interested amateur can learn this as easily as he can learn the pruning of Roses. Indeed, the pruning of fruit trees follows the same lines as the pruning of Roses, differences being only in matters of unobscure detail. The experienced Rose-

grower prunes back the young shoots of his bushes and standards to points near the ripe wood of two or more years' standing; the grower of Apples and Pears does the same, with the difference that he cuts still closer. The pruning of most pillar Roses is the pruning of Raspberries exactly.

Too much is made of pruning by many professionals. It is not



PRUNING RED CURRANTS

Red and White Currants crop on short side shoots or spurs. In pruning, most of these side shoots must be cut back to within one inch or so of the main branches as shown at the bars; a few may be merely tipped. See also Chapter XX.

a matter of complexity and mystery and of a manual skill comparable to glass-blowing and shaping ware at the potter's wheel. It becomes simple and clear and within the compass of any handy man or woman if a little study is given to the principles and a little intelligent finger-and-thumb to the practice. Useful guidance is given in Chapter XX.

THE OLD GARDENING AND THE NEW 25

But fruit trees may also be introduced into shrubbery borders where "ornamental" trees are often exclusively used. There is surely nothing much more beautiful among small trees in spring than an Apple or Cherry in full bloom. The better kinds of Crab are also beautiful and the fruit is a real ornament as well as a valuable food unit. There would be little need for the slow gathering of wild fruits in times of food scarcity if every garden plot where fruit would succeed were planted. Wild fruits are for the children; the time of adults can be employed to far greater profit in cultivation. It is stark folly to neglect the planting of food trees and then to devote precious time to competing with school children and nomads and wastrels for the sparse crops of the hedgerows.

The division of gardens into watertight compartments, with bulkheads tightly closed, all under the control of one wait-till-I-press-the-button professional, jealous of higher authority, is not a thing to be proud of in these days. Organisation of this kind is needed on a battleship, but it is not wanted in the garden. Flowers may be associated with vegetables and fruit trees with shrubs and no working efficiency need be lost.

CHAPTER III

**THE GARDEN OF THE FUTURE—WHAT IS WANTED—THE
DEMANDS OF ECONOMY—THE NATIONAL SPIRIT AND
THE NEW GARDENING—BETTER GARDENS AT LESS COST**

WE ought to consider a garden as an expression rather than a precept. To search for evidence of faithfulness to a particular type, or conformity with a given style, in a garden, instead of for inspiration and individuality, is to take up a debased in preference to an exalted standpoint. If it were once admitted that style ruled the garden, a tyranny would be established that we should soon learn to hate. There are garden makers who love to work by elaborate plans, just as there are novelists who delight to weave immaculate plots. They act thus because they obey professional instincts, not because they are influenced by the obligations of true art. Life is affected by certain principles and forces, but no group of individuals is governed by a series of inexorable processes, moving by ordered, interwoven stages to an inevitable end. While in nature and in human life design has its influence, there is much that is fortuitous. It is because gardening must always be an experiment rather than an accomplishment, a search rather than a discovery, that we find it difficult to say of the garden of the future that it will be this or that. We cannot bottle seas. We cannot label sunbeams. Writers have tried to distinguish mid-Victorian and post-Victorian gardens by labelling them respectively "formal" and "natural." There is no such distinction. Whoever plans a garden to the last detail is at heart a formalist. Even Alpine gardening, in the way that it has been practised in recent years in the larger gardens, is formalism pure and simple. Any fixed feature of a garden, constructed on a definite system and restricted to a particular area, is a formality. Colour-grouping with hardy plants in borders is every whit as formal as ribbon bordering with tender plants which present gaudy contrasts of colour, such as the Geranium-Lobelia-Calceo-

laria concoctions of the past. The fact that harmonies are provided instead of contrasts does not mean that formalism has been abandoned; it only means that it has found a different method of expression. Let us not hug the delusion that we have discovered a new doctrine when we have only learned a new detail. As long as there is a shaped lawn, a sunk garden, a pergola, an artificial pile of rocks, a clipped hedge, in a garden, there is formalism and we need not necessarily feel ashamed of it. What has to be eliminated from gardens is not formalism *qua* formalism, but vulgarity. When we have eradicated all affectation, all specialism, all heavy expenditure, it will be soon enough to wrangle about the formal and the natural—a folly to which there is no beginning and no end.

When we try to form a conception of the English garden of the future, let us begin by putting aside phrases. As we reduce labels for our plants to the minimum, so let us abstain from unnecessary labelling of our methods. We cannot, perhaps, go so far as to neglect uncompromisingly every garden convention, repudiate all obligation towards style, disdain professionalism root and branch, riot in an egoistic debauchery of ways and means; but most gardens have their natural amenities, and in seeking to comprehend and interpret them the gardener violates no canon of art or good taste. The English garden will probably acquire certain well-marked characteristics, because war has increased the family spirit in the nation, and the stronger it becomes the greater the tendency there will be to conventionality, inasmuch as the family spirit is inherently conventional.

Everything that is done during the next two generations will be affected by the demand for economy, because for at least twenty years to come taxation is bound to be severe. Moreover, if the State is forced into a great building scheme in order to provide for the hundreds of thousands of small dwelling houses which will be required, far-reaching changes in the land system will perhaps be regarded as an essential preliminary. The search for economy will take several directions: reduction of the gardening staff, curtailment of lawns, elimination of flower beds, abandonment of large rockeries, extension of fruit planting at

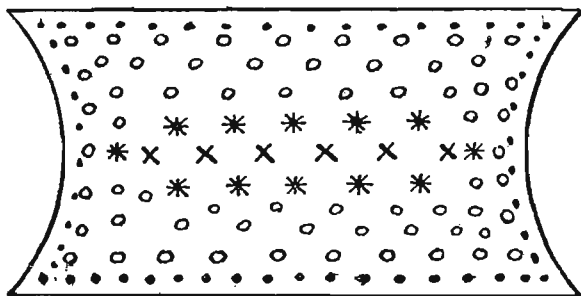
the expense of ornamental shrubs, selection of standard varieties of all flowers, fruits, and vegetables instead of novelties, home propagation rather than purchase of plants, and so on. But it will not be found easy to effect economies in every direction. To turf up superfluous flower beds is to increase lawns, not to diminish them, and in any case the reduction of a lawn presents difficulties. In most cases it occupies so prominent a position in relation to the house as to impose definite restrictions. To put it permanently to hay is to sacrifice gardening and the same remark applies to grazing it. As a better plan, in the nature of a compromise between beauty and utility, with economy duly considered, mowing the front area, planting and sowing the central parts with bulbs and hardy flowers among the grass, and breaking up the back into large borders planted in the main with standard fruit faced with selected shrubs and Rose pillars, may be suggested. By these means, useful crops and economy of labour are secured without the sacrifice of the amenities.

Beds in grass are still treated with too great a tolerance. Groups are to be found both in public and private places, the filling, emptying, refilling, and edge-trimming of which are a sheer waste of time, inasmuch as the place would look better without them. It is not often that the public parks teach a lesson to private gardeners, but cases are to be seen in which the reduction of the beds to a quarter of their former numbers and a slight widening of the borders have vastly increased the effect while greatly reducing the labour and cost of plants.

Alpine gardening has in it so much of the pure spirit of gardening that one criticises any phase of it with reluctance. Yet it has been carried to extreme lengths. As an example of the rock-builder's art, the Alpine garden at Wisley is admirable. Here we see a vast erection, composed with vigour, built with skill, planted lavishly. Yet it remains an incongruity, as completely detached from the amenities of the garden as a Geranium bed in a pine wood; while near by, in bosky corners, under the banks, at the streamside, along the shady ways, are exquisite little pictures, instinct with the harmony and genius of the place.

The simple phase of rock gardening which expresses itself in

forms less definitely "Alpine," but in which, nevertheless, Alpine plants flourish and give generously of their beauty, charm, and interest—the form represented by a judicious "sowing" of small stones on banks, slopes, and pool approaches—may be expected to live when the obviously manufactured rockery with its plethora of stone is dead except as a warning. Yet if lovers of Alpines permit themselves to be led into the labyrinth which hybridists are preparing for them, allowing themselves to be taught to scorn the beautiful clean hardy species which have come to us as a precious gift from the hand of God, and to develop



A TYPICAL PRE-WAR LAWN BED

The crosses represent tall Fuchsias, the stars white Marguerites, the circles pink Begonias, the edging dots Echeverias. Pretty enough, but a large number of beds planted in similar ways entail endless labour. Borders are better.

a greed for diseased mongrels, there will be little gain, for these plant "poitrinaires" will have an extortionate value put upon them by those who breed them.

I would appeal to those who love Alpine flowers to study simplicity, whether their gardens be large or small; to ask themselves, not how near they can get to supplying the plants with an imitation of their native mountains, but with how little offence to the amenities of an English garden they can make them feel at home. From this point of view, Alpine gardening becomes possible to most people, even amid the impoverishment of war.

The feature which will pass with the least injury through the

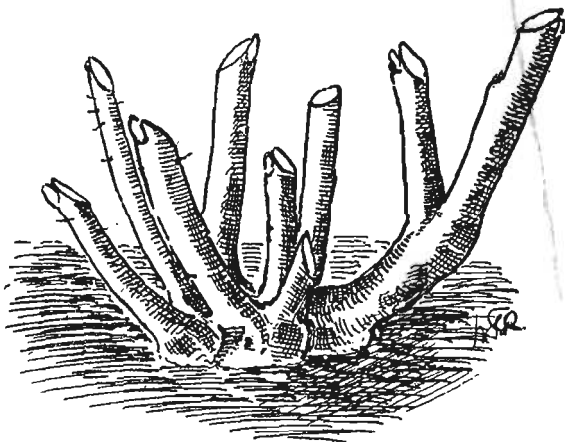
hours of trial is the Rose garden; it may even gain at the expense of others.

It is significant that in the darkest days of the war, when exotic shrubs were almost a dead weight in the great nurseries, Roses were selling well. The reason is not far to seek; the Rose, while not purely native, has become a typically British flower. So many of the best modern varieties have been raised in England and Ireland that we have come to look on all classes of Roses with the same sense of kinship as on the dog Roses of our hedges. The Rose is truly British. It has the robust, almost rude, vigour; the solid colour; the hearty appetite; the wholesome simplicity, of the English yeoman. Whatever drops out of English gardens the Rose will remain entrenched in the impregnable fortress of the English character. It will live and flourish as long as England lives and flourishes. It is true that motives of economy may lead to a reduced sale for new Roses, the price of which may consequently fall; but that is no evil, for it will act as a wholesome check on those too greedy raisers who have poured out novelties in hundreds with little regard to their distinctness and their vigour.

There may be more home propagation of Roses. Growers will test the behaviour of their favourite varieties from cuttings and find that they may thrive as well on their own roots as on a Manetti stock, while being hardier and longer-lived. And they may go to the hedgerows for standard briars in autumn, as old-fashioned amateurs used to do, and put buds of varieties of which more plants are wanted into them the following summer. The beautiful art of budding had become almost unknown amongst amateurs, so completely had they surrendered themselves, in the pre-war fatness of their purses, to the nurserymen. Yet of all methods of plant-propagation it is perhaps the most fascinating and under a competent teacher it is easily learned. Pruning, too, is full of interest.

With increased home propagation of hardy, vigorous, bright, and fragrant Roses, there is every incentive, even in the leanest of days, to extend the cultivation of the national flower. We shall do well, not only to plant more and more Roses in our own

gardens, but to encourage the cottager to plant also. We will give him trees and perhaps he will find us briers. One would gladly see such a Rose-planting movement as would make this old England of ours a veritable land of Roses. Here indeed is a task to inspire: Roses as emblems of our might, Roses as mementos of our dead, Roses as the shrines both of our grief and our pride, Roses as the expression of our national idealism, Roses as



PRUNING ROSES

A bush pruned hard for exhibition blooms. Note that the shoots have been cut down nearly to the ground. Compare with page 33.

the spiritual sign of that union between the classes to which more tangible form must be given in a better division of wealth.

There are now Roses for all needs, and some of the most beautiful modern rambling Roses, especially those having *Wichuraiana* blood, luxuriate in the shallow, hungry soils which starve into insignificance the rich, full-blooded hybrid perpetual Roses of the showboard.

It is but just to set against the many evils of specialism the fact that out of its operations there has sprung a class of hardy and free-blooming Roses admirably adapted to economical

gardening, because capable of covering large areas of ground in a short space of time with a dense thicket of glistening foliage and attractive flowers. The garden-maker gazing wistfully at a bank which he would fain transform into an Alpine garden were not the expense prohibitive may take heart of grace at the thought that he can quickly and economically cover it with Roses.

Let me tell of some of the Roses in the nursery adjoining my War Garden.

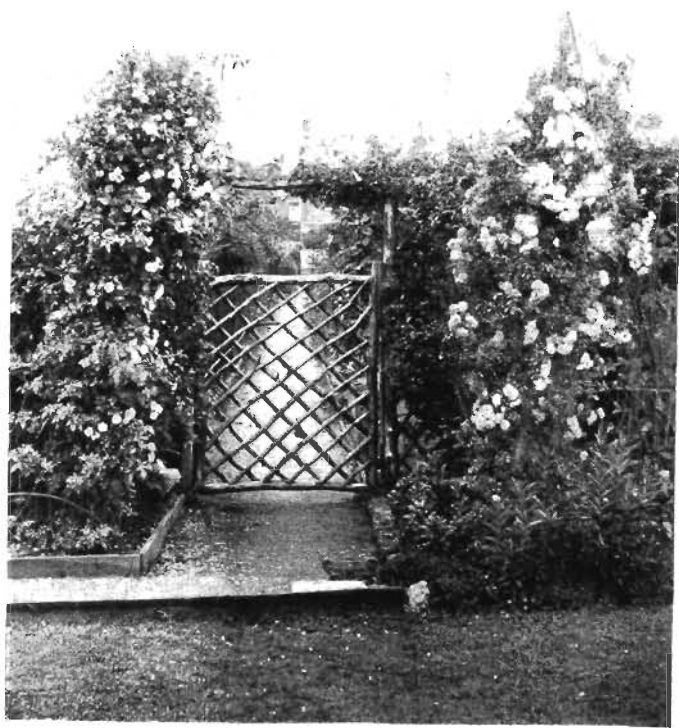
It is Alexandra Day. Already I see the white-frosted maidens flitting along the roads with their baskets of artificial Roses, although six o'clock has not yet struck.

Within there are real Roses, both in the beds and on the pillars.

The singles and the earlier of the ramblers are out. Carmine Pillar glitters in the sharp light of early morning. It clings to a pillar at the edge of a long bed of Paeonies and outshines the brightest of them in its wonderful intensity. If this Rose were but perpetual what a treasure it would be ! Alas ! its season is short, and those who love it must make good use of every moment of the long June days. When are raisers going to unite the brilliance of Carmine Pillar with the exuberance of Dorothy Perkins, so that we may have it for weeks where we now have it only for days ?

American Pillar is equally beautiful in its different and softer tone, which loses nothing in charm from the broad base of white. The flowers, too, are in clusters of unusual dimensions. A lovely Rose, with a quite respectable amount of vigour.

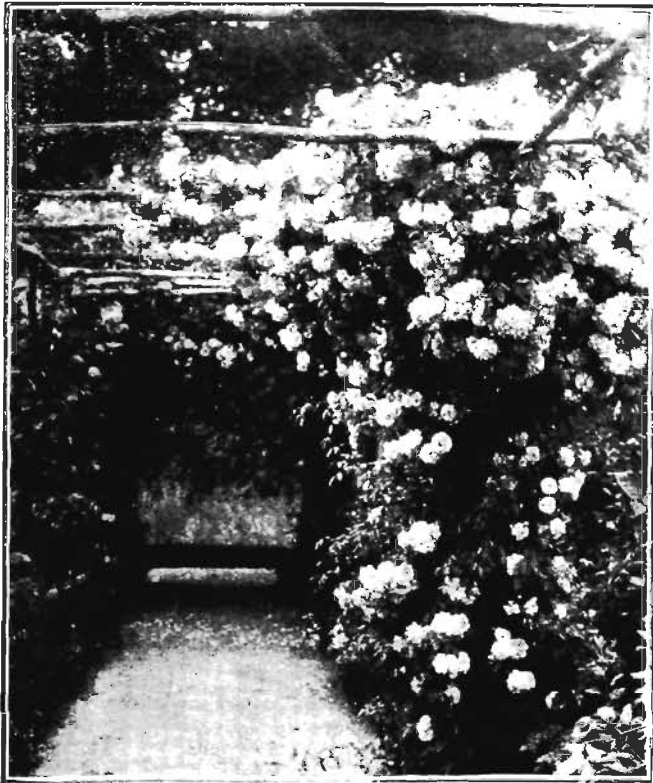
The sunshine and warm nights of May brought that earliest of hybrid Japanese, Alberic Barbier, into bloom before June opened, but here it is still, for the sixth month has been cool, with a good many cloudy days, if not with an actual rainfall of any particular amount. Even if the creamy flowers had no charm, one would be tempted to grow Alberic Barbier for the sake of the dense thicket of pretty shining leaves which it knits around the pillars. The tits gratefully seize on its abundant twiggy cover, and one tries to forget what they may do to the Sweet Peas later on in the joy one feels at their darting and twirling play among the glistening leaves and foam of bud and bloom.



Economical Gardening

A CHEAP BUT ARTISTIC GATEWAY

The Rose Pillars at each side give a plain cheap gate distinction.
(See page 32, etc.)



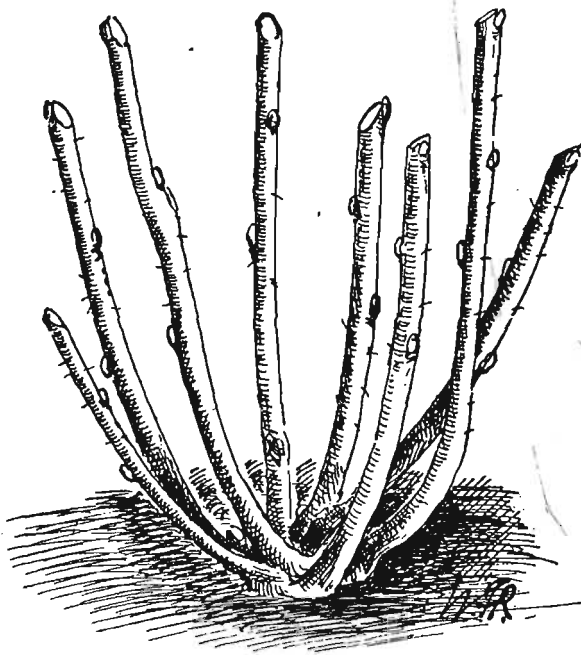
Economical Gardening

THE SIMPLEST OF PERGOLAS

A few plain poles and Rambler Roses. Blush Rambler is seen at the front.

(See page 33)

Blush Rambler is out earlier than usual, but none the less welcome on that account. Late or early, this model pillar Rose, as admirable of habit as charming of blossom, wins its usual meed of affectionate admiration. Less familiar, but delicious alike in



PRUNING ROSES

A bush pruned moderately for garden decoration. Note that each shoot is cut close to a bud in firm wood.

its tint and its smell, is Zephyrine Drouhin. It is not decorative enough for the multitude, which still plants Crimson Rambler, in spite of its want of scent, its short period of beauty, and its unfortunate predilection for mildew.

Perhaps the most beautiful of June pillars, however, is that clothed with Madame Ren   Andr  . In a Kent garden of past

years, with soil that was little more than chalk, this exquisitely tinted Rose did me good service; and here, a few miles out of the City of London, it is thriving. The flowers stand out farther from the pillars than those of any other variety, and this, in combination with the striking shade of salmon pink, make it very conspicuous. What a gap there seems to be between the Roses of to-day and the Roses of youth! I remember within a mile of the gates of the War Garden a particular plant of that long-forgotten Rose, Céline Forestier, and another of Maiden's Blush. I grew to look for them season after season. I made an annual pilgrimage to see them as each successive June came round, and it was often taken, in the case of Céline Forestier, on Derby day, which will suggest to good sportsmen that it was an early Rose. I am afraid that Céline had no great beauty of form, but it had bright colour and it bloomed freely and—it was one of the Roses of my youth. The Maiden's Blush grew on a cottage miraculously preserved amid the encroachments of villas on a road bearing the pleasant name of Nightingale Lane. I like to believe it is there still. You may tell me that thirty years is a long time in the life of a suburban Rose. You may suggest the probability that not only the Rose but the cottage itself has long passed away, but I want to think that no change has taken place. Maiden's Blush may mean nothing to the Rose growers of the present generation, but it means something, entwined as it is with the memories of boyhood, to me.

Most of the pillar Roses strike readily from cuttings.

We can afford to reduce our lawns, our rockeries, our bedding, and still be the gainers, so long as we extend our roseries and our borders of beautiful hardy plants raised economically at home. We have to become better gardeners—to raise for ourselves much material that we have been in the habit of buying and to do work which we once paid others to do for us. This will not only bring its own pleasures and benefits, but will give us a knowledge of the trials and difficulties of our old gardeners, whose work we once thought so slow and unsympathetic. Their larger operations were impeded, as we now find, by a mass of small but necessary details, the significance of which we did not understand before.

And we have a conviction that the old gardener, in spite of his frequent grumpiness, must have loved the garden, otherwise he would not have triumphed over so many obstacles, for only love could have given him enough patience to persevere, as it will give patience to us—patience and humility withal, which is the hard-won child of knowledge.

To sum up, we shall have smaller areas of dressed grass, fewer built-up rockeries, simpler flower beds. We shall have more orchards, more wild gardening, bigger borders, more rock-strewn slopes, more Roses. We shall avoid specialisation. We shall refuse to be led into reckless and costly novelty-hunting. And the net result will be that we shall have better gardens at less cost.

FOOD, FRUIT, AND FLOWERS

CHAPTER IV

SOCIETIES AND SHOWS—WASTE ON NOVELTIES

SPECIALISM presents one of the most dangerous of pitfalls for the flower-lover who wants to garden with a proper regard for economy. It consists of concentrating attention on a particular plant, whether Rose, Sweet Pea, Carnation, Dahlia, or Chrysanthemum, and growing, not only a large collection of standard varieties, but every new or supposed new variety which is sent out by the various raisers. It would be difficult to compute what specialism has cost gardeners during the past twenty years, but the sum must be enormous. Just before the war the number of "novelties" introduced annually had greatly increased and the prices of them had been raised. Half of them were not of course novelties at all, but old varieties re-distributed under new names. And most of the remainder differed so little from existing varieties that their appearance benefited nobody except the trader who introduced them.

The introduction of improved varieties of plants is desirable, but so much has already been done with all the most important plants, flower, fruit, and vegetable, that improvement is now difficult, yet with an enormous demand and willingness to pay high prices to spur raisers on they have persisted and will persist. Some have set themselves a high standard and abstained from distributing anything which was not distinct and good; others have shamelessly exploited the too trustful and credulous amateur. But nearly all have devoted themselves exclusively to the flower and ignored the constitution of the plant, with the result that diseases have become rife.

The specialisation of a particular flower is not gardening. It is true that it would benefit gardening if the ultimate result of it was to produce healthier plants at a smaller cost, but often it has the opposite effect. It gives us, very slowly, and at enormous expenditure, larger flowers and a wider range of colours,

but since improvement in these directions is accompanied by more disease among the plants, the garden does not benefit. Sweet Peas and Carnations—to name two popular plants only—have been “improved” considerably as to bloom, but unfortunately overbreeding and specialistic cultivation have made them more liable to disease, so that the garden has not gained as it ought to have done by the increase in size and more varied colours in the flowers.

It is easy to succumb to the temptations of specialism. Visits to flower shows, especially the shows of special societies, reveal flowers of great beauty, because they represent the handiwork of the most successful raisers and the most skilful growers, specially prepared for one particular day. Visitors are deeply impressed by what they see and in many cases they join societies and form collections without further consideration. But more likely than not their gardens are the worse for it, because interest becomes centred on one plant to the neglect of others.

A grave defect of most special floral societies is that they fall under the control of a knot of traders, professional exhibitors, and raisers who have but one object—to exploit the amateur for pecuniary gain. These people often quarrel fiercely amongst themselves over the allocation of the spoil, and most of the societies dwindle slowly after making brilliant starts in life; but the coterie hangs together in some sort of way as long as there is any public interest in the organisation to which it has attached itself. And in some cases threatened disintegration has been averted only through the contending elements reconciling their differences in order to defeat a reformer. The most embittered trade rivals will join hands to thwart a member who begins a crusade against the flagrant abuses which exist.

The interest of all members of special societies, whether traders, exhibitors, raisers, or amateur growers, is focussed on novelties. Traders and raisers want novelties because they sell at higher prices than standard sorts. Exhibitors want novelties because judges are influenced by them. Amateurs want them because the collection of varieties must be kept up-to-date. It is not too much to say that most of the societies are based on novelty-production. And since novelties are in such demand, it follows

that they are forthcoming, for plant-raisers are skilful and amateurs are not discriminating. The traders, professional exhibitors, and raisers form a novelty committee to decide what are and what are not genuine and meritorious novelties, and the most influential straightway provide themselves with seats upon it, the less influential who are excluded therefrom protesting strongly. The decisions of these interested committees take the forms of certificates of excellence, which have to go round among the various members if anything like peace is to reign. It is truly remarkable that awards made under such conditions carry a particle of weight, yet they undoubtedly place a special value on the varieties which receive them. The explanation is that amateur gardeners in pursuit of a delightful hobby are blind to realities, and carry a charitable faith in the honesty of every fellow-grower to excess. They buy, they are victimised; they buy and are victimised again; still they go on buying, for it is essential that they should be "up-to-date." Just as there are abuses in the production of machine-made "novelties," so there are abuses in exhibiting. Professional gardeners are allowed by the Royal Horticultural Society to rank as amateurs because they represent their employers, who nominally receive the prizes. The men are restricted to the produce of their employer's gardens. So far good. But interchange goes on, not only between gardener and gardener, but between trader and gardener, and even between trader and amateur. Fellow-members of expert committees assist each other. It is sad and regrettable that such unsportsmanlike and dishonest proceedings take place, but unhappily they do. Their prevalence before the war constituted a grave blot on flower-shows, which otherwise were so pleasant. General shows, and particularly village shows, probably do more good than special shows, for the former classes at least encourage the cultivation of fruit and vegetables, whereas the latter only display flowers.

Not every special society is trade-ridden, not every exhibitor is a rascal, not every raiser is a "faker." The National Rose Society, founded and ever since controlled by educated amateurs, has by far the highest standing of any floral organisation. It is

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true that it is much too indulgent with respect to novelties, giving its awards on flowers only, and consequently too many new Roses are introduced; apparently it believes in a very liberal attitude towards its trade members, and in leaving a good deal to the common sense of its amateur constituency. But it is a clean and wholesome body, and at least it counteracts any harm done in letting through such a flood of new varieties by disseminating a great and valuable mass of information on Rose culture and Rose pests. When the amateur asks himself whether he shall join this, that, or the other floral society, let him first try to comprehend its character, let him consider its scope carefully, let him weigh its achievements, let him satisfy himself that it tends to improve gardening. A standard of quality in the flower is not enough; unless it does something for the plant it is wanting. I am quite willing to admit that most of the special societies have improved the particular flower which they affect, judged by their own standard. But I refuse to stop there and I insist on the plant itself coming under review. The sum of a society's achievement cannot be assessed solely on what is seen on a particular day in a London hall or tent, which is commonly the view of the narrow and purblind florist; it has to be made in gardens large and small, the property of rich and poor, over the whole of the country. Would horse-racing be tolerated in war time if the only point was as to which of several highly trained thoroughbreds could get first past a post? Is not the real issue the maintenance of the bone, sinew, and stamina of the pure-bred horse? If the net result of the operations of the racecourse was the propagation of feeble and diseased horses the community would suppress it. Speaking broadly, the floral societies are baneful, because they concentrate everything on bloom. Having instituted a particular standard of quality in the flower—a standard, remember, which is based on exhibiting—they subordinate everything to it. Close inbreeding, intense vegetative propagation, gross feeding (all at variance with nature) are practised. Every cultural device which will yield an extra fraction of size or richness of colour in the flower is practised, heedless of its effect on the constitution of the plant.

The result is, plants full of disease. Is it worth while? For the reasons given, it is undoubtedly a moot point whether British gardening is not the worse rather than the better for the operations of special floral societies. Be that as it may, it is certainly to the interest of the garden-lover to refuse to become the victim of specialism. The part for him to play is to choose such varieties of each popular plant as will grow healthfully in his garden under reasonable treatment and enhance its beauty. It does not matter if the varieties are old, or if the flowers which they produce fall below an artificial standard established by a handful of floricultural bigots twenty or fifty or a hundred years ago. The flowers may be defective floriculturally, yet ideal horticulturally, as in the case of those which we study in another chapter. Specialism is bad for the garden, it is wasteful, and it is associated with great abuses; let us have less of it in the future than we have had in the past.

CHAPTER V

OLD FLOWERS FOR AN OLD NATION—BEAUTIFUL PLANTS WHICH CAN BE EASILY AND CHEAPLY PROPAGATED AT HOME

"WHY should England not sing?" The words linger in my mind as I pass through the nursery to the War Garden. Because she is locked in the mightiest of the great struggles of her history must she be mute? Shall she not sing of her fathers and her past? Shall she not find expression somehow for the flood of feeling which national reticence and shyness forbid her to talk about?

England must sing and she must grow flowers. In neither act is there the remotest suspicion of callousness or self-indulgence. The more she sings and the more flowers that she grows, the clearer will be her perception of her moral greatness.

I am glad that people go into the nursery to buy flowers as they did in the days of peace. I am glad that they still carry armfuls away to the cemetery beyond the prison. I am glad that seeds of dear old English flowers still sell. The most hardened profiteer would think twice before devoting his gains to vast erections of rock for the cultivation of diminutive Alpine plants in the midst of war. But to sow Wallflowers and Mignonette is so different a matter that shipowner and old-age pensioner can there meet on common ground.

The old English flowers must come into their own. We know how they were used to inaugurate a movement for a more natural system of gardening, and we know what has come of it. We were to have a distinctively English garden—a type suited to our national character; and the leading part in it was to be played by hardy perennial plants grouped in borders. No such type has developed. On the contrary, there never was a time when English gardens contained so large a proportion of exotic plants, nor were composed of so singular a hotch-potch of styles, as when war broke out in 1914. One does not seek to deny that much beauty

and interest were to be found in the modern garden, particularly in spring, when the Alpines were at their best. The point is that the simplicity and economy of the old English school were wanting. It is to them that we must return for the years of impoverishment which lie ahead.

When one sees what has befallen many of our greatest flowers under the hand of the florist, working for trade purposes, one cannot regret that a check was put on Alpine gardening. For the florist was beginning that close inbreeding with Saxifrages, Phloxes, and other great Alpines which he had practised with such unhappy results on Sweet Peas and Carnations. It is the way of the florist to lead his victims to consider nothing but the flower; the plant is ignored. So long as a new shade of colour can be imparted, or a variety with a larger bloom can be raised, it is held to be of no consequence if the constitution of the plant has been weakened. In due time even the constitution of the Saxifrage, built up during the course of uncounted centuries amid the snows of the mountains, would have been undermined and we should have had it blotched and disfigured with disease as the foliage of many of our best plants is disfigured to-day.

If there is one thing more wanted than another for furthering the welfare of English gardening in the lean years which lie before the nation it is interest in plants as plants. A false standpoint has been adopted and it is vital that it should be corrected. To consider the flower and not the plant which produces it is equivalent to listening to the song without thinking of the bird.

Let us, foreseeing a period of severe stringency before our country, with anxious industrial problems to solve and hungry millions whose breadwinners have bled for us to feed and clothe, restore our gardening to the simplicity of the past. Let us realise that it was developing into a costly and enervating luxury, the maintenance of which nothing could excuse. Let us be satisfied to have beautiful and fragrant gardens, without seeking to out-do our neighbours. It is not that non-food plants are necessarily expensive, indeed, their cost may be insignificant in consideration of the pleasure and benefit which they yield. The very poorest are justified in growing them. It is their abuse, not their use,

which has had to be deplored in the past; and it is against abuse and not against use that we have to guard in the future.

In seeking to turn the thoughts of flower-lovers to seedling plants, my object is to substitute economical gardening for costly specialism. Florists' varieties do not, as a rule, come true from seed, but species do. We will, therefore, grow more species and fewer florists' varieties. This will bring us back to old plants—those beautiful old plants which were pressed on our notice so insistently thirty years ago as the ideal material for bringing our gardens more nearly into conformity with nature, but which have receded so sadly since. Thousands—hundreds of thousands—of beautiful plants and shrubs can be raised from seeds at the cost of a few shillings. I hope to see a great movement for raising hardy plants, both annual and perennial, from seed in gardens all over our land, to its abiding glory and benefit. I hope to see a style of gardening develop which shall have marked national features. I hope to see British gardening distinguished by a robust and virile simplicity and common sense, conforming to the national character, which is above everything vigorous and direct. The excesses of Alpine gardening, which is beyond the scope of the non-moneyed classes, have probably had the opposite effect to what was expected when "natural" gardening was first talked about, causing a reaction in favour of tender bedding plants, which the nature movement set out to extinguish. Be that as it may, a change is urgently called for, and happily there is at hand an ample supply of good material with which to effect it.

HOME-PROPAGATION—SEEDS

There are many ways of propagating hardy plants, but there is none more pleasurable and satisfying than raising from seed. Nature herself raises 99 per cent. of her vegetation by means of seeds, and her methods of sowing are as varied as they are ingenious. The plant-lover generally turns to vegetative propagation, whether by cuttings, layers, divisions, portions of root, or what not, when he wishes to reproduce a particularly valued plant or a special variety; but to provide a large quantity of

plants economically he must use seeds. Seeds lend themselves best to safe and economical circulation. They yield the maximum quantity of plants at the minimum cost. They will wait for favourable weather. They are the most convenient form for interchange between people at a distance, as, for example, in different countries. Above all, perhaps, they appeal because they bring plant and grower into close intimacy from the first stage of the plant's existence, creating a love and interest which cannot otherwise prevail.

Wholesale patch-sowing in bed and border is not, however, infallibly conducive to success and the enjoyment which follows in its train, because variations of weather make it difficult to command those conditions of tilth and moisture which are the most favourable to speedy germination. In principle, therefore, the great bulk of the flowering plants and shrubs which are to be raised from seeds should be sown under conditions which bring those important matters completely under the control of the raiser, *e.g.* in drills of prepared sandy soil in a cold frame, or in pans in a cool house; the latter for very small-seeded or rare plants. The finer the texture of the compost, the shallower and more even the drills can be made; and with very shallow drills, it is in practice easier to sow small seeds as thinly as they ought to be sown than when the drills are deep and uneven. Furthermore, thinning is less tedious in a frame than in the open, especially if the bed is made well above ground level. Who, that has had to handle seedlings in pans or on a raised bed and seedlings in the open ground simultaneously, has not found himself looking forward to the former with zest and to the latter with distaste? Even where no glass is used, I would still recommend a prepared bed, preferably elevated, with subsequent transplanting, than border sowing. The site should be one which, while open in the sense of receiving a free circulation of air, is not fully exposed to the sun, more particularly in cases where the grower is compelled to be absent for long periods. With this provision, a more equable state of moisture can be maintained than with full exposure. Yet the site should not be a really wet one, for, apart from increased risk of damping off, slugs will assuredly take a

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heavy toll unless the cultivator is constantly watchful and prompt with the lime basket.

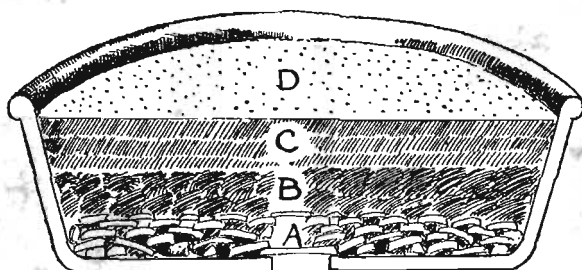
Perfect sowing in the border calls not only for care, but for much practice, consequently earnest attention to the task does not always suffice. To scold the amateur for sowing too thickly is easy, but how many of the critics are themselves on the side of the angels? Where there is but one short spring sowing period it is practically impossible for a sower to train his fingers to the necessary suppleness before the task is completed for the year; only on the seedsman's large trial ground, where the sower is at work all day and every day for several weeks, beginning with annuals in March and finishing with Wallflowers in May, can the proper aptitude be acquired.

Let the seedling ground, then, be a nursery, however limited in area. Let special attention be devoted to preparing a raised, well-drained, gritty, friable, and moist seed bed. In such circumstances germination will be as swift as the nature of the seed permits, and the seedlings will be strong and thrifty. Transplantation as well as thinning may be called for in certain cases, but the interested grower will not grudge whatever time is necessary for that most fascinating operation. He will have learned to consider every plant, however small, an entity, which it is up to him to carry forward in unchecked growth and health from babyhood to maturity. The good kitchen gardener does not hesitate to transplant his Lettuces and his Cauliflowers to a nursery bed before planting them out; and what is good for them is good for border plants.

Where seed-propagation is studied, there will be sowing going on from spring to autumn as things come to hand—some, perhaps, from far-distant friends. But the principal sowing period for biennials and perennials will be spring and early summer—say, April to June. The man of foresight will take care to get his sowings made in such good time as will provide a liberal reserve of plants, even if at sowing time his borders are not made. The nursery will provide the stimulus, if any be needed, for the delving. Thousands of sturdy seedlings will call for a home and they will not call in vain.

Many hardy plants ripen their seeds about midsummer and those amateurs who keep in touch with the limited number of seedsmen who specialise in good biennials and perennials can then obtain fresh seed. As a rule this new seed germinates very quickly and the plants raised from it make rapid progress. Let the lover of border plants bear this in mind when the fading of some of his earlier flowers reminds him that ripe fresh seed will soon be available.

Leaf mould may be added to the sowing compost fairly liberally, as facilitating transplantation as well as encouraging free rooting.



A PAN PREPARED FOR SEEDLINGS

A, crocks for drainage; B, rough soil; C, fine soil; D, seeds sown thinly in silver sand, which is useful for very small seeds.

For the bulk, any ordinary loamy soil with a copious admixture of sand will suffice. Exceptional requirements as to compost are generally mentioned by the dealer, but indeed they are so rare as to be almost negligible.

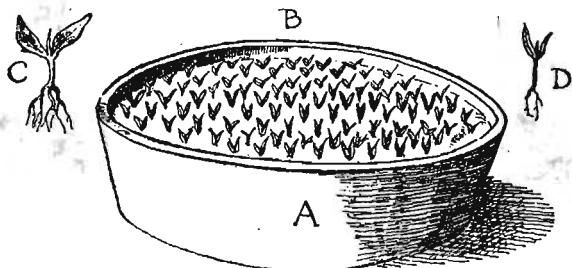
It is a good thing to heat the soil thoroughly before making it up, as this is a simple means of sterilising it.

A thick layer of cinders should form the base of the bed, in order to discourage worms from working through.

I believe that when the nursery system of raising hardy plants has once been practised with the better perennials there will be a tendency to make up the bed earlier in the year and raise the small-seeded annuals on it also. It is conceivable that there are people who do not detest the thinning of patches of small annuals

as heartily as I do, but I can hardly suppose that there are many who actually enjoy it and would miss the practice. And if the time should ever come when people in general can bring themselves to realise that hardy annuals are worth prepared beds and transplantation, then I believe that they will receive a revelation of the degree in which beauty can go hand in hand with economy.

One of the little difficulties of the gardener who raises a considerable number of biennials and perennials from seed is the great differences between the germinating periods of the various kinds. Some will not only germinate quickly under favourable circumstances, but will actually flower within a few weeks of



PRICKING-OUT SEEDLINGS

A, pan of light soil; B, seedlings; C, sturdy seedling with good roots; D, weak seedling with poor roots.

sowing; *Verbenas* and *Dianthus sinensis* (especially *Heddewigii* varieties) are familiar instances and might for practical purposes be classed with the annuals. But there are others which germinate very slowly, especially when the seed is a few months old, as will be the case with most seeds bought in winter or spring. And whether the seeds are sown in pans (pans are preferable to pots as accommodating more seeds in proportion to the amount of soil used) or in a bed, there will be bother with weeds. A thorough roasting of the soil before use reduces this trouble; for the rest, there must be periodical scratching over, otherwise the surface will become a mat of fine vegetation. After germination has taken place the weed trouble is less serious, but it is always present when soil is left undisturbed for a considerable period. The



A TUBEROUS-ROOTED BEGONIA STARTING GROWTH IN SPRING
Note the new buds.



The tuber at the top has been cut through and has made two good plants,
which may be grown in pots or planted in a bed.

(See also page 57)



A GOOD DOUBLE TUBEROUS BEGONIA
(See also page 57)

For Beds

Anemones	Marguerites	Poppies
Antirrhinums	Myosotises (Forget-me-nots)	Salvias
Asters, annual	Pansies and other	Stocks
Begonias	Violas	Sweet Peas
Calceolarias	Petunias	Sweet Williams
Cannas	Phloxes, annual	Verbenas
Carnations	Polyanthuses and	Wallflowers
Dahlias	Primroses	
Lobelias		

FOR ROCK GARDENS

Alyssums	Cyclamens	Primulas
Androsaces	Dianthus	Ramondias
Anemones	Gentians	Saxifrages
Aquilegias	Geraniums	Silenes
Arabises	Heucheras	Sisyrinchiums
Armerias (Thriffs)	Iberises	Soldanellas
Arnebias	Linarias	Stokesias
Aubrietias	Lithospermums	Veronicas
Campanulas	Onosmas	Violas
Corydalises	Pentstemons	Wahlenbergias

For details of these and many others see the tables in Part III., but we may consider the salient points about the principal flowers here, taking them in alphabetical order:

ANEMONES

The true flower-lover appreciates Anemones as he does few bolder and more brilliant plants, because of the variety of work which they do for him. He can use them in his beds, in his borders, on his rockeries, and under his trees. There are some which bloom in spring and others which flower in summer and autumn. Certain species are lowly Alpine gems, others are tall and robust. The Japanese species and its varieties are among the most exquisite of flowers for cutting. Add that some Anemones

luxuriate in shade while others revel in sunshine, that some flourish on the chalk of windswept downs while others need the soft leaf mould of the sheltered woodland, and one begins to form a correct idea of the diversity which is found in this beautiful genus.

There are few spring pictures more exquisite than that formed by a bed of the brilliant scarlet *Anemone fulgens* in association with the double white *Arabis*—in itself almost as beautiful as *Lily-of-the-valley*. And this same glorious *Anemone* produces lovely effects when grouped on the rockery with the smaller, soft-hued *Narcissi*, such as *Johnstoni* *Queen of Spain*, *minimus*, *cyclamineus*, *bulbocodium*, *pallidus praecox*, *albicans*, and *cernuus*. It must have full sun, otherwise it may not bloom freely and disappointments on this score are by no means unknown. A comparatively dwarf plant, *Anemone fulgens* still has stem enough to be useful for cutting, and with a bed freely bloomed there will be a temptation which must not be condemned to gather some of the glittering flowers for the purpose of enlivening rooms. To insure an even bed of flowers tubers may be planted in autumn, but a stock can be raised from seed. Botanists do not admit *fulgens* as a true species, classifying it as a form of *hortensis*, but it comes true from seed. The double *fulgens* is worthy of attention.

The glorious *Empress*, *Alderborough*, and *St. Brigid* *Anemones* are varieties of *coronaria*, a species which, like *hortensis*, came from southern Europe upwards of three hundred years ago. Blooming later than *fulgens*, they form a beautiful succession and are just as desirable for beds, but no mixture is needed, as the colours vary considerably and make exquisite harmonies of their own. I find that a happy way of dealing with the bed is to set corms of the fine scarlet *Gladiolus Brenchleyensis* about 2 feet apart among the upspringing plants in April, and in June or July, when the *Anemone* bloom is over, to set between them, at 18 inch spaces, the lovely white *Marguerite* *Mrs. Sander*, the foliage of which bears a sufficiently close resemblance to that of the *Anemone* to harmonise with it until it dies away. The *Marguerite* and the *Gladiolus* make the bed beautiful in July and August. Thus two entirely different but equally admirable effects

are produced. These *Anemones* are easily raised from seed, especially if it is rubbed up in sand previous to sowing; but tubers are available if autumn planting is desired.

The third species of first-class importance is *Japonica*, a fine plant for the autumn border, but represented in most gardens by its white variety *Honorine Jobert*, except where hardy herbaceous plants are specialised, in which cases the named varieties with semi-double flowers are perhaps preferred. One cannot dispute the beauty of such varieties as *Mont Rose*, *Silver Cup*, *Whirlwind*, and *Lady Ardilaun*, but they are not necessary to the every-day flower-gardener, or to those who want flowers for gathering. In any case plants of these special varieties will have to be bought, as the plants are not tuberous-rooted and seed is not available. The other species and varieties are of less general value, but in the garden of shade the wood *Anemone*, *nemorosa*, and its varieties, also *Apennina*, *angulosa*, and the *Hepaticas*, will assume an importance which they do not enjoy in sunny places. They are all beautiful, as also are such gems as *alpina* and *blanda*; and taller species such as the lovely snowdrop *Anemone (sylvestris)*, *narcissiflora*, *rivularis*, *Baicalensis*, *globosa*, and *pulsatilla*. One would gladly say more about them if space permitted; brief descriptions of several are given in Part III.

ANTIRRHINUMS

There are few cases in which a garden plant of great importance and much diversity both as to habit and colour is represented by only one species, yet such is the case with the *Antirrhinum*. The evergreen trailing species *asarina* is occasionally met with in rock gardens, but certainly cannot be considered an important plant. No, there is but one that counts and that is *majus*, from which all our garden varieties have sprung, a native of Britain and therefore hardy among the hardiest, and what is more, flourishing on almost every class of soil to be found in the British islands. This versatility is in a sense a drawback, because it tends to obscure the fact that the plant really needs special soil in order to give of its best—an apparent paradox that needs a word of

elucidation. The Snapdragon never grows more vigorously than on damp clay soils, but the wood it makes on such ground is soft and sappy and in no way so floriferous as that which is formed on limestone. This is sometimes overlooked by cultivators, who fail to realise that they are only getting a tithe of the beauty which the plant is capable of producing, and indeed misconception is easy when the plants look so well. Lime, even in the crude form of lumps of chalk, may be added to heavy soil with nothing but benefit. The plants are not necessarily weaker, for *Antirrhinums* grow luxuriantly on soil which forms the shallowest of layers over solid limestone; it is simply that the chalk encourages a harder and more floriferous type of wood.

It is a great point in connection with this splendid plant that the varieties come almost as true from seeds as good species, consequently, the most natural of all systems of propagation meets the principal needs, but this fact is to a certain extent discounted by the readiness with which they lend themselves to cross pollination by bees. The amateur gardener often wonders why the Snapdragons which he has saved at home fail to come true, while the seedsman's packets give him with little variation the colours described in the catalogue. The explanation is that the seedsman's *Antirrhinums* are grown in beds so far apart that the same bee cannot get from one to the other with its burden of pollen, whereas the amateur's plants are so close together that one bee can visit many varieties and effect numerous crosses. Free a seeder, therefore, as the *Antirrhinum* is, it is not an ideal plant for home saving in cases where distinct colours are required. The amateur who wants to perpetuate a particular variety must circumvent the bees by taking cuttings, which alone can be relied on in small gardens to reproduce the coveted variety. And it is satisfactory to know that cuttings root readily in a frame, or even in gritty soil in the open ground, in late summer; nor need the propagator fear to use tips with flower-buds on them, bad as this class of wood is for cuttings in the case of most plants.

One finds that on limestone at all events the plant is a true perennial, especially the old tall type of *majus*; of the medium and dwarf types one is not so sure. But really the point is unim-



YOUNG CHRYSANTHEMUMS JUST POTTED FROM CUTTING BOXES

Success with Chrysanthemums—I.

To grow Chrysanthemums successfully and at the same time economically, strike cuttings in small pots or boxes in spring, pot singly in April, and stand in a frame or a sheltered place as shown. Re-pot in May. (See back.)

(See page 60)



CHRYSANTHEMUMS POTTED AND STOOD OUTDOORS FOR THE SUMMER

Success with Chrysanthemums—II.

To get abundance of small flowers on plants pinch the young plants two or three times; to get large flowers, grow to three stems as above.

(See page 60)

portant, so easily can the plant be treated as an annual by sowing in heat in winter, or as a biennial by sowing outdoors in early summer. Save that the dark varieties have coloured and the light plain stems, and that in some the leaf is somewhat narrower than in others, there is little difference in the foliage; it is in variations in height that the chief horticultural value lies. The true majus varieties grow from 2 to 3 feet, the nanum class about 18 inches, the Tom Thumb 8 to 9 inches. The first type is possibly the best for large borders and distant beds, but the nanums are incontestably the most valuable for the great majority of gardens, whether the plants are wanted principally for the borders or for bedding. It is in this class, too, that we find the widest range of beautiful "art" shades. The pumilums, or Tom Thumbs, are much wanting in these exquisite tones; otherwise they are useful enough for small beds, blooming long and profusely. There is a section of majus called grandiflorum which is distinguished by very long stems and a noteworthy member of it is a variety of American origin named Nelrose, which proves to be a valuable pot plant for winter blooming and yields beautiful spikes for vases. The colour is old rose. Fawn, terra-cotta, salmon, and other "art" shades of this fine plant would enhance its value and it is to be hoped that they may be forthcoming.

Antirrhinums hardly lend themselves to artistic mixed bedding and certainly the nanums need no associates, but the rather squat growth of the Tom Thumbs calls for relief from a taller, looser plant, such as that beautiful and neglected half-hardy annual the Salpiglossis, or coloured Tobaccos, or even Ostrich Plume Asters. Each amateur buyer of Snapdragons will pick colours to his taste from the catalogues and happily for him the range is both beautiful and wide.

AQUILEGIAS (COLUMBINES)

While the species of *Aquilegia* mentioned in the notes on herbaceous and Alpine plants (see Part III.) have their interest for lovers of those great classes, there can be no doubt that for general garden value the long-spurred hybrids of the seedsmen

are pre-eminent. Particularly is this the case with the hybrids of *caerulea*, the prevailing colours of which are blue and white, against the prevailing red and yellow of the *Californica* hybrids. These *caerulea* hybrids are distinguished by vigorous growth and profuse production of long, branching sprays of bloom with long nectaries or "spurs." They make the most beautiful of lightsome groups for the front area of mixed borders, being as full of grace as fawns. The height is about 2 feet. One finds that they are at home in most soils and that they are very happy on the poor limestones which are so mistakenly feared by inexperienced gardeners.

Although there is a native *Columbine* (with an excellent white form, by the way) these hybrids have come from an American species. They are perennial when established, but, like the Snapdragons, they get crossed considerably by bees, and one finds it well to raise a stock as biennials each year, sowing in spring. Special varieties can be kept and increased by division when they have become strong. Those who raise their hybrid *Columbines* under glass and plant them out in early summer must be prepared to give them a certain amount of attention, otherwise the groups will gradually melt away. Drought is probably the chief cause and naturally watering is the best remedy. Of the plants which live and thrive, the strongest may be found in bloom before the summer is over; but the grower should base his highest expectations on the late spring of the following year, when the plants will be at their best. Then, indeed, no plants of their season will command greater interest or evoke a more lively admiration. The plants do not sucker freely like *Michaelmas Daisies* and certain other herbaceous perennials, and consequently root-division is less facile, but it is practicable.

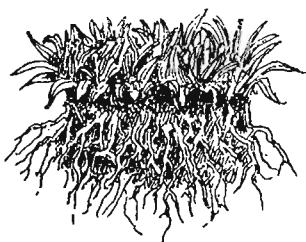
ASTERS

The exacting botanist will not permit us to give the name of *Aster* to our dear old annual favourites, which we raise in millions in frames every spring, demanding that we use the ugly and unfamiliar *Callistephus*. There is little fear, however, of any

confusion, considering that the Aster proper is so different a plant as the perennial Michaelmas Daisy. Does it therefore matter? Surely very little. Nevertheless, it is necessary that we should know the botanist's name, because he has succeeded in stampeding more than one seedsman who counts. We need not, however, speak any longer of German Asters, because British, French, American, and Italian raisers have given us strains of the highest merit. The English Aster, of which a typical class is the Victoria, is distinguished by large and massive flowers mounted on rather short, sturdy stems; the American by tall, freely-branched plants of an altogether looser habit, the flowers smaller and less formal. They are perhaps the best for bedding, and certainly the Comet and Ostrich Plume types are superior for this purpose to the old English exhibition types such as the Quilled, the Paeony-flowered, the Chrysanthemum-flowered, and even the Victoria. But all these classes have great beauty



A strong seedling perennial Aster, which will make a good flowering plant.



A crowded clump of perennial Aster, which ought to be split up.

of bloom to recommend them, and their comparative stiffness can be discounted by planting among them things of rather taller and looser growth like *Salpiglossis*.

No small share of the value of annual or China Asters as flower-garden plants lies in the fact that they can be grown in reserve quarters until midsummer, and then lifted and planted in beds from which earlier plants have been removed. Is the reader a Pansy lover? Then he can sow the fine modern strains of bedding Pansies of which mention is made further on, and put the

plants in his beds in autumn. They will be beautiful the following year up to mid-June (later in moist districts) and can then be taken out and Asters substituted. This plan of growing Asters is really better than bedding them up earlier, because disease will have developed itself, and affected plants can be removed while the plants are in the nursery bed. Losses from disease are sure to occur to some extent, but if the plants are not grown in heavily manured soil the trouble is not likely to be serious, especially if lime and wood ashes are added freely. Aster-lovers must beware of providing a very rich soil for the purpose of forcing very large flowers, as it encourages disease. And large flowers are not important in the beds. Thinning the buds is a safer way of increasing size than heavy manuring. Those who like free-growing, free-blooming Asters with long stems should grow a bed of singles, especially if cutting is held in view. The range of colours is not so great as in the doubles, but it is not insignificant. And in my experience they are less pestered with disease than the doubles. Herbaceous borders can often be brightened tastefully by planting groups of China Asters in the front areas in summer. They may be set near Pyrethrums, for instance, which are generally over before the summer is far advanced. While their perennial relatives, the Asters proper of the botanist and the Michaelmas Daisy or Starwort of the amateur, are beginning their great task of enlivening the back areas of the border, the smaller but equally beautiful Chinas will give cheerfulness to the front.

Of the perennials I need say little here, because they are dealt with elsewhere, yet I would remind the lover of these great autumn plants that the species and also some of the varieties can be raised from seed. Some of the dealers in herbaceous plants offer unnamed seedlings at a cheap rate, and those growers who do not care to grow named varieties should look on these seedlings as a convenient and economical source of good material. Meanwhile, the specialist can have named varieties by the score, and he can worry to get every one of the many novelties which pour out every year if he is so minded.

BEGONIAS

There are unfortunately no hardy Begonias, but workers in moist districts must consider this plant for their beds because there are few to compare with it for luxuriance and beauty in rainy localities. And it is valuable, too, for cool, damp spots in otherwise dry gardens. While it will flourish in the sun it does not object to shade. The modern Begonias are all crossbred forms of hybrids raised by intercrossing exotic species and by no stretch of language can we claim them as natives. Having to form tubers (that is, in the case of the tuberous varieties, and they are the largest and richest in colour) the plants are somewhat slow to come into bloom from seed, consequently impatient growers, or those lacking the conveniences for sowing in heat in winter and growing on under glass, choose dormant tubers, which they buy in spring, start in boxes of moist fibre in a frame or greenhouse, and plant out half-grown in June or July. It is a perfectly legitimate way of getting stock, and has the possible advantage that the tubers can be bought in separate colours. But there is a special fascination in Begonia-raising because of the extreme smallness of the seed, which provides the grower with a delicate and discriminating task. Very fine soil with a surfacing of damp silver sand, careful fingering in spreading the seed, a covering of glass and brown paper, heat, and watering when necessary by immersion to the rim of the pot, will see him through to success. It is asking for trouble to plant Begonias in dry, shallow soil; they must have moisture. But they do not mind being shifted when half grown so long as a good ball of soil or fibre is kept to the tubers and, consequently, the planter need never be afraid to wait for rain. They will enjoy a rich soil and a mulching of leaf mould, but so long as the soil is moist they are not fastidious. The smaller but also very beautiful fibrous-rooted Begonias are often favoured for edgings.

CALCEOLARIAS

A remarkable change has taken place in the fortunes of the Calceolaria as a flower-garden plant in consequence of the intro-

duction of some very fine hybrids. Perhaps the *Calceolaria* was never so completely extinguished as some haters of the old-time ribbon-border, in which it played so conspicuous a part, supposed, for one continued to encounter it in nurseries in spring in sufficient quantities to justify the belief that buyers were still fairly numerous. But they were probably of the class which gardens in serene unconsciousness of the trend of modern horticultural opinion. One fears that they often derived little satisfaction from their *Calceolaria* adventures, for the yellow *Calceolaria* is a terrible plant to die off just when it should be getting seriously to work. In any case, it was not looked upon as a desirable plant for the modern garden. But the advent of the now-famous variety *Golden Glory* carried people off their feet, and when it was followed by other fine hybrids, such as *Clibranii*, *The Bronze Age*, and *Sinclairii*, the *Calceolaria* was fully restored to favour. Note, however, that these *Calceolarias* are not hardy—less so, indeed, than the old yellows. They can only be grown in the garden as *Begonias* and *Salvias* are. *Golden Glory* is much larger than the old-time yellows, alike in growth and flower; it is a plant to group for effect in selected places. The seed requires the same careful handling as that of *Begonias*, and the seedlings need discriminating treatment. Later, rich soil, with a fair amount of moisture, will do the rest. But many grow the new *Calceolarias* exclusively under glass.

CARNATIONS

The Carnation-lover should not permit himself to become obsessed of named varieties, propagated vegetatively by layers in summer, because they are so often marred by disease. He should raise seedlings, not only of the *Margarets*, which flower the same year if sown early under glass; not only of that useful old scarlet *Grenadin* and its newer white form, but also of the fine border strains raised by Martin Smith and Douglas, which many seedsmen supply. He cannot forecast what varieties will accrue from the adventure, but he can be fairly satisfied that they will be worthy of the space they occupy. He will perhaps do well to raise them

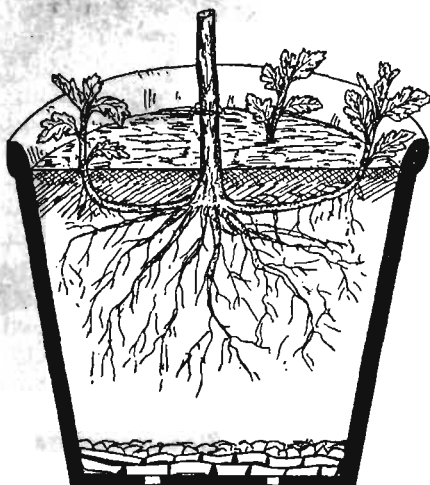
in a frame in spring, but all the same, many growers of seedling Carnations sow them in the open in June and let them take their chances with other border plants. Except in damp, heavy soils, they generally pass the winter to make large, free-flowering plants the following summer; but friable, well-drained soil is important. There is splendid material for beautiful beds in healthy batches of Carnation seedlings, and few so charming alike in foliage, bloom, and fragrance could be obtained at so low a cost. One by no means seeks to disparage named Carnations, but it cannot be gainsaid that the cultivation of a good modern collection is expensive and exacting, and that severe disappointment in consequence of disease is far from being uncommon. All things considered, seedlings are better for general garden purposes. Nor should Pinks be forgotten. Mrs. Sinkins is a universal favourite as a beautiful double white, Maurice Prichard is a fine single of a pretty pink shade, and the Munstead strain of single Pheasant-eyes are not only extremely pretty but very sweet. In addition, there are the old laced Pinks so beloved of our forebears. The amateur will find that there are few plants more interesting to raise from seed than the Dianthus family, which in addition to the Carnation, the Picotee, and the Pink includes some of the most charming of our rock plants (see Part III.) and also the Sweet William, which is dealt with separately further on. The seeds are of fair size, and do not call for the delicacy of handling which Begonias and Calceolarias require. Nor are the seedlings in any way "niffy"; on the contrary, they grow freely with mild heat and abundance of air, especially if provided with a gritty mixture of loam and leaf mould, the former predominating. From first to last the pans or boxes will be full of interest.

CHRYSANTHEMUMS

Of the three great classes of this genus: the hardy annuals, the ox-eyes, and the florist's, it is only the first which is propagated from seed by the general body of flower-gardeners. The ox-eyes and Moon Daisies are in the first place very cheap and in the

second the clumps thicken fast and therefore lend themselves to early and easy division. As to the florist's class—the autumn-flowering Japanese, incurved, single, pompon, etc.—named varieties are generally grown, which do not come true from seed and must therefore be propagated by means of cuttings if they are to be reproduced exactly.

First as to the annuals. The single forms of *carinatum* (tri-



A Chrysanthemum showing young sucker shoots which make good cuttings.



A bad cutting of Chrysanthemum, long, drawn and weak.

color) and *segetum* (Corn Marigold) and the double varieties of *coronarium* and *inodorum* are esteemed because they grow rapidly from seed sown outdoors in spring, flower profusely, have pretty colours, and are well adapted for cutting. In truth, there are few hardy annuals more easily grown or more generally useful. The ox-eyes, varieties of *C. maximum*; and the Moon or Shasta Daisies, varieties of *C. Leucanthemum*, are among the most familiar of herbaceous perennials, flowering until autumn, thriving in almost any soil, and yielding a profusion of white flowers with long stems which are very suitable for vases. It



PROPAGATING VIOLAS

A Viola with young growths suitable for cuttings.



PROPAGATING VIOLAS

Cuttings inserted a few inches apart in a cold frame.

(See page 67)



FORGET-ME-NOTS FROM SEEDS

(*Myosotis*)

We sow Forget-me-nots in June and July to give us plants to flower with the bulbs in spring. Here are shown the seedlings before pricking out.



FORGET-ME-NOTS FROM SEEDS

This picture shows the young plants pricked in nursery beds to strengthen. A distance of at least four inches apart should be allowed in all directions.

(See also page 67)

only remains to be said about them that a stock of plants can be easily raised from seed if desired and flowered the same year.

But the principal class, after all, is the florist's, the undisputed queen of the autumn, as well adapted for growing in pots as in the open ground, beautiful in the conservatory as it is beautiful in the exhibition hall. And it is important to point out that if the grower can once succeed in getting names out of his mind he can derive great pleasure and benefit from seedlings, and furthermore that he can flower the early races the same year as they are sown by sowing under glass in January or February. Raising presents no difficulties, for the seed germinates readily in the orthodox mixture of sandy loam and leaf mould. The usual watering and pricking-off suffice. The single, double, early, and late strains alike may be planted out on a nursery bed in early summer and transplanted to the places where they are to flower in showery weather at any convenient time in summer or autumn; thus they may be utilised for succeeding early plants in beds or for making groups in the border at any points where gaps show themselves. And they may be used with great effect against low walls and fences in suburban gardens.

Useless to the exhibitor, these beautiful seedling Chrysanthemums are invaluable to the flower-gardener of moderate means. The former class may pay 5s. or even 7s. 6d. for one plant of a "novelty" (very likely a variety all but identical with others on sale at 6d.); the latter may get hundreds of plants for a few pence, with the added interest that among his seedlings he may find new varieties of merit. It is much to be regretted that so noble a plant as the Chrysanthemum should have come to be the slave of prize-hunters; it is still sadder that an impression should have become general that it is only when grown under the exhibitor's system that they are worth attention.

If cutting-propagation is practised, it should be noted that sucker shoots from the roots are better than weak stem shoots.

CLARKIA

The scheme of the present work hardly permits of detailed treatment of the majority of the hardy annuals, which, however,

FOOD, FRUIT, AND FLOWERS

ceive attention in Part III. But the *Clarkia*, in its modern improved form, is so valuable as to call for special comment. It is the development of the varieties of the pretty old single pink species *elegans* which has added so much importance to the *Clarkia*, because it is found that these plants are admirably adapted to pot culture as well as to the open air, blooming precisely in spring from seed sown in a greenhouse the previous autumn. When thus grown they produce long spikes clothed with exquisite double flowers, almost as large as *Balsams* and with a better range of colours. But autumn-raised plants potted may also be bedded out in spring if desired and in early summer there are few bedding plants to vie with them. Later on the plants sown outdoors will bloom and these will retain their beauty until autumn, provided they are grown thinly throughout. A few patches may, however, be left unthinned and pulled in handfuls for vases. The amateur should make a note of such charming varieties as *Chamois Queen*, *Firefly*, *Orange King*, *Purple Prince*, *Salmon Queen*, *Scarlet Queen*, and *White Queen*, all of distinct and beautiful shades. Some hard things have been said in these pages respecting the unbridled multiplication of cross-bred flowers, but at present at all events matters have not gone to extremes with *Clarkias* and one has nothing but compliments for the hybridiser.

DAFFODILS

See "Bulbs and other Bedding Plants."

DAHLIAS

The *Dahlia* presents us with a corresponding phenomenon to the *Chrysanthemum*—a plant easily raised from seed at trifling expense and blooming the same year as sown, which has so completely fallen a victim to the predatory exhibitor as to be considered beyond the reach of all who are not able to buy plants. It is high time that seedling culture, free from the tyranny of names, became recognised. Not only the old single forms, but

the modern Paeony-flowered and Collarette types, may be raised from seed in heat in winter and flowered the same summer. The Paeonies have the great merit—lacking in most of the Cactus varieties—of throwing their flowers boldly up on long, stiff stems, so that they are equally decorative in the garden and conspicuous when cut. The Collarettes, with their inner “ruff” or “collar” of upright florets, have the advantage over singles for cutting that they last much longer in water. Whether they are more desirable in the garden is a matter of taste. Equally with plants from cuttings, seedling Dahlias enjoy rich soil and abundance of water in dry weather. Bud-thinning in order to get greater size of bloom is at the option of the cultivator, who, however, ought to be able to find better use for his time.

Any particularly good seedling may be perpetuated by preserving the tubers through the winter and striking cuttings from them in spring.



A Dahlia shoot taken from a tuber starting growth in spring. It should be struck in a small pot in a warm place.

DELPHINIUMS

We may in the first place recall the fact that this genus covers Larkspur, which is the annual form of it and is at our disposal in two classes: the rocket or compact and the branching. The variety of the latter called roseum is a charming plant, growing about two feet high in ordinary soil, blooming profusely for a

FOOD, FRUIT, AND FLOWERS

period, and having a very pretty rose flower. It is quite enough for a bed and in any case is a very useful plant to in a frame, prick off into boxes, and keep at hand for what-emergency may arise, for it can be planted out in June if sary. There are also red, carmine, blue, and white forms. seedman's "Hyacinth-flowered" Larkspur is a dwarf form e rocket, and of this also there are several colours, including rent shades of blue. Pretty as they are, it is doubtful if they n such demand as they once were owing to the introduction ome dwarf forms of the perennial species *grandiflorum*, bly Azure Fairy, Blue Butterfly, and Cineraria. These grow more than a foot high in ordinary soil, and bear their charm-blue flowers in profusion over a long period. What is more, lend themselves to culture as annuals, flowering the same as sown if put into a frame in March. If preferred, they may own outdoors in June, and treated as biennials, when they lly flower somewhat earlier (in the following year of course) grow a little taller. It is, however, the *Delphiniums* proper—all and noble plants of the herbaceous border which flower oriously from June onward—that mark the genus as truly t. The florist has had his way with the plant to the extent ising a considerable number of new varieties, but as propa-n, being confined to seed and division, has never been of a ng nature, the plant has kept healthy. Owing to the forky re of the rootstock the *Delphinium* is not the best of plants vide, and as growers find that it gives good spikes year after if planted in the first place in rich soil, and afterwards top-ed every two or three years, it is not frequently disturbed. ever, seed of several of the best-named *Delphiniums* is able and amateurs ought to take advantage of the oppor-y of getting a liberal stock at small cost. In this connection, worthy of note that the beautiful medium grower *Belladonna*, h was barren in its earlier years, has seeded recently, and al new forms of it have been raised. And here one must ss that the raiser of named varieties from seed must expect le variation in colour. How beautiful strong clumps are /body knows, but it is not every grower who appreciates

the advantages of cutting back after flowering and watering with sewage or other liquid manure in order to bring up good successional spikes.

GERANIUMS (ZONAL PELARGONIUMS)

See " Bulbs and other Bedding Plants."

HOLLYHOCKS

The most ardent supporter of vegetative propagation is silenced by the Hollyhock, and admits that seed must be resorted to if any life is to be kept in the plant at all. The remarkable thing is that he cannot see that what has happened to the Hollyhock in consequence of intense vegetative reproduction for the purpose of making money out of named varieties is happening to nearly all our great flowers, and unless checked must sooner or later *undermine their constitution as it has undermined that of the once healthy and noble Hollyhock.* When one sees a collection of Hollyhocks which have been artificially propagated and grown in rich soil one realises to the full the tragic evils of the system. The unhappy plants are horribly pockmarked. Seedlings may also be affected, for the fungus is an exceptionally virulent one, and to some extent they suffer for the sin that ruined their ancestors; but they are rarely attacked so severely as to be unable to sustain fair spikes of bloom. And now that we have good annual forms the plants have not to undergo the trials of the winter, for they can be treated just as Stocks and Asters are, being sown in gentle warmth under glass towards the end of winter and planted out in June, to bloom in July or August. There are both double and single strains of the annuals, and there is likewise a strain of annual doubles with fringed flowers. In the case of the perennials, the seed is sown one year for flowering the next. Even with these it is well to sow under glass, but with little heat, and to plant out in summer, so that the plants can get well established before winter. They enjoy a deep, fertile, loamy soil, but the manuring should be moderate, as it is not desirable to make the growth too succulent.

5 FOOD, FRUIT, AND FLOWERS

The various colours come pretty true from seed, and as seed of several is available, especially among the doubles, the grower who wants particular shades for particular positions may very well get separate packets. One finds it a good plan to keep the plants in a bed to themselves, in an open spot, through the winter and to transplant them in the spring, because when they are shut in among larger plants throughout the summer and autumn, as is the case when they are put into the border as seedlings, they do not get enough sun and air. Furthermore, it is wise to allot the places for them in the autumn, and to dress the sites with basic slag and fine lime, $\frac{1}{2}$ lb. of the former and 1 lb. of the latter per square yard, digging both well in. The slag supplies phosphates, which help to fortify the plants. Spraying with Bordeaux or Burgundy Mixture, as practised on Potatoes, has the drawback of disfiguring the plants, and every effort should be made to keep them healthy by natural means.

IRISES

See "Bulbs and other Bedding Plants."

LILIUMS

See "Bulbs and other Bedding Plants."

LOBELIAS

The little border Lobelia as we meet with it in gardens is a form of the species *erinus* which came from the Cape in the eighteenth century. It is itself a dwarf plant, but some of its varieties are still smaller. Among the seedsman's varieties one finds Cobalt Blue, Barnard's Perpetual, Crystal Palace, Emperor William, Imperial Blue, White Gem, Prima Donna, and perhaps others besides; all these are forms of *erinus*. They come true from seed, although on occasion they are propagated by cuttings. The seed sown in heat in winter and the plants pricked out and hardened for June planting. Apparently Lobelias are grown as largely as they ever were, for, although the ribbon border is not as popular as it was, the want of a low, compact, edging plant which will

bloom profusely for several months often asserts itself. *Ramosa* and *tenuior* are annuals and both are worth growing; the latter has flowers much larger than those of the *erinus* type and makes a charming pot plant. *Cardinalis* with its green and fulgens *Queen Victoria* with its purple foliage are well known as border and bedding plants, growing 2 feet high and bearing brilliant scarlet flowers.

MYOSOTIS (FORGET-ME-NOT)

The value of the Forget-me-not for spring bedding justifies its inclusion in a select list of flower-garden plants. Pretty enough in itself, it is also charming as a groundwork for Tulips and other taller plants. The best forms for this purpose are varieties of the species *alpestris*, such as *Royal Blue*, *Queen Victoria*, and *Star of Love*. Growing only 6 or 8 inches high, they are of dense habit and clothe themselves with beautiful rich blue flowers, which last well into early summer, but lose their depth of colour when the hot weather comes. Every spring gardener knows and appreciates them and not less because they cost so little and give so small a modicum of trouble. Sown in any reserve spot in early summer, they germinate readily and are ready for transplanting in autumn. The clumps can be split up if desired in order to increase the stock, as small pieces soon spread into large ones. The limestone gardener will come into his own with the Forget-me-nots, for they are never more brilliant and beautiful than on the chalk. *Dissitiflora* and its variety *Perfection* are popular Forget-me-nots. *Azorica* and *rupicola* are the best for the rockery; the former can be flowered the first year from seed if sown in spring. For the waterside, *palustris* and its variety *grandiflora* are the ones to choose. Truly an accommodating genus, thus to thrive under conditions so different as the limestone bank and the pool.

PANSIES AND OTHER VIOLAS

The cult of the prize Pansy is not pursued avidly in England, because the exhibition varieties do not give of their best, even

under special culture, suffering severely by comparison with Scotch flowers. The main reason is doubtless want of atmospheric humidity, which curtails activity of growth and thereby cripples the flowers. This is more particularly the case in the South and East of England. As a rule the early flowers are good, but after the heat of June has operated, the plants lose their freshness and the quality of the flowers deteriorates greatly. To a certain extent this affects all Pansies, including the tufted Pansies or florist's Violas, but a reduction in the size of the flowers is not so serious a matter for the flower gardener as it is for the exhibition grower. Pansies which make abundance of tufts continue to bloom freely long after single stem plants have become exhausted, and if the later flowers are smaller than the earlier the culture is not necessarily a failure.

Tuftiness is a habit of the modern Viola and it can be increased and maintained by liberal treatment, including top-dressings of soil and manure in July and August, with liquid manure if available. It is furthered by constant removal of old flowers. For this reason most Pansy lovers give attention to the Violas instead of to the Pansies proper. But under Asters I have shown how these beautiful flowers can be grown to advantage and I here repeat that the seed can be sown in summer, the plants put into the beds in autumn, flowered in spring, and cleared away to make room for Asters in July. I am, of course, aware that the plants can be flowered in summer from seed sown under glass in February of the same year, but this system of culture subjects them to the strain of doing their principal work in the hot and trying weather of summer and I do not think that they give equal satisfaction to those raised the previous year and brought into bloom two months earlier. Nor does growing them in shade solve the problem, for they develop a straggly habit, bloom sparsely, and lose size. The Aster-Pansy combination removes all difficulties and gives us charming beds at small cost.

The amateur should not look for distinct varieties when growing Pansies from seed; he should be satisfied with a type. Take *Madame Perret*, for example. This is not a variety, but a class, the varieties of which have certain shades in common. At a

distance the bed is composed of one variety, but near inspection reveals that although the flowers bear a general resemblance to each other owing to a similarity in marking they are nevertheless not all identical. The grower can, if he think fit, reproduce any particular one by means of cuttings, but that tends to defeat the object in view by leading to specialisation and should only be resorted to in rare cases. Masterpiece, Trimardeau, Bugnot's Giant, Matchless, and other strains give us similar cases to Madame Perret. Lord Beaconsfield, however, is a true variety, showing little if any variation, even from seed, and the two shades of blue blend very harmoniously. Mark Mills presents us with one of the exceptional cases in which vegetative reproduction is, if ever, pardonable, for it is a flower of the richest beauty, gloriously coloured with its body of pure, clean claret and its broad band of



A Pansy cutting taken from a stem.

yellow, perfect of shape, large of bloom, and strong of stem. It makes a most beautiful bed with no associate, but as seen in combination with the slender, silvery-leaved *Gnaphalium microphyllum* it is even more beautiful. Unfortunately, seed of this noble Pansy does not seem to be available. Cuttings are best put into a cold frame in autumn. They can be true stem cuttings or partially rooted shoots pulled from the base.

With respect to the tufted class, so popular for bedding and carpeting, we are face to face with a measure of specialisation if we insist on true stocks of the named varieties; for they must be propagated by cuttings if they are to be kept uniform in colour and habit and this must be done at the end of summer, wintering the cuttings in boxes in frames or cool houses and putting the

young plants out when they are comfortably rooted in spring. By such means are perpetuated useful sorts like Kitty Bell, Maggie Mott, Ardwell Gem, Sylvia, Nora Marrows, Snowflake, Mrs. E. A. Cade, Gold, Peace, J. B. Riding, William Neil, Countess of Kintore, and other pretty varieties which are used for bedding, carpeting Rose and other beds, and edgings. But if these popular sorts cannot be grown true from seed, the resolute supporter of seminal propagation may find other varieties in blue, purple, white, and yellow which come with so little variation that they may almost be described as true. These will serve general garden purposes just as well as the named sorts.

PETUNIAS

These flowers have perhaps lost something of their popularity as garden plants, although still grown extensively for the summer decoration of the cool greenhouse and conservatory. Their merits of vigorous growth and free production of large brilliantly-marked flowers remain; such retrogression as there has been is probably due to nothing more nor less than the demands of newer plants. The largest of gardens cannot grow everything. Perhaps, too, despite the richness of their markings, Petunias are too "streaky" to give complete satisfaction in beds, and certainly in the case of the large fringed flowers they are somewhat indecisive. There are, however, good self, or nearly self, Petunias, notably the charming old variety Countess of Ellesmere, than which there are few prettier flowers, and kermesina, likewise rosea and the newer variety Copper King. All of these are suitable for beds and can be grown with ease and economy on the lines of other half-hardy annuals such as Asters and Stocks. Petunias are particularly worthy of attention by those who are compelled to garden on poor soil; in rich soil they are apt to become too gross to bloom in a satisfactory manner. Of the various strains, Ideal and Feltham Beauty are two of the best for bedding.

PHLOXES

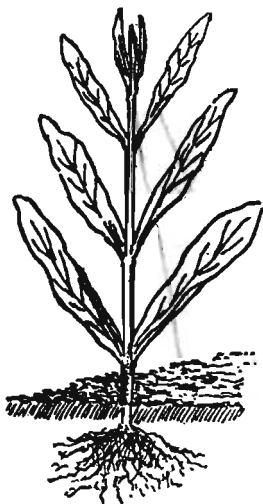
All types of Phlox have advanced in favour during recent years, the dwarf annuals of the Drummondii class equally with

the tall perennials which are the offspring of the species *decussata* and *suffruticosa* and the low perennials suitable for the rockery. *Phlox Drummondii* itself is an American plant with purple flowers introduced in 1835. It has been completely eclipsed by the garden forms and is rarely seen.

There are, broadly, three types: the *grandiflora* or large-flowered, the *nana compacta* or dwarf, and the *cuspidata* or point-petalled. As a matter of fact, there is not a great deal of difference in the height of the *grandiflora* and *nana compacta* types and the former should have preference. A bed of mixed seedlings is exceedingly pretty, and in view of the simplicity of culture, which is similar to that for *Asters*, it is not surprising that the plants enjoy great favour. When they are first put out they must be protected from slugs by frequent dustings of fine lime, or with drenchings of lime water at night, or they will speedily disappear. A long list of distinct colours is found in the catalogues and the flowers come true.

Those who shy at the low habit of *Phloxes* on the ground that the beds are too flat may associate taller plants with them or may reserve the *Phloxes* for use as broad edgings to bolder beds.

The tall named perennials used for the herbaceous border do not come true from seed, but scarlet, blue, pink and white shades are available in separate packets, and from these useful stocks of plants can be raised for the mixed border. There is no finer genus and every cultivator of herbaceous borders will pay particular attention to it. It does not always thrive in stiff, damp ground, often dwindling away through disease, but in friable, well-drained, warm soil it is magnificent. The grower of named varieties should include *Regulus*, *Virgo Marie*, *Tapis Blanc*, and *Coquelicot* in his



A STRONG PERENNIAL
PHLOX

A young growth of this character forms the finest head of blooms.

collection. Seed of the dwarf perennials suitable for the rock garden may not be available, in which case plants will be bought. *Divaricata* and its large lavender-coloured variety *Laphami*, *reptans*, *frondosa*, *amoena rosea*, and such forms of *setacea*



PERENNIAL PHLOXES CROWDED

A bunch of growth similar to this rarely makes a good head of bloom.

(*subulata*) as *annulata*, *Lindleyana*, *The Bride*, *Vivid*, and *Newry Seedling*, are a few of the most desirable of these gems, so beautiful in spring.

POLYANTHUSES AND OTHER HYBRID PRIMULAS

The garden forms of *Auricula*, *Oxlip*, *Polyanthus*, *Primrose*, and other hardy hybrid *Primulas* present us with a valuable set of

spring-blooming plants, low in habit, profuse in bloom, beautiful and varied in colour. Gardeners love them as the general public love the little Primrose of the woodland, so exquisite in its cool, dense tufts. The paste-flowered Auriculas of the florist may be passed over for garden purposes, but not so the large coloured hybrids such as Giant Yellow, Invincible, Laced, and even "Dusty Miller" with his mealy foliage, for these plants make delightful beds and are charming as a groundwork for late Tulips and also for Tea Roses. The bunch-flowered Primroses generally called Polyanthuses are even better, and whatever the spring garden lacks it must have its quota of these glorious flowers. Giant strains of yellow, orange, crimson, scarlet, cream, white, rose, blue, mauve, and purple can be obtained separately. Or a mixed strain such as the Munstead may be procured. These fine modern strains throw their huge clusters of bloom to a height of 15 or 18 inches. And again there are the true Primroses, which bear their flowers singly on the stems: these give brilliant reds and a fine blue, in addition to light colours. The habit is lower and denser than that of the Polyanthuses. Cream and yellow Primroses of the modern large-flowered strains form an exquisite groundwork for white, yellow, and orange Tulips, some of the best of which are named in Part III. Perhaps the best way of raising these splendid plants, Auriculas, Polyanthuses, and Primroses alike, is to sow the seed in boxes in February and put in a cold frame, set the seedlings out 9 inches apart in a nursery bed in June and transplant to the flowering positions in September. The season can be lengthened by picking off the seed pods as fast as they form. The plants will probably improve the second year, but afterwards may deteriorate to some extent; anyway, it is easy to raise a fresh stock every year or two. In cases where they are bedded it is necessary to move them after flowering, and for a time, especially if the position is a hot one, they will diminish in size, but in autumn they will begin to develop again, and in mild spells throughout the winter they will extend more, until, with April, they attain to their full size. And growth will not stop with the commencement of flowering.

Species of *Primula*, suitable for the rock garden and other

purposes, will be found in Part III., but it may be emphasised here that some of the hybrids of the new Chinese species, such as Unique, Lissadell Hybrid, and Ipswich Hybrids, are exceedingly beautiful and interesting plants, which the near future will probably see bedded out. The colours are not matched by the Polyanthuses and Primroses. The hybrids are mainly the result of crosses between Cockburniana and pulverulenta and between Bulleyana and Beesiana.

POPPIES

For many years among the commonest and least esteemed of plants, the Poppies (genus *Papaver*) have risen to a high place owing to improvements in each of the three classes: annual, biennial, and perennial, but most of all, perhaps, as a result of the remarkable development of the corn Poppy, which in its glorified modern form is the Shirley Poppy of our gardens. This beautiful annual is unquestionably rather fleeting, like its salmon-coloured sister of the wheatlands, but in its season it is so exquisite as to almost, if not quite, assume the premier place among the annuals which are contemporary with it. There are certainly no others, whether of its own season or later, which embrace so delicious a range of salmon, orange, fawn, and pink shades. It is worth while buying this class separately from the deeper and richer colours if they are offered, as they are in the catalogues of some seedsmen. They give effects of their own, as the new Chinese Primulas do, and do not blend with brilliant colours. The seed may be broadcasted to cover a large patch in a sunny position near the house, where they will, for their little day, be one of the best features of the garden. There is a double strain of the Shirleys, but the finest of the double annual poppies are found in the varieties of opium Poppy, *P. somniferum*, which are taller than the corn Poppies and bear huge flowers on long, strong stems. The double white offered under various garden names by seedsmen, including Snowball, is a splendid plant. It may be mentioned that umbrosum, that fine crimson Poppy each petal of which is stained with a bold black blotch, is an annual; and

so are glaucum, the scarlet Tulip Poppy; and pavonium, which, having a clear black ring in the scarlet flowers, is sometimes called the Peacock Poppy.

When we turn to the biennials, there is a variety, or perhaps one should say a group of varieties, which enjoys high popularity even among Poppies, and that is the offspring of nudicaule, the Iceland Poppy. The type is yellow and there are both single and double whites, but the charm of the group lies in the numerous salmon, orange, coral, pink, and rose varieties which appear in the mixtures supplied by reputable seedsmen. They can be flowered the same year as sown if they are put in under glass in March, but under biennial treatment they are best sown in July, when they flower the following spring. They make charming groups in the rock garden.

The third important group is that formed from varieties of the perennial eastern Poppy known to botanists as *Papaver orientale*. The type is a bold, rich, and early blooming border perennial, but it is now losing place to its offspring, which grow more numerous every year. Already such varieties as Queen Alexandra, Princess Ena, Mrs. Perry, Perry's White, Beauty of Livermere, and Lady Roscoe are to be met with in many gardens. While seed of several of them is offered, it cannot be relied on to come quite true and the amateur may do well to get a good mixture and let the named varieties look after themselves. All the Poppies, annual, biennial, and perennial alike, are accommodating as to soil; they will thrive in almost any.

ROSES

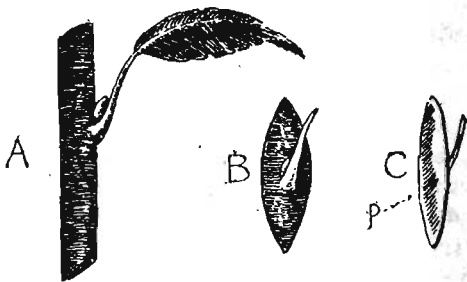
Seedling Roses are rarely met with, except on the grounds of hybridists and nurserymen, who raise them with the object of obtaining new varieties. As the natural system of propagation, one would gladly practise seed-sowing with Roses, as with the other grand old flowers of our gardens which are dealt with in the present chapter, if the practical interests of the garden were served by it, but unfortunately such is not the case. Many types of Roses do not produce hips and the great majority of our fine

double Roses bear no seed. Even if they did, the way would not be clear, because, owing to intense interbreeding, the progeny would certainly be of a mixed character and most of it greatly inferior to the garden varieties which we have. Add to this that the seed germinates very slowly, and it will be fully realised that the culture of seedling Roses is not justifiable in general garden practice.

As regards raising seedlings with the object of setting superior varieties, no encouragement can be given to so slow and profitless an undertaking. Only raisers who have been able to develop certain strains, who have the experience of years behind them, and who have extensive grounds where they can grow, not only the thousands of seedlings which it is necessary to have if even one good variety a year is to be raised, but also a large collection of existing varieties for comparison, can hope to pay a tithe of the heavy expenses involved. Even in normal times the enterprise would be a mistaken one and in periods of food scarcity it would be reprehensible in the highest degree. But certain Roses, notably the briers (including the Penzance briers) and rugosas, produce hips freely, and it is partly because of this that these species are used so largely as stocks or foster-parents. The hips are gathered when ripe and laid in sand for the winter; in spring the seeds are rubbed out into the sand if necessary and both seed and sand sown together. A year may elapse before the seedlings are of any size and it will be two or three years before they are strong enough to be budded. It is scarcely necessary to point out that however sound the cultivation of seedling briers is in the economy of a nursery, it is not justified in small private gardens, because space can be put to better use. But the Rose-lover should know that there is such a thing as a seedling brier stock, and he should further know that it proves to be an excellent foster-parent for most Roses, particularly teas. The nurseryman likes the Manetti stock better, because he can generally raise it to the budding stage quicker than he can the brier, but it is not so long-lived as the latter.

Seminal or natural propagation is not, then, practically feasible for Roses, and all the other methods are vegetative, whether by

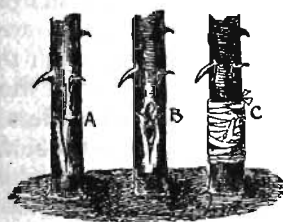
grafting, by layering, by budding, or by cuttings; in other words, the particular individual plant so propagated is reproduced, we do not get an entirely new plant. Yet certain Roses, particularly the hybrid Wichuraianas, may be said to exhibit a natural system of propagation, since they will on occasion throw out roots from stems which have come into contact with the soil. They may be described as



HOW TO TAKE BUDS

A, bud marked for removal; B, bud sliced out and leaf cut off; C, pith removed, but growing point (*p*) left.

self-layered, as Strawberries often are. In nature, creeping plants frequently reproduce themselves in this way and by many repetitions of the process they travel considerable distances. Rose-lovers frequently lament their inability to propagate plants by natural means and turn to cuttings in order to escape the tyranny of stocks, inserting in the autumn firm eight-inch pieces of the current year's wood almost up to the tips in the soil,



BUDDING DWARF ROSES

A, the "T" cut; B, the insertion of the bud; C, the bud bound in.

suffice for one cutting, and if these buds are inserted singly in separate brier stocks it follows that a given length of shoot is used

and getting flowering plants from them in two or three years. The plan is well worth adopting by those who object to stocks, and most of the more vigorous Roses do well under it, as we see in Part III.; but it remains a vegetative process the same as budding, indeed a bud is a cutting; it is a slice taken in summer out of a shoot which, in autumn, might otherwise be used as a cutting. But several buds can be cut out of a length that would only

more economically under the budding than under the cutting system. In some cases, however, the buds are not inserted singly in the main stem of a dwarf brier, but several are put into the various branches of a standard brier, from three to six being used according to the number of shoots which the standard is carrying. Whether, therefore, buds go farther than cuttings in forming new plants depends on the character of the brier used.

Stock-tyranny has no terrors for the Rose-lover who has plenty of ground. He is just as willing to plant stocks as to plant Roses, because he knows that he can turn them into Roses with very little trouble and ultimately he gets a good collection together without having had to spend much money on it. He will collect or buy tall hedgerow briars for his standards early in autumn and plant them after trimming the roots back to one short stump (this to avert the nuisance of sucker growths springing up from the base subsequently), budding them the following summer and flowering them the next. He will put brier as well as Rose cuttings in during autumn in order to provide dwarf stocks for his bush Roses, and he may even gather hips and sow seeds as before mentioned. Small obstacles are not allowed to thwart the amateur who, smitten with a great love for the flower and coveting a representative collection, is yet unable to afford extensive purchases; stocks point the way to the realisation of his desires, and stocks, therefore, he determines to study. He may master the art of budding in one lesson if he has a competent teacher, in which case he will have few if any failures; or he may muddle through to competence, spoiling as many buds as he succeeds with. Success turns almost entirely on two small items: pith-removal and moisture. There is a knack in getting the pith away from the bud, after it has been sliced off the shoot with a sharp knife, without dislodging the small green germ at the back of it, and this knack generally has to be learned; it is intuitive with some, while others only acquire it through practice. But the best of bud-makers might fail if the stock was suffering from want of water, and for this reason it is worth while, in a dry July, to wait a reasonable time for rain, and in its continued absence to give the soil round the stocks a good soaking of water. Not for a moment should the

bud itself become dry, or instead of remaining fresh and growing the following spring it will turn black and shrivel almost immediately.

Dwarf stocks are budded close to the ground, standards at the bases of the side shoots, close to the main stem.

Buds, then, for dwarf Roses and buds also for standard Roses, but what about pillar Roses? Buds may again be used, and are used largely in the nurseries; but cuttings also serve. Moreover, the grower will do well to consider the hint as to the self-layering habit of the Wichuraiana roses, Dorothy Perkins, Alberic Barbier, and so forth. He can try laying down some of the long shoots, bringing them into close contact with the soil in several places, and where they root taking off the shoot. For selections of Roses, pruning, eradication of pests, and other matters, see Part III.

SALVIAS

Gardeners have long known that the non-hardy perennial species *splendens* will flower the first year if the seeds are sown early, and the plant is a brilliant one, well fitted, so far as colour is concerned, to vie with the brightest of bedders; but the habit leaves something to be desired, and it was not until the introduction of some varieties of comparatively dwarf and compact habit that the *Salvias* rose to an important place as flower garden plants. The variety *Pride of Zurich* in particular impressed amateurs, in part because of its intensity of colour, good habit, and duration, in part because it thrives in town gardens, in part because being an early bloomer it gives flowers in July. It is more vivid than the brightest *Geranium*, and for four months is unsurpassed in brilliancy even by the famous zonal *Paul Crampel*. Say what one may about garishness, there are flowers which have a forcefulness that cannot be ignored, and these two are cases in point. They impress themselves on the gardener with irresistible emphasis, refusing to be ignored. There are other good varieties of *Salvia splendens* besides *Pride of Zurich*, notably *Fireball* and *Victor Emmanuel*. All of them can be raised from seed in

heat in February, pricked off, hardened in a frame, and planted out in June. That magnificent blue *Salvia patens*, so beautiful in colour, can also be flowered from seed in a few months by sowing early in heat, and one occasionally sees it used as a bedder, but it is not so accommodating as *Pride of Zurich*, and likes a moist climate. Of the many other *Salvias*, the annual *horminum* variety *Blue Beard* is one of the most useful. It can be sown out of doors in spring.

SCABIOUSES

The genus *Scabious* is important to the gardener on account of two species only, namely, *atropurpurea* and *Caucasica*, the former an annual or possibly biennial, but exclusively grown as an annual; the latter a perennial. Both species have yielded varieties, but it is only in the case of *atropurpurea* that they have become more important than the type. Every seedsman offers mixtures and some offer separate colours which come true from seed. They are generally raised in a greenhouse or frame and planted out in June. The plant itself is not a bulky one, but the flower stems are long, reaching to three feet and bearing double globular flowers of very agreeable odour. Perhaps the dark varieties are the sweetest, but all are fragrant. The sweet *Scabious* thrives in most soils, and those who love annuals should include it. They will probably learn to value it for cutting as well as for the garden. It may be well to mention that indoor sowing is not essential, and in the absence of glass the *Scabious* can still be grown as an ordinary hardy annual, sowing outside in April; but the indoor sowing gives very strong and sturdy plants quite early, which transplant readily with a ball of moist earth at the roots, and can be set in clumps in the herbaceous border or in such other places as the grower considers suitable. One finds, therefore, that they do more for the garden than outdoor sowings. The perennial *Caucasica* is a dwarf plant with large flat blue flowers of great beauty on stems about two feet long. It thrives in almost any soil and should be grown everywhere.



Economical Flowers

PERENNIAL PHLOXES

Amongst the best of herbaceous plants, Phloxes grow and increase in ordinary soil almost as readily as Michaelmas Daisies. The variety shown is the white Flocon de Neige.

(See page 71)



Inexpensive Garden Features

ROSE-ARCHED AND ROUGH-TILED PATH WITH SIMPLE HERBACEOUS
PLANTS AND SEAT

(See page 94)

STOCKS

The "Stocks" of our gardens are the offspring of the botanist's *Matthiola annua*, a native of southern Europe and named after the Italian botanist Matthioli. Although the botanical name has dropped as far as the general Stocks of our gardens are concerned, it is used in connection with the night-scented Stock, which is offered in most catalogues under the name of *Matthiola bicornis*. In passing, one may say of this plant that although very poor from the ornamental point of view, it is well worth growing for the sake of its singularly powerful and pleasant evening fragrance. It is mean and weedy-looking during the day, and therefore it should not be put in a conspicuous place; yet it should be near the house. Our forebears called the beautiful and fragrant day bloomers "Stock Gillyflowers," and the modern popular name is obviously a simple abbreviation of the old one. We like as many doubles in our Stocks as possible, because the singles are straggly and fugitive, whereas the doubles are compact and lasting; and the trained seedsman contrives to give us a very good percentage, considering that he has to save his seed from single flowers. Bearing this fact in mind, we must not upbraid him if a small percentage of singles appear, as, indeed, they generally do.

The places of the once-popular German ten-week Stocks are now taken by French Stocks, and the Nice strains command attention, alike because of their vigour of growth, fine spikes of double flowers, and beautiful colours. The lovely variety Beauty of Nice, with its charming flowers of salmon-pink, has been grown for several years, and has won a secure place in the esteem of Stock-lovers; not less desirable are such varieties as Côte d'Azur, dark blue; Mont Blanc and White Lady, whites; Peach Blossom, soft rose; Summer Night and Violette de Parme, violets; Monte Carlo, pale yellow; and Crimson King. The habit is branching, and those who want dwarf forms can still obtain them in French Stocks of the dwarf double ten-week class, which seedsman offer in separate colours as well as in mixture. The Giant Perfection is a strong-growing Stock of pyramidal habit, with longer spikes than the dwarf ten-week, reaching two feet high. All three

classes are annuals, suitable for sowing outside in April, but more frequently sown in cool houses or frames in February or March, pricked-off into boxes, and kept handy until suitable places for planting present themselves. They may be bedded out or grouped in borders at will, planting fairly close to permit of thinning out singles without leaving large gaps, say nine inches apart for the dwarfs, a foot for the Nice strains, and fifteen inches for the Giant Perfection. The soil should be deep and fertile to encourage vigorous growth and fine spikes of bloom which will retain their beauty for a long period.

The intermediate Stocks, of which the East Lothian is a popular Scotch strain, are biennials, but they will flower the same year if sown under glass in spring. They are more frequently sown in August for blooming the following spring. They are nominally hardy, but are generally grown in pots and wintered in frames. The Brompton and Queen (Emperor) Stocks are also biennials, but their hardiness is less open to doubt, and they are generally grown throughout in the open air from early summer sowings. All the Year Round is a perennial form with Wall-flower-like leaves, a useful hardy Stock.

SUNFLOWERS

The joy of Sunflower culture is not, perhaps, always on the highest plane, except in the sense of altitude, for we find that it often centres in the stature of the plant, and therefore has most in common with the form of horticultural enthusiasm which finds its chief outlet in the dimensions of a huge Pumpkin or the weight of a monster Vegetable Marrow. But the Sunflowers can do more than grow tall; they can give light and warmth to the garden in a way which few hardy plants are capable of. Thus, groups are useful in the herbaceous border and the wild garden. And some of the best forms of Sunflower are quite dwarf, notably the Cucumber-leaved and its varieties, Diadem and Orion, which form handsome bushes 3 feet high. There is, too, a dwarf form of the common Sunflower called *nanus plenus*. The Russian Giant and the variety called *globosus fistulosus* are respectively

good single and double forms of the common annual Sunflower, both of tall habit, and the single the stronger of the pair. The so-called "Red Sunflower" is a type with a broad brownish band round the disk; although opinions may differ as to its beauty there can be no disagreement as to its distinctness. It is an annual and, like the preceding varieties, only needs sowing in the spring where it is to bloom. The beautiful Sunflower *Helianthus rigidus* Miss Mellish (syn. *Harpalium rigidum* Miss Mellish) and the varieties of *Helianthus multiflorus* are perennials of which seed may not be available. They divide readily, however, and are therefore easily increased after plants have been bought and established.

SWEET PEAS

The culture of this plant in rows on strings and wire, the shoots severely restricted, the soil gorged with manure, the object being to force huge flowers, is one of the most flagrant examples which modern gardening can show of the lengths to which people will go in the greed for prizes. The old Sweet Peas, grown naturally on sticks, were little affected by disease; the modern Sweet Peas are full of it; and what is more, the diseases have spread to culinary Peas. In a double degree, therefore, the result has been evil.

The exhibition Sweet Pea as trained and pruned for show, restricted to one stem only, is a monstrosity. As a garden plant it is worse than useless, for in the diseased state into which it usually falls it is ugly. Its one point of value, apart from the question of prize-winning, is in the long stems on which the flowers are borne. The stalks of naturally-grown plants are long enough for cutting when the plants are young, but after the first gathering they are apt to come much shorter. The problem, then, is how to get a plant strong enough to yield many gatherings of long-stemmed flowers without adopting the forcing methods of the exhibition growers, which have had such disastrous effects on the plants. There is a simple intermediate course. It is to sow seeds in shallow boxes in February, put them in an unheated frame or in a cool greenhouse close to the glass, pinch

off the tips of the plants when they are four inches high, and plant out in April. The pinching will result in the development of a series of basal shoots, generally three in number, which should be allowed to extend up the sticks. Side shoots will show on each in due time, but these may be pinched out while quite small, so that the three leading growths have nothing to carry but their own leaves and the flower-stems. Admittedly this is not strictly natural culture, but it serves the purpose of getting long flower-stems, and many gardeners will be willing to practise it on a limited number of plants if long stalks are important to them. Supported by deeply-worked and moderately-manured soil, it will produce a useful supply of cutting material. The raising in boxes has the further advantage that it provides a stock of plants which may be very useful for putting out in beds and borders in April and May, with or without the subsequent removal of sublaterals. There are few flower-gardeners who do not appreciate such a reserve of Sweet Peas. It is only for a short period that the plants occupy frame or house room, for as soon as mild spring weather comes they are safe in the open air—indeed better there than under glass. The sowing mixture had better be plain loam and sand, the seeds barely covered with soil and only enough water given (especially in the cases of the whites and lavenders) to keep the soil moist, as a sodden condition is liable to be attended by rotting off.

When the plants are put out it is advisable to shake the soil from the roots, so that they come into immediate contact with the fresh soil of the bed or border; the plants will not flag and die, as advocates of retaining a ball of box-soil with the roots fear, if the border-soil is damp and if water is given in dry weather; and this, be it noted, would be needed even if a ball was kept. It is entirely a matter of taste and expediency whether the plants are put out in rows or clumps, but in either case nine inches from plant to plant is near enough. There is a strong case for clump-plantings in herbaceous borders, where the Sweet Peas do valuable supplementary work for several weeks in summer. And if a few seeds are scattered about the middle of the clump (taking care to choose varieties the colours of which will harmonise with those of the box-sown plants in case they are in bloom together)

there will be a succession which may link up June and October. While mixed rows of Sweet Peas have a charm of their own, it is unwise to mix colours indiscriminately in a clump. Nor should particular varieties be used without regard to the plants near them. Rather should due thought be given to associating colours which blend, as lavender and cream; lavender and salmon; rose and cream; red, white, and blue; Picotee-edge and pale pink, with or without cream, or lavender, or both; orange and cream. The difficulty of associating salmon with other colours is that the salmons are unable to stand sun, and for this reason should be put in a semi-shady position, as, for example, on the east side of a fair-sized tree, which breaks and diffuses the sun heat without causing dense shade. Clumps of salmon-coloured varieties grown to themselves can easily be shaded with butter muslin, under which the flowers assume an exquisite tone of colour.

Cutting is good in itself, because it helps the plants to throw up a long succession of flowers, especially if the gathering is done systematically before the flowers fade, as then there is no possibility of seed production. Early seeding is the worst of stem-shorteners, because it imposes a great strain upon the plants. If there are several plants of each variety growing together, each should be completely stripped of its flowers in turn, in preference to picking a few flowers from each plant simultaneously. There is no appreciable loss of collective beauty, and the complete rest which each plant gets in its turn benefits it and enables it to push a good fresh crop. If possible, the picking should be arranged so that each plant is stripped every two or three weeks.

But after all, continuous flowering and the maintenance of long stems turn in a great measure on the health and vigour of the plants. And here the character of the soil comes in. A heavy soil capable of retaining a good deal of moisture in summer will keep the plants going longer than a very light one in a dry season. In a wet season the light soil will be equal to the heavy, if properly manured, and may be even better, because of the plants keeping free from disease. Taking one season with another, a strong loam on medium clay will give better Sweet Peas than sand

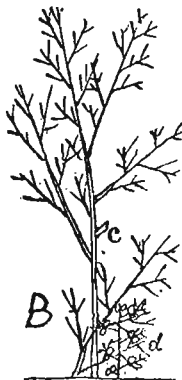
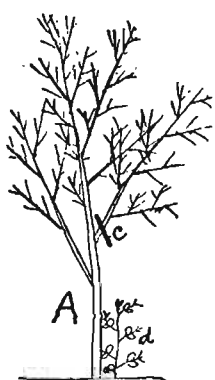
FOOD, FRUIT, AND FLOWERS

talk. The lighter the soil the more necessary it is to study the dressing carefully. A moderate dressing of decayed manure—two to three heaped barrowloads per square rod—should be base, and in most cases it is best applied after the principal rains are generally over, say, in the early part of March, dug in deeply. But it should be supported by a phosphatic fertiliser and preferably by two, one soluble and the other insoluble, such as superphosphate of lime and steamed bone flour. These may be supplied together in mixture, in the proportions of 1 lb. superphosphate and 1 lb. steamed bone flour per square rod, worked lightly into the top spit. If the supply of decayed manure is short, 1 lb. of sulphate of ammonia may be added to other fertilisers. In days of peace, sulphate of potash is available on sufficiently moderate terms to permit of adding 1 lb. per square rod to the three fertilisers already named, and its effects are sure to be beneficial. With respect to the use of lime and soot for Sweet Peas, it may be said in the first place that lime should never be used in mixture, unless they can be intimately turned well into the soil, because the lime releases ammonia in the soot, and if the ingredients were on the surface the ammonia would be dissipated in the air. But each has a special effect in particular circumstances. For instance, lime is especially valuable on most heavy soils, especially if they have been worked heavily for several seasons, and it generally does good by being applied to such ground in powder form at the rate of 2 stones per square rod at any time during winter. If the surface is very hard and hard to pulverise, ground limestone is best, applied to the surface early in the winter and left until spring. But previous to sowing with lime 14 lb. of basic slag per square rod should be applied, as this also helps to reduce lumpy ground and at the same time supplies phosphates. It should be remembered that lime is also present in builders' rubble, which is admirable for dusting. Lime is not generally called for on light land, especially on peaty soils. As regards soot, it does its best work on light soils and should be dusted on the surface at intervals as it becomes available, in winter and summer. Several light dustings are better than one very heavy one.

Those who rely on outdoor sowings for their Sweet Peas may try one in autumn if the soil is friable and the site well drained, because if all goes well the plants will give earlier flowers than the spring-sown. Mid-October is generally the best time. The seed should be covered about 2 inches deep, and the soil drawn up in a low ridge at each side of the young plants when they are 2 or 3 inches high. This treatment generally insures their passing the winter safely, although success is never certain in very cold or damp districts. With respect to the spring sowings, it is prudent to anticipate trouble from vermin by moistening the seeds in linseed oil and then rolling them in red lead before sowing. With respect to disease, one cannot promise immunity. Some authorities consider that the spores are transmitted with the seeds, and consequently it is a good plan to soak them for a few hours in a solution of 1 oz. permanganate of potash per gallon of water before sowing. It is doubtful whether anything can be done if the plant is struck just as it gets nicely into bloom, and it is wise to pull out and burn plants the buds and flowers of which crinkle up, while the tendrils become very abundant with a disposition to sterility, and the leaves get streaky. If, however, it is merely a case of mildew on the leaves—more common in culinary than in Sweet Peas—a spraying of 1 oz. liver of sulphur per 3 gallons of water may be tried, supplemented, if the weather is dry, first by a heavy watering and then by a soaking of liquid manure. Whenever there has been extensive disease among the plants, whether in the form of mildew or otherwise, the sticks should be burned when the crop has been cleared off, not kept for use again the following year.

There is no need to scramble after novelties of Sweet Peas, because there is an abundance of good standard varieties, which can be bought for a penny a packet upwards. The following selection will meet most needs: *Deep Reds* (crimson, carmine-cerise, and carmine-rose): Maud Holmes, Edith Taylor, John Ingman, and Rosabelle. *Light Reds* (not so vigorous in growth as the deep reds): Scarlet Emperor, Queen Alexandra. *Whites*: Florence Wright Spencer, Edna May, and Constance Hinton. *Orange and orange-pink*: Helen Lewis and President. *Salmon*: Barbara

and Henry Eckford. *Pink*: Elfrida Pearson and Hercules. *Cream-pink*: Mrs. Hallam and Mrs. Hugh Dickson. *Picotee-edged*: Mrs. C. W. Breadmore and Elsie Herbert. *Maroon*:



HOW TO STAKE SWEET PEAS

A, tall stick in position; *c*, branch taken out to put against young plant *d*; B, young plant, *d*, protected by branch of stick; *c*, stump of branch removed.

King Manoel and Nubian. *Lavender*: R. F. Felton and Nettie Jenkins. *Blue-flaked*: Bertie Usher. *Cream*: Clara Curtis. *Pink and white bicolor*: Mrs. Cuthbertson. *Rose-flaked*: Mrs. W. J. Unwin. Rings a yard or even two yards across, according to the area available, of such varieties as these, are a great embellishment to any type of border.

They are particularly beautiful in large borders in which pillar Roses are included, especially when

the colours are blended with the colours of the Roses. It is not, however, desirable to set them very far back in the border unless there are reserve plants in another place to cut from, because frequent journeys for gathering purposes would be inconvenient, especially in wet weather. Where constant picking is contemplated, it is convenient to have a row or a series of clumps beside a hard walk. It is better to pull the stems out of their sockets than to cut them, and it can be done quite easily while the sprays are young; when older they have a tighter grip, and do not part readily from the haulm.

Sweet Peas are just as happy on trellis work as they are on sticks, and this should be remembered by suburban gardeners, who often use wooden trellising for making divisions in their gardens. But the plants are not at home in narrow town gardens with high walls or fences, the haulm being weak and the flower-stems very short; they like a garden where there is a free play

of air. One does, however, occasionally see examples of successful culture in the forecourts of suburban streets, generally in fairly wide, airy streets and on a western aspect. In this and other gardening connections the white Everlasting Pea may be considered as an addition to the Sweet Peas, for it is a beautiful plant and comes true from seed. It may be added that Sweet Peas can be propagated by cuttings, but it is a method of increase which should never be resorted to. Probably harm has been done to the constitution of the plant through the adoption of this system by florists.

SWEET WILLIAMS

Time was when the only Sweet William which was considered of any importance in gardens was the florist's "Auricula-eyed"—a strain rather than a variety, inasmuch as there were certain differences of marking, but all of the composed and regular type which the florist with his delicious egotism calls "refined." These ringed flowers have given way in most gardens to self-coloured varieties, such as Carmine Beauty, Pink Beauty, and Scarlet Beauty—forms of dwarf habit, bushy, free-flowering, and sharp in colour. One fears that the old florist might not approve of them, but they are undoubtedly beautiful. These modern Sweet Williams are useful for forming clumps in the front area of mixed borders, and also for bedding, but as regards beds, one must remember that they do not fit in so conveniently between summer bedders as Wallflowers, their best flowering season being June. They come nearly but not quite true from seed; slight differences of tone are apt to show themselves. One sows these Sweet Williams in early summer with the Wallflowers, perhaps in a spare plot to transplant, perhaps where they are to flower with subsequent thinning. It should be borne in mind that they "move" quite readily even when well advanced in growth, provided they are not allowed to suffer from want of water. Like most of the Dianthus, they appreciate a lime-dressed or chalky soil.

TROPAEOLUMS (INCLUDING NASTURTIIUMS)

The numerous species in this genus do not provide us with many flower-garden plants, but what there are count. There is, for example, the glorious "flame Nasturtium," *T. speciosum*, a lovely Rambler for a damp district; the "Canary Creeper," *T. aduncum* (synonyms, *peregrinum* and *Canariense*) so admirable for fences and pillars; and above all, perhaps, *T. majus* and *T. minus*, those brilliant Peruvian annuals from which have sprung the tall and Tom Thumb Nasturtiums of our gardens. It is useless to speak of the home propagation of *speciosum*, because it will not thrive in the majority of gardens, although positively exuberant when suited; but the others are easily—almost too easily—increased by seeds. The *majus* or climbing Nasturtiums in particular seed so freely that the next year's crop of plants is sometimes embarrassing in its luxuriance. Everybody knows how freely they ramble over a frame of Pea sticks or other support, growing on strenuously right into the autumn and flowering as they grow. Lucifer and Spitfire are two of the brightest of the named varieties, but perhaps most growers use mixtures, although in the case of the Tom Thumbs, especially when wanted for bedding, named varieties are procured. Empress of India and King of Tom Thumbs are two of the best of the dwarf scarlets. Golden King is a good yellow companion. Ruby King and King Theodore give darker colours. Ladybird, Pearl, Rosy Morn, and Terra Cotta provide other shades. Lilliput is a still smaller class. But the greatest advance in dwarf Nasturtiums is found in the set with silver variegated leaves, sometimes offered as Queen of Tom Thumbs. They are prettier than the older Tom Thumbs and ought to be grown by everybody who loves Nasturtiums. Several colours are represented in the flowers.

TULIPS

See "Bulbs and other Bedding Plants."

VERBENAS

A comparison is often instituted between Verbenas and Phlox Drummondii, and a suggestion made that the advance of the

latter has been made at the expense of the Verbena. As a matter of fact, there is little room for comparison between the two plants and there has been no decline but rather an advance in the Verbena as a flower-garden plant. As a bedder it never enjoyed so much favour as it does to-day. Coming freely from seed sown under glass in February, growing cheerfully in cold frames when pricked off into boxes, extending very rapidly in almost any soil after a slow start, covering the soil with a close mat of deep green foliage, and producing a profusion of beautiful and fragrant flowers for three months, it has strong claims on the attention of amateurs, who are well advised to treat it as an annual. Mixed beds look so well that it is not necessary to plant out to colour; nevertheless, separate colours are available and seedlings come nearly true. Blue, rose, scarlet, violet, white, and pink (Miss Willmott for choice) are all offered. When mixtures are planted the seedlings can be put out 18 inches apart, because there will be no pulling out of unsuitable plants, which has to be allowed for by those who are bent upon having beds of one particular shade, and find, when flowering begins, that some plants are not perfectly true. The violet species *venosa* is a charming little plant and more hardy than the hybrids. It comes as readily from seed and makes a pretty edging.

WALLFLOWERS

We see in our consideration of bedding plants (*vide* Part III.) how Wallflowers may be used alone in groups of lawn beds or may be associated with Tulips and other plants. The increased range of colour in modern Wallflowers makes it possible to devise beautiful combinations which would not have been possible years ago and to this extent we are grateful to the hybridist, who has improved the Wallflower without impairing its constitution. In truth, it would be difficult to wear down the stamina of this rare old plant, because the natural method of propagation by seed is the only one available, the plant not lending itself to any vegetative process. It seeds freely, the seeds germinate very quickly, the growth is rapid in almost any soil, and the varieties

come quite true from seed, so that there is no excuse for seeking out any other method of increase. The great love of the plant for limestone shows itself in unusually swift development on chalky ground, so that the grower who has such soil must avoid early sowing, otherwise the plants will be so huge by autumn that the labour of planting out will be considerable. The early part of July is soon enough. On soils free from lime sowing may be done a month earlier. Large trade growers generally save themselves the trouble of planting out by sowing where the plants are to bloom, providing them with the space necessary for development by the simple process of thinning out, but this would not be feasible in a great many private gardens. The practice of sowing in rows a foot apart in some reserve corner, setting the seedlings out 9 inches apart when they begin to crowd, and finally planting out 12 to 18 inches apart in autumn, is more convenient. The culture is so simple that it is unnecessary to enlarge upon it.

The Wallflower is a perennial, not dying off after seeding in its second year; but in garden practice it is a biennial and it lends itself admirably to culture as such by reason of the fact that it attains to its greatest size and completes the best of its flowering between October and May inclusive. The great majority of herbaceous plants, both annual and perennial, are of course either non-existent or at their lowest stage during that period, and by filling beds and enlivening borders between the stages of the principal summer plants, the Wallflower performs a special and most valuable function. The popular singles of which a selection is made below are by far the most important for the garden, but the doubles should not be neglected. They are very useful for flowering in pots in cool houses in spring. Separate colours are available. The so-called "annual" Wallflowers are really biennials, but as they flower the same year from spring-sown seed the term is admissible. They are by no means so good as the perennials and serve no such distinct and valuable purpose. While there is no sweeter Wallflower than the Blood Red, it cannot be said that there is much difference in the varieties as far as fragrance is concerned; we may therefore assess merit by habit and colour in making the following selection: .

Blood Red.—Dwarf and compact; medium-sized flowers; deep red. Plant 1 foot apart.

Belvoir Castle.—Dwarf yellow, good habit; 1 foot apart.

Cloth of Gold.—Tall yellow, very vigorous, yet bushy in habit; flowers large; perhaps the best Wallflower grown; 1½ feet apart.

Fire King.—Orange, dwarf habit, but rather looser than the preceding; valuable owing to its distinct and beautiful colour; 1 foot apart.

Eastern Queen.—Salmon red, dwarf; 1 foot apart.

Golden Monarch.—Bright yellow, dwarf; 1 foot apart.

Golden Tom Thumb.—Deep yellow, dwarf; 1 foot apart.

Ivory White.—Ivory or dull cream; 1 foot apart.

Primrose Dame.—Primrose-coloured, dwarf; 1 foot apart.

Ruby Gem.—Nearly violet; 1 foot apart.

Vulcan.—Velvety red, dwarf; 1 foot apart.

With the Wallflowers sow the beautiful allied plant *Cheiranthus Allionii* for flowering the following year rather later than the Wallflowers. It is a low plant of neat, dwarf habit, with flowers of brilliant orange, which are "perpetual" for a considerable period. This beautiful plant is well adapted for the rock garden and is far superior to *Cheiranthus alpinus* and *C. Marshalli*, being much richer in colour. It is a biennial and should be sown afresh every year. The Wallflower is *Cheiranthus Cheiri*. The generic name appears to derive from its use as a "nosegay" or hand-borne flower; cf. *cheir*, hand; and *anthos*, flower. The popular name derives from the liking of the plant for limestone walls.

The tables of selected plants in Part III. should be considered in connection with the foregoing notes on popular and valuable flower-garden plants. Many good plants are included in the tables and brief descriptions of them and notes on their requirements given. A desire to economise space in the interests of food crops has led to the relegation to tables of some plants the merits of which would in other circumstances have justified greater prominence. Only a limited number could be selected for treatment in the present chapter.

FOOD, FRUIT, AND FLOWERS

CHAPTER VI

WALKS, STEPS, AND WALLS

ERE is a strong case in most gardens, and the strongest of all small gardens, for giving particular attention to the embellishment of the neighbourhood of walks, which of all parts of the den are the most frequented, yet often the most neglected. times when the principal areas of a garden are being devoted to food crops, there may be cases where the ornamental features may be restricted to the sides of walks, to the various flights of steps, which as a rule are connected with the walks, and to the walls. To consider the principal beauty of a garden in connection with its walks is to strike a firm, attractive note at the very entrance to the place, to maintain it up to the doors of the house, and to extend it to every section. It is, however, common to see the sides of walks left bare, or at the best to find them surrounded by lawns, the beds of which are grouped in a geometrical figure at the principal entrance to the house, instead of being spread, as they should be, along the sides of the lawn. Where, at the gates of a suburban, and indeed many rural gardens also, are found clumps of heavy, dull, and monotonous evergreens, there should be the first of a series of beds, or the beginning of a continuous flower border, in which pillar Roses, flowering shrubs, and annual and perennial herbaceous plants are tastefully grouped in accordance with the principles enunciated in Part III.; so that interest is awakened and beauty seen from the moment foot is set on the place until the portals of the house are entered. At the very outset the visitor feels then that he is coming into touch with people of taste and discernment, and if a walker's steps lag in spite of a conviction that a cordial welcome is imminent, it is a compliment to the host who is waiting to greet him. The adornment of walks will vary with their character and the use of the garden which they serve. What may be termed the entrance walk will probably be of gravel; it will be drained, made

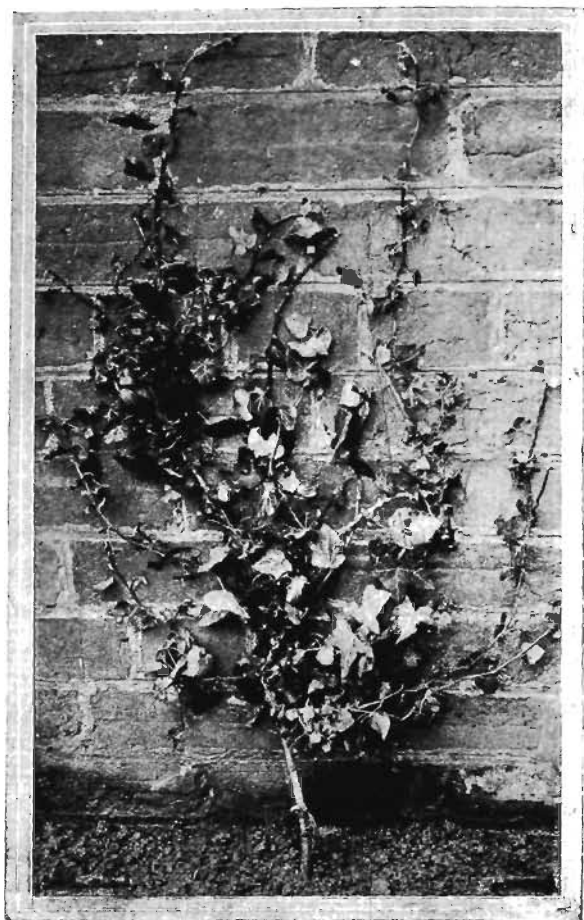
substantially with under rubble, and cambered in order to carry rain to the sides. Leading up to the front door, it will not pursue a series of zigzags nor double upon itself, although it may follow an even and graceful curve which lengthens it a little. The subordinate walks may be of ash or even turf. In the shrubbery, the woodland, and the wild garden they will certainly be either of grass or heath. And such organic differences of character call for differences of treatment.

Let it be said at once that the pergola or series of disconnected arches is for the inner and not for the entrance walk. In connection with the larger suburban houses, it sometimes happens, particularly in the neighbourhood of the large public commons, that there is a fair area of ground at the front of the house, without, however, permitting of a double pair of gates and a continuous "drive." In such places one often sees the main (perhaps indeed the only) walk covered with a pergola from gate to house door. There are grave disadvantages both in summer and winter. During the growing season constant watchfulness has to be observed in order to guard against ingrowing shoots becoming a nuisance, and in the case of strong-spined Roses even a danger; while in autumn, winter, and spring heavy drip makes itself obnoxious. It is not essential that the pergola should span a walk at all; it may be fixed beside the walk; but it is certainly seen to the best advantage when the area between the lines of supports is used as a walk, more particularly if it be grass.

The entrance walk, then, should have no covering. Even an arch is apt to be a nuisance. Pretty enough on a summer morning, it is an ugly obstacle to pass on a dark, wet, winter night, when clothing, umbrella, and temper are alike apt to become severely lacerated. The material for embellishment should be at the sides of the path only, not over it. If disconnected beds are preferred to a border, let them be interspersed with objects of interest which rise above the level of the ordinary bedding plants, such as a group of pillar Roses, a clump of Pampas Grass, a Bamboo, a conifer, a standard flowering tree, and a clump of Sweet Peas; and these objects will generally look best if given a small circular bed, which may at discretion be carpeted with Violas or other

low-growing plants. If the space available beside the walk is severely restricted, it may be necessary to abandon the idea both of large-plant borders and disconnected beds, but still something should be done, even if it be only a "ribbon border." This term terrifies conventional and unimaginative amateurs, because it conjures up something which they have been taught to loathe as garish and vulgar. But there are plants in the world besides scarlet Geraniums, yellow Calceolarias, and blue Lobelias. What is the matter with a spring ribbon border planted in three rows: at the back Tulip *Gesneriana lutea*, in the middle Wallflower Cloth of Gold, in the front a strain of orange, yellow, and cream seedling Polyanthus? In May it will be a dream of tender beauty. And in summer what error of taste is there in a ribbon border of (back) Pentstemons, (middle) Snapdragons, (front) *Koniga maritima*—a combination which will be beautiful for several months, and yet is only one of a dozen charming arrangements? Rock edgings, such as are seen at Aldenham and some other large places, also have strong claims, and there is no reason why, if a supply of small stones can be obtained, such edgings, ranging from 18 inches to 3 feet in width (for strict uniformity is undesirable), should not be made in thousands of small gardens. In a sense they are miniature rock gardens, with only one or two tiers of stones. Numerous small Alpines and bulbs (see Part III.) could be drawn upon to furnish them.

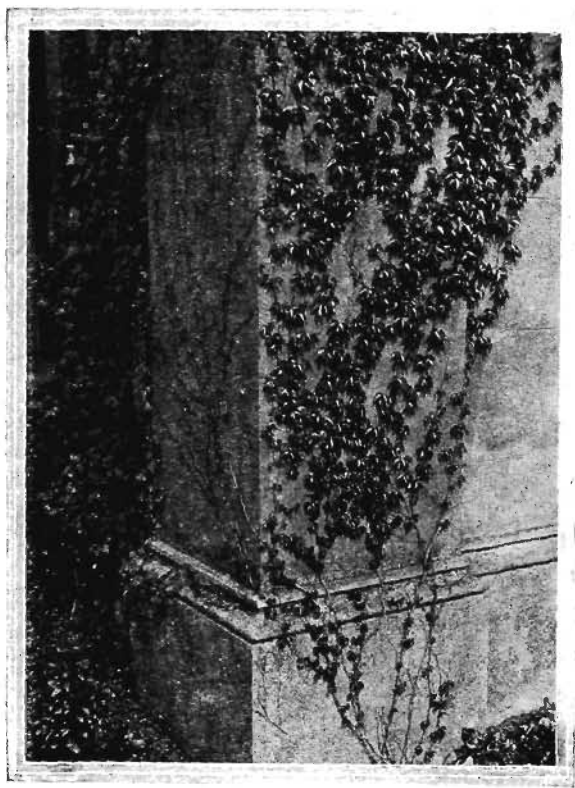
It only needs a little management, therefore, to provide the sides of the principal gravel walks with objects of beauty and interest which every entrant will enjoy and appreciate. And the inner grass walks, whether mown paths on the lawn proper or uncultivated paths leading to the wilderness, can as easily be given attractions. A combination of pergola and herbaceous border is perhaps the best for the shaven path; and certainly where there is plenty of room, the narrow borders which would suffice for the posts and plants of the pergola may be widened with advantage, so that they may not only provide for the requirements of the pergola, but for a host of non-climbing plants besides. The undressed path probably winds between shrubs and beneath trees, and a great many beautiful plants can be grown, as our list



Economical Gardening

To make a young Ivy plant go as far as possible, get a strong plant in a pot and spread the shoots on the wall as here shown.

(See page 98)



A hint about Virginian Creeper

The Virginian Creeper is one of the best of wall plants, but is only perfectly at home on a south wall. Note the difference in the vigour above. The front is a south aspect and the side a west aspect. All the shoots came from the same plant. It colours beautifully on a south wall.

(See page 98)

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of plants for shade in Part III. shows us. The path leading to water probably descends, and a case is presented for treatment with flat stones, beside and between which Saxifrages, Primulas rosea, japonica, and other moisture-loving species, Portulacas (for hot sites), and, at the lower parts, aquatics or semi-aquatics, such as Japanese Irises, Arrowheads, Ladies' smocks, and Nymphaeas, may be established.

There should be no kind of path in the garden which is not studied from the point of view suggested in this chapter, namely, that it is the paths of the garden which come most under the eye, one at this season, another at that, and consequently that one of the first objects of the gardener, after finding appropriate places for them, is to provide something suitable for their adornment.

Steps are naturally associated with paths, although there are cases in which they lead directly to open lawn. It is particularly in gardens on sloping ground, whether terraced or otherwise, that we find steps; in the flat garden there are few. Steps are of various kinds, from the elaborate flight of fine stone, broad and massive, with carven pillars and handsome balustrades, in the most important parts of large gardens, to the rough steps hewn in sloping ground and laid with stones or logs. In any and every case suitable ornamental plants can be found for them. Perhaps in the more elaborate flights the steps themselves will not be planted, the gardener contenting himself with filling the vases with Ivy-leaved or Zonal Geraniums and setting tubs of Agapanthus, Hydrangeas, or Agaves at the bottom. But in the case of less elaborate flights, plants will certainly be established between the steps, whether vases and tubs are used as well or not. Arabises, Alyssums, Aubrietias, Alpine and hybrid garden Pinks, Portulacas, Sun Roses, Cerastiums, and Saxifrages will provide abundance of material. Flights of steps thus treated add greatly to the charm of the garden, and in the case of flights connecting gravel walks, make a pleasant break in the lines of herbaceous borders or lawn beds. In the case of a flight of steps leading to turf, a flower bed may be provided near the bottom, and while not so close as to impede free movement, yet near enough to be under close

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scrutiny, for people do not, as a rule, come down garden steps as children come down house stairs, that is, either three steps at a time or in a slide down the banisters; but move sedately and contemplatively, with an eye tuned to beauty.

In many cases steps will practically form part of a rock garden, merging at the sides of the flight into the stones of the rockery. Such arrangements are beautiful near garden houses and in approaches to the water side.

Walls are as permanent as the principal walks and as conspicuous. Wall of house and wall of outbuilding, as well as terrace walls—all come boldly under the eye and all must therefore be furnished, in part perhaps with varieties of Ivy and Virginian Creeper, but also in part with beautiful flowering and berried shrubs, such as Ceanothuses, Buddleias, Clematises, Escallonias, Pyrus (Cydonia) Japonica, Cotoneasters, Crataeguses (Thorns, particularly *Pyracantha* or *Lalandii*), Jasmines, Honey-suckles, Magnolias (*grandiflora*, that fine evergreen, brooks no companion in its haughty vigour), *Calycanthus praecox* (synonym, *Chimonanthus fragrans*, deliciously perfumed), Kerrias, Roses, and Wistarias. Rougher walls, open-jointed or mortar-crumbled, double walls loosely built, and walls which sustain banks, may be set with things that require little moisture and enjoy lime, such as Wallflowers, Campanulas of the smaller species, Arabises, Aubrietias, *Alyssum saxatile*, Alpine Pinks such as *Dianthus deltoides*, encrusted Saxifrages, Sun Roses, and Sedums. Happy he who, in a moist district or in a sheltered, damp spot, can grow on one of his walls the beautiful *Tropeolum speciosum*—an object, when at home, of almost unequalled beauty.

The greatest of all tub plants for steps, terraces, and selected positions by water is certainly the *Hydrangea*, by reason of the facts that it makes a large and symmetrical bush well clothed with foliage, produces numerous large trusses of pink flowers which retain their freshness and beauty for many weeks, and is so nearly hardy that it can be wintered safely in an unheated shed. When the plants have grown out, little pruning is necessary and what is needed can be done when the old flower trusses are cut away in autumn. They thrive for many years without

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retubbing if they are top-dressed with fresh loam annually. On the iron-containing soils of Sussex Hydrangeas come blue when planted out in mild districts; the change from pink to blue can be effected under cultivation by using alum water, 1 ounce of alum per gallon of water used once a week. *H. paniculata grandiflora*, with white flowers, is also a good tub plant; it requires harder pruning than the pink.

CHAPTER VII

GARDEN HOUSES AND PERGOLAS

GARDEN houses, like dwelling houses, will differ in accordance with the means, requirements, and tastes of those who build them. We may suppose that if those economists are right who prophesy a good many years of impoverishment for the nation in the process of recuperation from the war, most of the dwellings which are built will be small ones. There will be a "levelling down" process, descending by steady gradations from the mansion to the cottage. People who have been accustomed to twenty-room, four-servant houses will drop to ten-room, two-servant houses, while old occupants of the ten-room type will rent or build an eight-room and manage with a maid-of-all-work. Small villa people will search for cottages which they can run entirely without domestic assistance and find that the supply is not anything like equal to the demand. Of course, there is another school of economists who contend that the next twenty years should see a condition of abounding prosperity, and if events prove that their view is the sounder the house movement will be in the reverse direction, that is, from small to large houses. In this case—one fears it is unlikely—the cottage pressure will be relieved, but if one thing seems more certain than another, it is that the number of suburban six-room and seven-room houses and of country cottages will be insufficient to meet the demands of the ensuing decade.

Assuming for the sake of safety a levelling-down rather than a levelling-up process, may not those of us who have to contemplate a descent in the dwelling scale take heart of grace from the thought of the garden house? Shall we not find at least equanimity in contemplation of the simple life? When plants begin to interest us as much as people used to do we shall not want to entertain, or be entertained, as often as we once did. We shall not want to call or be called upon in the same degree as of old. And it is surely rather on account of guests and visitors than on

ourselves that we want large houses and troops of servants. Perhaps this suggests a diminution in the social observances and in hospitality which awakens certain regrets. The graces and courtesies of country-house intercourse will never be lightly sacrificed, breathing, as they do, toleration, cordiality, and loyalty; and stimulating the faculties both of mind and body. If they were to be necessarily replaced by mere suburbanism, with its narrow outlook and cramping influences, it would indeed be a calamitous change. But our alternative is by no means that; it is a life of cheerful domestic activity brightened and enriched by flowers, sunshine, fresh air, and the pleasant companionship of books, with a few choice friendships among persons of similar tastes to our own.

Let us recall that holiday in a country cottage, where we occupied rooms half the size and a quarter the number of our own, our wants provided by one woman instead of by three or four servants. We left it with regret. We had a sense of reduced comfort and privacy when we got home, with domestics incessantly coming in and out; and a feeling of worry at the number and amount of the stream of bills. We felt a real leaning to cottage life, with its simplicity and economy. The garden, the lanes, the woods gave us a feeling of space and freedom wanting in the larger home premises. Generations long since dead and gone had made parks and coppices where we could go freely without payment. Beauty without cost was ours for the seeking. The feverish craving for amusement, for entertainment, for excitement, left us completely. Time passed only too quickly. Recalling this, need we sorrow at the thought of living permanently in a smaller place, providing it is one where we can create new interests. And can we not reconcile ourselves to it the more readily by thinking of the air, the space, the freedom, the perfume, of the garden and the countryside? What is the loss of a room or two when we can fix seats and form arbours in spots made cheerful by the bright hues and sweet breath of the flowers?

If the garden house is indeed no more than an arbour, it will still become dear to us through the fragrance and sunshine of many a long summer day. It shall be "rustic" in material and

construction, and it shall be placed in a position where it not only gets abundant sunshine, but also commands a beautiful view, whether of externals in the shape of hill and forest or of internals in the form of border and lawn. It may be in the angles of two walls where paths intersect, or it may be at the end of a favourite walk. It will be creeper-covered and it will be adequately seated, so that it may really serve the purposes of a room. The ingenious specialist-builder of summerhouses now gives us the option of a house which is built on a pivoting base, so that we can at will swing it from one aspect to another in order to get more or less sun and wind. This creates a creeper difficulty, but it can be got over by providing the plants with a separate supporting framework. Or smaller plants can be grown in baskets or pots fitted into wire cages for attachment to the structure, so that they move with it. By one means or another flowers will certainly be provided.

The garden house may, however, be something more than a rustic arbour. It may be a substantial structure framed in stout unbarked timber, thatched, and fitted with casement windows; the front will be quite open. It will be a building with some pretensions to architecture. With a background of trees there will be a welcome suggestion of coolness and shade. If on sloping ground a stone stairway with surrounding rockwork will give opportunities for establishing pretty Alpines. If on the level, some beautiful and striking object, such as a special shrub, a pool with or without fountain, or a bed, should be placed near. It is only perhaps in large places that there is a case for a solidly built stone loggia, stoutly pillared and roofed. But where such an erection is made the surroundings will be in keeping: tiled path, stone steps, creepers on the walls.

There may be economy in house-building if a roomy garden house is made. True it will not be suitable for use at certain periods, but it is mainly in hot weather that a small dwelling house is at a disadvantage, and it is precisely in such weather that the garden house is most suitable. In cold wintry weather the small dwelling is snug and comfortable where, in summer, it might be oppressive. A small dwelling house and a spacious

arbour—such is the combination which makes for the maximum of benefit and enjoyment with the minimum of expense. Think of it, men of fixed incomes who feel so severely the pressure of heavy taxation, for it may be the solution of your many difficulties and the solvent for your anxieties.

There is no necessary connection between the garden house and the pergola, except, perhaps, that the class of material which suits the one may also suit the other and by presenting the opportunity for buying in quantity secure lower rates. Thus, the "rustic" timber which the local builder or carpenter gets from the woods may serve both for arbour and pergola. We see pergolas constructed entirely of such timber, the stouter portions being used for the uprights and the lighter for the top pieces. And these uprights, set perhaps 10 feet apart both longitudinally and laterally, will be connected in each direction, or possibly with the longitudinal pieces straight (as indeed they must be) and the lateral pieces crossed diagonally. Those who like frequent openings will probably give each pair of poles in the lines a small bed, turfing the alternate spaces; those who do not will make a continuous border from end to end. As we saw in our references to walks in the preceding chapter, the pergola may span a grass walk, or gravel, or no walk at all. Or broken flagstones may be laid irregularly, with or without small plants between. Or yet again it may be paved closely with whole flags, so that it may provide comfortable walking in wet weather. The one thing that it should not do is to span the path which is the only approach to the front door of many houses, because it will be tiresome in wet, windy weather, and also in the dark.

The climbing plants will comprise Roses, Clematises, Jasmines, Honeysuckles, special Vines and Ivies, and such other plants as the owner likes. The bed and border plants will include selections from those described in Part III.

If the pergola has stone pillars the task of clothing them will be somewhat more exacting than if the supports are of timber. And although stone pillars are the most lasting, well-matured timber the base of which is charred or pickled will last many years.

CHAPTER VIII

SHADE AND WILDERNESS

FEW food crops will thrive in shade, and it would be waste alike of good seed and costly labour to sow the principal vegetables in places where they would be stinted of sunlight. It is the same with fruit. Celery and Rhubarb will grow in moderate shade, Raspberries and Blackberries will tolerate a certain degree without becoming entirely barren, but in the main, food crops need sun. Amateur gardeners must not be misled by what they sometimes hear of fruit farmers growing Potatoes and green vegetables between fruit trees. If this gives the impression that Potatoes and Brussels Sprouts may be profitably grown in shade it is unfortunate. The shade even of standard fruit trees spaced in lines 20 to 30 feet apart is not the shade of woodland. The trees are rarely more than 20 feet high, generally much less, and the heads are kept thin in order that light and air can get free access to the inner branches; consequently there is rather chequered light than shade. Such a condition is compatible with a good deal of sunlight, were it not so the fruit trees themselves would not succeed.

What, then, can we do in shady gardens other than put in ornamental plants? True we can reduce shade by reducing timber, and there are doubtless cases where the labour and cost involved would be justified; but it is not light work and it cannot often be done without getting skilled help from outside. The handy amateur can sometimes rise to the erection of a conservatory or a summerhouse, but only in rare cases to the felling and clearance of timber. One feels convinced that there are thousands of gardens partially or wholly in shade where the purchase of sufficient sunlight to cultivate Cabbages would be bad economy, because the area gained would be out of proportion to the cost of obtaining it. Extension of kitchen garden does not mean better crops unless there is sufficient labour and enough fertile soil to cultivate the ground to advantage. Shade can sometimes

be reduced without sacrifice to the amenities of a garden by lopping certain branches. It is one thing to fell a large tree; it is quite another to trim it. Pruning may improve a timber tree as much as it does a fruit tree; and if the pruning not only improves the shape of the tree but admits more light to the garden, the operation should be performed at the earliest possible moment. It is frequently advisable to prune Elms, because the branches are sometimes cast. This point is apt to be overlooked by people who lament the "mutilation" of public trees. Admittedly Elms which have been severely pruned have a hacked and stumpy look, but they furnish again with time and meanwhile cause no catastrophes.

And still, with all reasonable felling and pruning done, there is shade in the garden. Shall we lament it? Should we not rather rejoice in it? It is ill after toiling for hours in the burning sunshine of summer to have no shady spot in which to seek rest and refreshment, alike of body and spirit. Even the field-worker, humblest of all labourers, is able to find on woodland marge or in hedge's lee the coolness which means so much when the hour for the frugal meal arrives. The garden in which one has to make the best of the meagre shade of a Rose arch has to be fled when the heat of an unclouded July day has set its fierce hand upon the countryside. For many golden hours of summer it becomes uninhabitable and that at the period when it is wanted most. How often the first spell of hot summer weather reveals a weakness in a new garden which, with its borders and lawns and arches, seemed so full of complete and perfect promise in the spring! There are moments when the disillusioned maker feels that he would sacrifice the whole of it in exchange for a simple woodland glade, where there is nothing but leaf and bird song.

Let us then plant not only for food but also for shade. There are sites where trees are called for, as there are sites for kitchen gardens and for orchards. We can often so place trees that they will present a "garden" side and a "wilderness" side. Or we might put it that they give a front and a back—a front for lawn and cool seat at resting, reading, and perhaps eating time; a back for winding shady walk with shrubs and undergrowth and

naturalised plants. It is right and well to think of both when making gardens, especially if the area of the garden is somewhat out of proportion to the means for maintaining it in full "express" or intensive cultivation. Large kitchen and fruit gardens, extensive beds and lawns, and herbaceous borders mean much labour, which at particular periods of the year must be incessant. The shade garden can be carpeted with Ivy, Periwinkle, Anemone, and Lily of the Valley, the wilderness can be made to smile with Spiraeas, Foxgloves, Epimediums, Plantain Lilies, Snakesheads, Violets, Lilies, Hellebores, Hypericums, Daffodils, Primroses, Wood Hyacinths, Solomon's Seal, Wood Lilies, Veronicas, and the many other beautiful plants of which a detailed list is given in Part III. And this portion of the garden need not be meticulously dressed and weeded and watered and pruned. In its earliest years there will have to be a certain amount of observation and authority, if only to keep in subjection such strong coarse weeds as might prevent the selected plants from establishing themselves; but once these have formed their colonies and are capable of looking after themselves there will be little call for labour. On the contrary, the woodland and the wilderness will be places of repose and rest.

It is not in large places only that wilderness may be formed. There is an aspect of it which should appeal to owners of small gardens, which are so often merely glare, with every outline marked like a hedged field. It is that shade and wilderness rob the garden of its stiffness, disguise its rawness, and have at least the appearance of extending its space. And this is more than pretence in the sense of providing greater length of path and larger variety of feature. Garden space should not be measured in "feet super," but in the visions which meet and engage the eye. Judged from this standpoint, wilderness is supreme. Because it cannot be measured, it gives the impression of boundlessness. Because it can only be seen in parts, it appears to be a greater whole. It is part of the woodland, which means that it is nearer nature than the most cunningly contrived garden. The birds which it harbours will harass the kitchen garden and yet do no greater a sum of mischief, given reasonable protective

measures, than accrues in the formal garden; for birds have wings and sharp eyes withal, which between them guide feathered marauders to any place where food exists, whether it contains hedges and trees or not. But the birds of the home woodland and wilderness become home birds and are made as welcome as the cats and dogs and horses. What they take in seedlings they return in song, nay, in many a garden the score is against them, for the gardener takes care to keep them off the plants he prizes, while enjoying all the sweets they have to give. And the outwitted birds sing on.

The flowers of the wilderness have but to get established to appear regularly in their seasons. When Meadowsweet and wild Parsley and Foxglove and Hypericum are in full riot it seems hopeless to expect that the lowly Violet, Lily of the Valley, and Anemone can maintain existence, but with spring they are found again, vigorous and cheerful. All these little plants like to get into colonies—indeed, odd plants put in here and there instead of in a group together have but a poor chance of life. If the nucleus of a colony can be planted in autumn, when the coarser plants are down for the winter, it will have several months in which to bed itself in and start the course of self-propagation that ever afterwards will keep it secure, even when overgrown in summer. Seeds of the bigger things may be flung broadcast in early summer, to spring and grow without further care from the gardener. Those which find a congenial resting-place will germinate and grow in their own good time. Thereafter the gardener will learn to look out for the Violets in this corner, the Solomon's Seal in that, the clumps of Honesty here, the scarlet seed-heads of the Gladwin yonder. Successive generations of Foxgloves will flower and seed and die, flower, seed, and die again. Plants not suited by the place will make feeble attempts to grow and then fail, disappear, and be forgotten. In the remote depths the paths will be scarcely wider than rabbit-runs, and like them they will wind and cross and double, turning particularly at groups or belts of shrubs, as of *Berberis Aquifolium*, *Aucubas*, *Dogwood*, *Tutsan*, *Butcher's Broom*, and *Rhododendron*, indeed, the best point for a path to double is that at which its continua-

tion is obscured by some high, dense object, such as a group of evergreens.

The exposed herbaceous border has its shade, which is, however, different from the shade of woodland and coppice. It is not and cannot be dense, because there are no large trees and thick masses of undergrowth. Such trees as there are consist of small standards like Thorns, Laburnums, and perhaps Apples. The shrubs are probably flowering kinds, grown thinly and pruned for the sake of getting bountiful blossom. But limited though the amount of shade is, it helps many beautiful plants which are sensitive of unbroken sunheat, as Hepaticas and some other Anemones, including *angulosa*, Woodruff (*Asperula*), *Asphodel*, the *Astilbes* (*Spiraeas*), *Astrantia major*, the hardy *Cyclamens*, the *Cardamines*, including the Lady's Smock, the lovely *Dielytra* (*Dicentra*) *spectabilis*, which should have shelter from cold wind as well as some shade, the American Cowslips, the graceful *Epimediums*, the Meadow Geranium (*pratense*), the Winter Aconites, the Geums, Hellebores, many *Liliums*, the glorious Poppywort *Meconopsis Wallichii*, *Mimuluses*, *Omphalodes verna*, Primroses, the Bloodroot (*Sanguinaria canadensis*), numerous Saxifrages, the Foam Flower (*Tiarella cordifolia*), and many other good plants of which a considerable selection is given in Part III. So simple a provision as a site on the north side of a Rose pillar makes a great difference to these susceptible things. They grow vigorously when without it they would be weak and poorly flowered. Happily, they are nearly all inexpensive, and can therefore be planted in quantity.

CHAPTER IX

WATER AND THE SUNK GARDEN

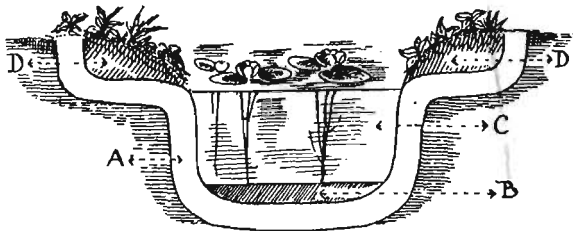
THE sternest advocate for the conversion of all ornamental features of gardens into food-producing areas is given pause by water, whether in the form of lake, pool, or sunk garden. Difficulties of lawn and shrubbery he can surmount—or at all events advise others to surmount, which is his real object—by the simple use of spade and axe; but the drainage and filling-up of water beds constitute a problem before which even the extremest patriot retires baffled. The garden-lover who may be harassed by doubt as to whether he is doing right in maintaining herbaceous borders and Rosebeds, in spite of everything of a reassuring nature which is said in these pages, may therefore feel easy in mind and conscience respecting at least one feature of his operations. Here, literally, is the time-honoured “last ditch.” With the same firmness that the soldier clings to his sodden trench, the gardener may glue himself to his bog. Here penitential tears need not flow, for no lachrymal shell scattering the noxious fumes of “waste” and “luxury” will penetrate. Just as, in our capacity as islanders, we think of the sea as England’s barrier against conquest, so, as gardeners, we may think of our pools and streams as a protection from those raids on the part of well-meaning sharpshooters which often make us so uncomfortable, for we too are patriotic, and we should hate to feel that in the pursuit of our hobby we were robbing our country of the smallest particle of sustenance and strength. If the time ever came when our land was driven to the last extremes for food, we would gladly sacrifice every foot of the beautiful sward which it has been the labour of years to obtain, instantly expel every root, whether of herbaceous plant or shrub, readily submit treasured Rose arches to the flames one by one until all were gone. And bitter though the ordeal would be we should not despair, with the solace of our water plants to sustain us, for they also are beautiful. In the summer at all events we should retain equanimity, even if in the

winter, when interest in aquatic plants is often chilled by snow and ice, we might be tempted to repine.

By the very nature of things, water plants and sunk gardens are the children of the summer. It is then that the green reeds rustle softly above the water, sending flickering shadows across its sunlit surface, that the broad leaves of the Lilies form a dense cool carpet for the light-footed tread of the flower shoon, that the water explodes its myriads of tiny shells under the charges of the sunrays, and that the gnats and midges and dragon flies flit and hover and dart in tireless activity under the stimulus of the noontide heat. In winter insect life is still, the *Nymphaeas* lie dormant at the bottom of the icebound water, and the reeds shiver in brown and arid melancholy under the searching gusts of the frost-laden wind.

Water gardens are of several kinds. There is the simple pool made by the adaptation of a depression on the lawn which is difficult to mow in summer and is boggy in winter. Quite a series of charming water beds can be made on falling ground by carrying the rain water from a portion of the house or garage roofs to an upper pool and letting the overflow from it feed the rest through trapped drainpipes. These pipes can be carried down from a second to a third pool, and even from a third to a fourth, until the lowest level of the garden is reached. But one such pool is better than none at all. If the bank which overhangs it is steep one would prefer to terrace it with stones and plant it with Alpines (see Part III.) than to put it in turf, because the grass would be slippery in wet weather and at all times bothersome to mow. If the pool is concreted (and it can be done at home at slight expense by fixing a framework of battens 2 inches from the sides, after concreting the bottom 2 inches thick, filling up the space with concrete and leaving it to set, then removing the battens) everything is under control. The pool can be drained at will, the plants removed, the bottom cleaned, and the plants replaced or fresh ones put in. And with the concrete one is sure that the pool is watertight, always provided that the bottom and sides are quite hard when the casing is applied, so that there can be no shrinking. By carrying the concrete a few inches above the surface of the

water and finishing it off on a broad "rim," connection can be made with a tier of stones, loose, but firmly set round the edge of the pool. Here can be housed the Water Forget-me-not (*Myosotis palustris*) and other lovely things. Three feet as a maximum and 2 feet as a minimum will suffice for the depth of the water. This type of water garden is a simple adaptation of existing conditions. It is made in a few hours with spade and trowel, first shaping and ramming, then lining with concrete and planting, and it is done at an expenditure of a few shillings. The *Nymphaeas* will be spaced over the bottom, the roots perhaps loosely tied in soil with a casing of moss to keep all together, and the masses kept



SECTION OF A WATER LILY POND

A, concrete; B, soil at bottom of pond; C, water; D D, soil on "shelves" of sides.

in place with a few heavy stones. Thus easily and inexpensively is an awkward pit or depression turned into a beautiful and interesting object. The *Nymphaeas* will be of such beautiful varieties as *alba* (for cold places), *Marliacea albida*, *Marliacea Chromatella*, *James Brydon*, *Laydekeri rosea*, and *William Doogue*—varieties which embrace white, yellow, rose, and crimson and are large-flowered. *Nymphaea alba* is the hardiest, but the others will be safe in most gardens, and year after year will throw up to the surface in spring their thick succulent shoots and leaves, through which the exquisite flowers peep in shy maidenly beauty.

In quite shallow water the aquatic hawthorn, *Aponogeton distachyon*, should be grown, for it is both beautiful and sweet; and there are many other charming water plants.

It may be that the approach to the site of the pool, while not so steep as to cause great inconvenience in mowing, yet lends itself better to treatment with stones than with turf, in which case a rough path or causeway of flattish stones, if available at no great cost, may be laid. Groups of such moisture-loving plants as are named on another page, to which the general index affords a ready guide, may be set beside the path and on the outskirts of the water.

The large sunk garden which is entirely artificial and can only be made at considerable expense is a different proposition. It is such a feature as we sometimes find in the grounds of a large domain. We come upon it when we are crossing the great lawn. Below we see a wide path, a broad margin of grass set with conifers, and then the water—almost of the area of a lake. Broad as the expanse is, it is covered in summer with glorious masses of Water Lilies. Or the sunk garden may be surrounded by clipped hedges and the water bordered with low shrubs. In a selected place may be seen a large stone vase, or there may be tubs of Hydrangeas. There is no case for making so considerable and costly a feature as this in times of stress; on the other hand, there is equally no case for doing away with existing ones, because there would be no gain in ground to justify the expense that would be involved. The existing sunk garden will remain a sunk garden in war and in peace. Undisturbed, too, will remain the sluggish stream or backwater, the swampy margins of which we sometimes find planted with strong Reeds, ornamental Rhubarb (Rheum), Bulrushes, Japanese Irises, and other bold, moisture-loving things, the water itself alive with Nymphaeas, the banks clothed with Conifers and Willows. The rustic bridge crossing such a stream will be a pleasant lingering-place for the contemplative Nature-lover, especially on those burning summer days when a cool ooze smell comes up from the sedgy edges where the water-rats pursue each other. For this is the chosen abode of the spirit of the Nature-garden, where peace and poetry reign—where, cradled long years ago by the gardener's hand, beauty has since found her throne without his further intrusion.

PART II
THE GARDEN OF UTILITY

PART II

THE GARDEN OF UTILITY

CHAPTER X

FOOD FROM THE HOME GARDEN

YARD for yard, the garden can be made to yield twice as much food as the farm. It can produce double the crop of Potatoes per square rod. It can give thrice the yield of Peas and Beans. And while doing this it can also do a great deal more—it can supply eggs and pig-meat.

When the gardener reads that the national Potato crop is only $5\frac{1}{2}$ tons per acre he rubs his eyes; he does not realise that the statistical department only deals with the produce of the farm and ignores the garden. With his more intensive culture he is convinced that he is producing an average of at least $11\frac{1}{2}$ tons, and very likely he is. At all events, it is quite safe to say that he averages much more than $5\frac{1}{2}$ tons of good table Potatoes, and still has a large quantity of smalls suitable for pig food.

It would be interesting and instructive to have statistics of garden as well as of farm produce, but let us be merciful to the Board of Agriculture, and consider what an appalling mass of work would fall upon it in distributing, collecting, and analysing the millions of forms which would be required in order to make tables of the yields of all the important vegetables and fruits grown in all the gardens of the United Kingdom. It would have to treble its staff, commandeer hotels for offices, and do other highly expensive things. Statistically, Horticulture does not exist, and is likely to remain non-existent, but let no one suppose in consequence that it is a mere side item of Agriculture, like

dairy-farming. It is a great industry and pastime in itself, with well-marked individual features, and it makes an appreciable addition to the national supply of food. Because gardening is for many a diversion it is not less industrial, in so far as it concerns itself with food crops. Every particle of food in the hobbyist's garden is still food; and it is produced on the most economical terms, because the time devoted to it is not time taken from trade or business, but from some other form of recreation (such as games) which is unproductive. It is because of this that the item "salaries and wages" need not appear on the profit-and-loss account of the amateur gardener, and its omission puts him in a favourable position for showing a profit on his operations. And gardening is sound economy for another important reason—it inculcates a liking for simple habits. The gardener finds abundant distraction in his plants, and has no craving for that of the theatre and restaurant. The form of entertainment which he enjoys the most lies within a few yards of his own door. But he is neither prig nor puritan; he is simply one who has learned how full of interest, variety, charm, and fascination is the good brown earth with its manifold products; and his heart and mind and sympathies expand rather than contract. There is food—good, wholesome food and plenty of it—in the well-managed, well-balanced home garden. Flowers, no doubt, as is both right and proper, but also abundant and palatable food.

The family of moderate size which is content with a simple dietary need spend but little on food if there is a garden of an eighth of an acre or more, for it will yield abundance of vegetables for every day in the year as well as maintain a good head of poultry, rabbits, and a pair of pigs. Bread will have to be bought, and sugar, and butcher's meat; but fruit can be produced at home. A quarter of an acre will give a handsome surplus, which, disposed of to advantage, will go far to pay for the necessary extraneous articles.

The areas named are so small that many who have not had experience of the yield of a little plot may find it difficult to realise that it can be so productive. Well, take Potatoes as an example. It is quite easy to grow 730 lb. suitable for table, that

is, 2 lb. for every day in the year, from 7 square rods of ground; and there will be a quantity left for the pig. In the winter the same piece of ground will yield Brussels Sprouts, Savoys, Broccoli, and other green vegetables. And nearly two-thirds of the area (of a 20-rod plot) remain for other things.

Those who measure soil-productiveness by the standard of the farm are apt to forget that the gardener can bring a concentration of influences to bear on yield—handwork, manure, water—such as are entirely beyond the powers of the farmer. The gardener is to a far smaller degree the victim of the weather than the farmer. He can deal more effectually with insect and fungoid attacks. He can do more to ward off the adverse influences of frost.

The reason why gardens do not yield what they might is that the cultivator does not give them sufficient preparation. Poor soil is not in itself fatal to high productiveness. The crops on the deep bed of rich alluvial soil in the river valley often sustain severe injury from frost, and the Potatoes grown thereon suffer badly from disease, when those on the thinner soil of the hillside escape. Ways and means of making poor soil fertile are at the command of the gardener. And in this matter it is not altogether to his disadvantage if he lacks the orthodox professional training, because he can learn its virtues without becoming obsessed of a rote which circumstances may not favour. The average professional gardener disdains the aid of poultry, yet under proper restrictions it may be introduced to the garden with benefit, saving manure, saving labour, and adding to the food yield. The same remarks apply to rabbits.

In cultivating the home garden for food, the worker must use his wits as well as his hands. He must not tie himself down to what is generally classified as gardening. If the garden will sustain birds and animals economically as well as fruit and vegetables, let birds and animals be introduced. And so far as poultry is concerned, let a wider view be taken than the cooping up of half a dozen meagre birds in a small pen. Let the fowls be actually in the garden, playing a part in the rotations. They will, of course, be kept in a reservation, but not always in the

same one. They will cover the whole of the uncropped ground in stages, just as the principal crop sections do, eating grubs, manuring it, and improving it for crops.

In cropping the home garden with food-production as the main object, it is desirable to form a clear idea of its status—whether it is to be a market garden with the home use of the unsold produce, or a household garden with sale for the surplus. For there is a wide difference between the two. It is very easy to learn how to grow a useful supply of food, and it may be possible to sell the surplus, but it is very difficult to conduct a market garden profitably and to use the residue economically in the household. Market gardening is one of those things which cannot be done by halves and there are few things more dangerous for a man of limited means than to rush into market-growing on the strength of a sensational return for one crop. One may make half a guinea from a dozen Tomato plants, but that does not prove that one can rely on making fifty guineas from a hundred dozens. One may make 10s. from a rod of Potatoes, but that is not to say that one can be sure of making £80 from an acre.

Teachers of gardening get accustomed to two questions: What crops can I grow? How should I treat my ground? And often a reply is expected in a few sentences. It is natural and right that in these days information should be sought on what crops should be grown in small gardens, but the subject is one that can only be dealt with adequately in a systematic and detailed way. Both crops and treatment of soil depend to a considerable extent on the character of the natural soil of the garden. Is it clay? Then it will suit Celery, Cabbages, and other greens, Leeks, Onions, Peas, Beans, Lettuces, Rhubarb, and Vegetable Marrows. It will give satisfactory crops of Potatoes if the soil is made friable, always provided that the site is not low and damp. It will suit a number of the best Apples, nearly all Pears, Plums, Raspberries, and Black Currants, and selected Strawberries and Raspberries. Is it sand? Then it will give Potatoes of particularly good flavour, and free from disease, but not heavy crops. It will suit Carrots and Parsnips. It will not yield Peas, Beans, Onions, Leeks, Beetroot, Celery, Greens, and the principal fruits satisfactorily unless it is heavily

manured. Is it that mixture of clay and sand which the gardener calls loam? Then with proper tillage it will suit nearly all the vegetables and fruits. Happy the gardener who has a loamy soil, for it is fertile, and at the same time friable. A loam leaning rather to sand than to clay is the best of food soils for market gardening, for with many of the robust virtues of clay it remains easier to work and gives earlier crops. Wet London clay which has not been "gardened" lies in large lumps when turned by the spade; loam breaks into smaller or quite small lumps according as it leans to clay or sand; sand falls in tiny particles; and this behaviour of the different types of soil affords a rough-and-ready guide to those who do not recognise them at sight.

Workers on the southern downlands are familiar with another class of soil—chalk or limestone. It has practically the same virtues and defects as sand, but it gains warmth slower in spring and holds it longer in autumn. Alluvial soils wherein one finds several feet of friable loam over limestone, as along considerable stretches of the Dover Road in Kent, are almost ideal; note the noble Cherries, the splendid Apples and Pears, the early Gooseberries, and withal the bountiful crops of Potatoes and other vegetables which they yield.

Colour alone is not a sure clue to the merit of a soil, especially in the neighbourhood of large towns, in spite of the general belief that a dark soil is always fertile. Town soils may be black, yet impoverished, because they have sustained the deposits of thousands of chimneys and have been stinted of manure. The dark hue of cultivated country soil is either the natural tint of clay and heavy loam, or the artificial shade of humus, created by regular manuring. Thus soil that is "light" in texture and weight may be dark in colour owing to an accumulation of humus.

Let us not fear soils of the character of the typical London clay, for they are full of possibilities. When trained and controlled they are good and faithful servants. There are stages in which aching muscles testify to their toughness, but they pass and are forgotten in the pride and joy which bountiful crops bring in their train. Hard work in their crude state and high satisfaction in their finished condition are the outstanding

features of these clays. One finds that in wet spells they have often to be left alone even when one is eager for work; but in dry periods they save labour in watering by their adhesive powers. As we shall see in the records of the War Garden which follow, they want their own methods of treatment and system of manuring, but that is where knowledge and skill come.

But if early crops of the standard vegetables are wanted, as, for example, in market culture, the light, sandy loam is better than the clay, because warmer and more friable. It is accessible immediately after spells of heavy rain. It is easily worked and can therefore be brought into sowing condition quicker. In a word, it is a "responsive" soil. But it needs more manure than clay, not only to build up the spring fertility, but also to use for "mulching" in dry weather with a view to conserving moisture and saving the necessity for constant watering. Although the French gardener's soil is dark—dark with accumulations of manure—it is light in texture and very friable, being, indeed, almost entirely composed of humus.

Soil which is light in texture is suitable for Intensive Culture, because the early vegetables can be cleared off earlier than from heavy land and because the crops do not grow so bulky. This is especially the case where the aspect is southerly. When the reader hears of numerous small crops being got in one season he may assume that the soil is light and friable, not heavy and stiff. With equal skill, the sum of produce from light and heavy soil is likely to be about the same—from the former a larger number of moderate crops, from the latter a smaller number of abundant yields. On all this and much more we shall hold commune in the chapters which follow.

What crops can we grow? We can grow every crop which we resolve to grow, but we cannot grow all with equal ease and success in every kind of soil; and if we want to sell we shall have to exercise restraint. It is rarely possible to sell to advantage surpluses of Parsnips, Beetroot, Turnips, late Potatoes, late Cabbages, Brussels Sprouts and other greens, Leeks, late Peas, and broad Beans. It is more easy to sell French and runner Beans, Lettuces, Radishes, early Cabbages, early Cauliflowers, early

Potatoes, young Onions, and Tomatoes profitably; and all these are welcome on the table at home. In small cultures, crops of inconsiderable weight and bulk which occupy the ground for a short period only, and can therefore be "turned over" at a minimum of labour and expense, pay best. Let us form a definite idea of the principal object, so that we may not fall between two stools. Does the home stand first? Then the course is clear—it is to proceed forthwith to the formation of a scheme that shall produce the longest possible supply of the vegetables most esteemed. Amongst the indispensables there will probably in most households be placed Potatoes, kidney Beans, Peas, early Cabbages, Cauliflowers, early Carrots, Celery, Lettuces, Mustard and Cress, Onions, Radishes, and Brussels Sprouts. How these things can be interwoven with each other we shall see. In a second class will probably be placed Broad Beans, Beetroot, Rhubarb, Parsnips, Broccoli, Asparagus, Savoys, Spinach, Tomatoes, Turnips, and Vegetable Marrows. In the third class will be put winter Kale, summer Cabbages, Leeks, and Seakale. This classification does not necessarily indicate the tastes of the author, but is an attempt to estimate the preferences of the majority. But whether the various items are valued as first, second, or third class, suggestions for dealing with them as factors in cropping schemes shall be given.

The reader may ask for guidance as to the best time for beginning operations.

The best period to start vegetable growing is the period when most people leave off, namely, autumn, because any rubbish on the ground can be burned, manure and leaf-mould can be collected, digging and trenching can be done, Peas, Broad Beans, Spinach, and Turnips can be sown, Cabbages, Lettuces, winter greens, Onions, and fruit can be planted. All this means a considerable contribution to the success of the coming year. The soil-preparation can be pursued as the weather permits throughout the winter, but not the sowing and planting. The amateurish method of leaving everything till Easter cannot be recommended. Moonlight nights in winter should be made use of if the cultivator is in great straits for time during daylight.

The next best time to autumn in the case of most soils and districts is late winter. The worst of the rains are probably over; frost has got into the ground and made it crisp, so that it digs well; manure can be shifted about easily while the ground is hard with frost; fruit trees can be planted; Broad Beans, early Peas, Turnips, and Radishes can be sown; rubbish can be burned while dry and added to the soil. These make up a substantial list of advantages. With a dry February or March all the work of the season can be got in hand and the whole situation mastered for the year.

If a start cannot be made till the end of the spring, the grower will be behind his work and will be well advised to reduce the number of crops grown. He can still plant Potatoes and sow Carrots, Peas, kidney Beans, Beetroot, Lettuces and other salads, Broccoli, Vegetable Marrows, and Coleworts. He can buy plants of winter greens of all kinds, autumn Cauliflowers, Tomatoes, Celery, Onions, and Leeks. These will give him a very good range of useful crops. In August he can sow spring Cabbages, Lettuces, Turnips, Swedes, winter Spinach, Cauliflowers (preferably under glass), and Onions; and he can plant Savoys, Broccoli, Celery, and winter Kale. But as to August sowing and planting, it is of course equally open to the early starter. For many details and tables see Kitchen Garden, Part III.

The person who knows that he cannot start until late in spring may ease the situation by sowing a few important things in a frame in late winter. Cauliflowers, Peas, Celery, Leeks, Tomatoes, Vegetable Marrows, Lettuces, Onions, and Brussels Sprouts are all amenable. Potatoes can be started in boxes.

Which brings us to the War Garden.

CHAPTER XI

THE BEGINNINGS OF A GARDEN

THE birth of a garden is an event full of interest. Happy parent-hood builds high hopes upon it. The garden is to be a new link with the generations. It is to be a friend and comforter. It is to add an immediate charm to life and to yield cumulative benefits continuously until old age comes, when it is to do its crowning work of soothing declining years.

All this may be confidently relied on if a wise beginning is made, but without that there will be disappointment and disillusionment. What I have to say concerning the early work of a garden may have more interest if given in the form of a record of a garden-making than if stated in the plain, didactic style of the teacher; and it need not be less informative, because in certain essentials the making of all classes of gardens is the same. In this hope and belief I will tell how there came into being under somewhat unusual circumstances the most recent of several gardens which I have made; for I had resolved to come back to the spade in order to carry through a definite project: that of making a garden which would serve the twofold purpose of giving healthful recreation in the scanty leisure of a busy life and of yielding a useful supply of food. The fact that the garden was made under the shadow of two great buildings, the one a gaol, the other a hospital, both closely bound up, therefore, in their respective ways, with the tragedies of thousands of lives, detracts in no way from the value of the work done in it, while adding in certain respects to its interest. Within the limits of a small circle moved gardener, cripple, malefactor, all obeying the commands of admonitory bells at dawn and dusk. Was there a reciprocal interest among them? The men in loose blue and the men in tight dun assuredly engaged in equal degrees the sympathetic attention of the man in grey who plied the spade, and with every sod which he turned there revolved a broken, disjointed, bungled something which once was an ordered social scheme based on international peace.

My friend the nurseryman was going to the war and with him was going a considerable part of his staff. To keep things right during the trying time ahead had engaged his anxious thought. For ground does not stand still; if it is not growing useful crops it is growing weeds. Perhaps it was partly due to this, but I think not wholly, because I am sure that he wanted to be obliging, that he listened sympathetically to my offer to take over a small area and keep it clean and productive. Two "quarters" (a nursery is always subdivided into numerous small areas called quarters) were placed at my disposal, the one $5\frac{1}{2}$ and the other $3\frac{1}{2}$ square rods in area. Only 272 square yards, or roughly one-seventeenth of an acre. But beggars must not ask too much and leisure is strictly limited. An eighth of an acre is perhaps the ideal area for an active person who can put in an average of two hours a day, but even that short time seemed impracticable in my own case and anyway 9 square rods it had to be.

No, the ground does not wait, especially when it is spurred on by a wet spring. In a few days there are weeds, in a few weeks something closely resembling turf. What is to be done with it? If the weeds are few and weak they can go under with the ordinary turning of the soil in digging, but when they are thick and strong it is another story. True, the men of the nursery treat them in that way, simply turning them over, but then they are not going to sow the ground with seeds, which makes all the difference. It is not difficult to turn a turf upside down, but it is very difficult indeed to draw drills in it and sow seeds afterwards. Beside the railway lines I see as I travel patient plodders breaking up turf for gardens and nearly all of them are going to work in the wrong way—aye, and so are the soldiers whom I sometimes see making gardens from turf under the eyes of an officer who, gallant fellow, knows even less about it, probably, than themselves. For they just cut the turf, half turn it and drop it, more or less evenly, instead of burying it a foot deep, grass side down, or stripping it off bodily, stacking it in layers with lime between, and leaving it to rot down into fertile "mould," while they proceed to dig the bared soil easily and quickly. But thick, loose weeds are not turf, properly understood, and the way with them is to hoe them off, dig with an open trench, lay the weeds in the

bottom, tread them and turn on to them a foot or more of soil. Thus treated, weeds cannot impede the tillage and in due time they become transformed into manure. Alternatively, they can be burned, this course being adopted if there is a good deal of dry rubbish to be disposed of by burning, in which case the weeds can be added to the heap.

What of manure? Two loads of rotted stable manure are allotted to me by the florist-warrior from his plenteous store in an adjoining yard. It is the equivalent of thirty-four loads per acre, which a farmer would consider liberal, but which a gardener would regard as moderate. The quantity satisfies me, for I intend to put in some deep digging and with that a moderate amount of manure suffices. I do not think that the gardener need covet much more for the average soil, which will respond handsomely to digging a foot deep and manure at the rate of three barrowloads per square rod. The true principle, however, as regards dung, is comparatively heavy applications to the areas which are to carry greens and legumes and comparatively light ones to those bearing roots. The ideal is not, therefore, an even three barrowloads for every rod, but rather four for the first class of crop and two for the others; or even, in special cases, six for one class and none whatever for another. I, for example, covet early Radishes and Lettuces followed by Cauliflowers, and the area which is to produce them and also to give me a heavy crop of Peas and Onions I lard liberally, while the adjoining piece which is to carry Potatoes I leave entirely unmanured, intending, at planting time, to dress the drills with a complete fertiliser consisting of sulphate of ammonia, sulphate of potash, steamed bone flour, and superphosphate in the respective proportions of 2, 1, $\frac{1}{2}$, 4. Four pounds per rod of this, or one handful to every two yards of drill, will meet the requirements of Potatoes. My objection to dung manure for Potatoes is based on the fact that repeated experiment in the past has convinced me that it conduces to disease. That it gives a strong plant and, with health, a heavy crop, I readily admit, but in a wet summer disease runs virulently through the rows, with the result that the crop is bad.

Yard manure does not affect Carrots and Parsnips in the same way, nevertheless it is objectionable, because it causes coarse,

fangy roots; and while Beetroot will do with a light dressing, it suffers like the others from a heavy one. My ground, I learn, was all manured the year before I had it, so that I was able to work on the principle enunciated without fear that any of my crops would suffer from starvation; had it been severely impoverished I should have given the whole of it a dressing of yard manure, varying the proportions in the manner stated.

In gardening it is not only the first step which counts, but the second and the third. My "quarters," I am told, have been dug and manured, dug and manured, year in and year out; it is because of this that the soil, though naturally light and stony, is dark in colour. Accumulated humus has given it this welcome hue. But ground freshly broken from turf will not be dark unless its texture is heavy, as in the case of clay or strong loam; and the pale soil will be improved, not only by deep digging and liberal dunging this year, but by a repetition of the same treatment next year and again the year after. In a word, soil is not really soil in the gardening sense until it has had several courses of treatment with the spade and the manure fork. I speak in a later chapter of "tilth" and all that it means to the practised gardener.

It is almost with a sense of luxury that I proceed with the making of this War Garden which has already had so much of a making in previous years; and that sense is accentuated when I recall the making of certain gardens in the past. There was that wilderness at P——, which, based on a damp clay soil in a humid spot, threw up such a forest of giant weeds and yet was so ~~soon~~ under cultivation. Liberal additions of ashes from both coal and wood, dressings of littery manure and coarse lime, supplemented by rough digging after frost, finally conquered it, although only after a strenuous struggle. It was a splendid servant when it had been fairly mastered, but before that it was a tyrant. The winter ridging so beloved of many gardeners was worse than useless on that damp site and I would here say that in my experience ridging is only worth while on well drained sites which get abundance of sun, frost, and wind.

And there was that chalk bank at L——, bleak and wind-swept in spring, reflecting the mild heat rays of sunny days and,

therefore, remaining cold until the full heat of summer came to bathe it in constant sunshine. It was the toil of a giant to make it fertile, light as its texture was, because it had to be broken at the base and manured and sooted again and yet again. It was base-broken—in other words bastard-trenched—because not otherwise was it capable of retaining adequate moisture. The manure had to be left on the surface to do real good, because if dug in, the chalk sucked it up.

And yet again there was that yellow clay at W—, which was so tenacious that it would crumble neither when it was thoroughly wet nor when it was completely dry, and which, when brought prematurely to the surface, lay in unyielding, heart-breaking lumps. It was subdued rather by patient watchfulness than anything else. Dug and trenched after frost, it yielded partially and reluctantly, eagerly hardening itself again if trodden when wet, but falling under vigorous pounding when partly dried. This sort of soil it is which fills the heart of the inexperienced gardener with the most sublime despair, especially when the winter has been wet and the site is badly drained. But let me say this: I have known such a soil remain stubborn and unconquerable until mid-April and then capitulate completely, falling to a fine tilth, and thenceforth behaving with such generosity as to give crops far superior to those from an easy light soil before the summer was far advanced. Patience, then—patience and watchfulness and a resolute determination to seize the first favourable opportunity, come when it may.

In each case memory recalls effort, delay, disappointment, but ultimate triumph. So will it be with the reader. There are many types of soil which may try him, but there are none which need defeat him. One type will bow to his will more readily than another, but all will yield sooner or later if persistent effort is supported by good judgment. Even such serious initial errors as the shallow burying of turf and the surfacing of stiff subsoil can be rectified, but it is better to learn at the very beginning that they are errors, and to avoid making them, for thus time and labour are conserved for fruitful work.

And this brings me to the joy of the spade.

CHAPTER XII

THE RETURN TO THE SPADE

As I poise the spade a thrill creeps over me. Can you feel it, you who, after a long absence, return to the greens and test with supple wrists the quiver of your driver? A very jewel of a spade, not only of a weight—it is a “No. 2”—suited to my physical powers, but of an exquisite balance. I twirl it on wrists which bend and curve of their own volition. I nurse it lovingly, with the hollow of the shank on my open left hand. The blade has that clear tint of watery blue which betokens steel of quality. It will get brighter and brighter the more it shears the soil; the edge will get sharper. It is not the size of a spade which counts, but the quality of the metal and the balance. There are large spades which work lightly, and there are small spades which work heavily. There are spades which cut the soil as the bow of a yacht shears the water; and there are spades which grind and drag with the dull inertia of a barge.

The digger soon learns to savour the joy of the good spade and spade-love becomes a lifelong affection. Here as I stand in the early morning sunshine, with that curious thrill creeping over me, my heart is stirred with the memory of past garden-making, with all that it meant of social and domestic happiness, of intimate association with eager young students who have since given their lives on the battlefields of Belgium and Gallipoli, of boundless horticultural enthusiasm on the part of every class of society—more satisfying, perhaps, than the years of the making of books which followed, when, with publishers insistent, the spade was laid aside and the pen held undisputed sway. With war, and with youth withdrawn from the fields and gardens, the return to the spade means to those unable to bear arms the privilege of applying muscle and sinew to practical work for country's sake.

And in war or peace the spade pays. The healthful exercise causes a faster spin of the blood and a general feeling of well-

being. The brain becomes clear and the mind contented. The digger speedily learns to love the implement through which he acquires this feeling of perfect bodily and mental health. He enters into a silent communion with it. Digger and spade become sympathetic companions.

During a period of labour shortage, women of gentle birth have not hesitated to turn to the spade. Have they, I wonder, learned that labour-saving knack which comes back to me as naturally as the feathering of an oar when I enter a boat, however long the interval between such excursions on the water may be? It is worth acquiring, because it ensures a maximum of work with a minimum of exertion. The shank of the spade is not gripped tightly by the lower hand with the palm upward, but is held lightly in the tips of the fingers with the palm downward. Observe, held lightly. And the same light grip suffices when the laden spade leaves the soil. How can finger tips hold a spade containing several pounds of soil? Ah! here comes in the balance of the spade and the levering action of the upper hand. The latter begins to sink backward as soon as the spade has been driven down and the blade rises automatically, full from top to bottom. At the moment when it comes clear, the handle is horizontal and what a moment before was the upper hand has sunk so low as to be almost touching the ground. With a slightness of effort which surprises the worker, the laden spade is raised a few inches from the ground by the fingers of the other hand and is poised for the turn. And no small part of the value of the palm-down method of digging lies in the facility with which the soil is turned as it is discharged from the spade—as easily as a scull is feathered by practised hands and by much the same wrist action. A slight twist of both wrists and the soil has gone, without a jerk, without a push, without a conscious effort of any kind. The twist frees the spade and turns the soil over with the same action, which is as it should be, because it does not suffice to push or shake the soil off without reversing it.

In conjunction with thin slices, the palm-down method enables the least muscular person to dig for hours without undue fatigue when once the first stiffness and want of "tone" have disap-

peared—as they will speedily do if the body is free from disease—because the stresses are spread over the back and shoulder muscles. If the digger grips the shank of the spade tightly with the palm upward, encircling it with his fingers, and lifts it when laden without the levering down of the other hand, the stress will fall on the muscles of the upper arm and chest, putting a severe strain on the heart; and the tiredness which follows will not be merely a healthy muscular fatigue, but a weariness approaching exhaustion, followed by several days of lassitude. The consequence will be that instead of the next bout being pleasantly anticipated with a feeling of mastery, it will be dreaded as a painful servitude. Such is the organic difference between scientific and unscientific digging. But everything may be spoiled by taking too thick “bites” or slices, which the gardener terms “spits.” The thickness of the spit can be regulated at will and the weight of each spadeful which is lifted and turned depends upon the decision of the digger. The beginner should feel his way to easeful competency in digging by exercising severe restraint in this matter.

A thoroughly experienced and hardy digger can afford to take thick bites of as much as 7 or 8 inches, but a beginner should never attempt such extremes under the influence of the delusion that he will get through the work quickly. He may work by degrees from spits 4 inches to spits 6 inches thick; but he must not vary the thickness in one particular line, or his work will become uneven. On the contrary, he should take care that each spit in a line is of the same thickness, and by drawing the edge of the spade along the line of the “cliff” after each discharge, he will have no difficulty in keeping a straight line. With each spit cut of the same width and discharged by the same style of action, not only the digging face but also the surface of the dug soil will be perfectly even and level. Alternate hillocks and hollows are the signs manual of defective digging.

There may be states of the soil when a fork will prove to be more suitable to the task than a spade. Only experiment can settle this point. The experienced digger likes to have both tools at hand, so that he can be free to make a choice. On very

light and also on very heavy soils the spade will probably prove to be the more suitable implement; on the many differing types of soil between the two extremes, it will be surprising if the fork does not sometimes score. The principles of good digging apply equally to both fork and spade.

The maintenance of a sufficient and even depth and the proper utilisation of the manure are both matters worthy of consideration. Depth can be positively insured by working on a systematic method. The professional digger likes to make a start by throwing the first line of soil into a wheelbarrow and taking it to the other end of the piece. By thus opening out a strip of a foot wide or more (2 feet is suitable), he can begin his task sure of being free from any anxiety as to his level. The second line is turned into the space left by the removal of the first, the third into the second, and so on to the end, when the soil which was wheeled away is found waiting to fill the space left by the turning of the last spit. But an old hand will not be baffled by the want of a wheelbarrow; he will resort to one of several devices to gain his end of an open trench, without which satisfactory digging is impossible. Perhaps he will run a line down the centre of the piece, throw the first spit from the right hand side to the edge of the left, and leave it in a loose heap while he works backwards to the bottom, then crosses over and advances up the other side, to find awaiting him when he reaches the top the necessary amount of soil for filling his last trench. Or perhaps he will decide to work it in one strip and will open a trench by "piling" the first 3 spits, levelling when he has dug, say, 4 feet by drawing enough of the piled soil forward. How to fill up when he has reached the end and realises that he wants soil from somewhere may at first puzzle him, but there is a very simple way out; it is to throw the top soil of the last 2 feet of ground on to the path—including all the loose soil which has crumbled off the tool—to dig up the bottom soil so as to raise its level, and then, before putting back the waiting heap of top soil, to spread on a thick coating of manure or decayed leaves. When the filling-in is done it will be found that the proper level has been secured. And this will be the best strip of soil in the piece.

The digging-up of the bottom soil in order to raise the level of the last strip is really neither more nor less than the process for which the gardener uses the ugly name of bastard-trenching. When a piece of ground is dug two spits deep instead of one and the layers are kept in the same position it is "bastard-trenched." What the origin of this unpleasing term is one can only conjecture. In ordinary trenching the positions of the two spits are reversed, the top soil going down and the under spit coming to the top. One may suppose that with the old-fashioned gardener of a bygone age this was the only true and proper way of trenching, and that he applied the term "bastard-trenching" to the new-fangled method to show his scorn and contempt for it. But bastard-trenching is a first-class method of cultivating the ground, as every "practical man" to-day readily admits. It is better than the best digging, always provided that it is done thoroughly, each of the two spits being turned to an honest depth. And what a lot of garden rubbish one can dispose of in or on that upturned "second spit"! I am not thinking of burnt stuff; that is for the top. I am thinking of that accumulation which grows and grows in some out-of-the-way corner until one gets quite worried over it. For a garden can show a wondrous assortment of odds and ends which will not burn readily and which no one cares to take away, even if insidiously offered as a gift.

I referred a page or two back to the proper utilisation of manure. The average digger likes to spread his manure evenly on the ground at the rate of about three heaped barrowloads per square rod and turn it under as he digs. The drawback to this plan is that the loose, greasy manure tends to clog both boots and tool and I prefer to keep it in handy heaps and fork it into the trenches. By adopting this plan one has a cleanly working and gets the manure well buried, so that when drill-drawing begins no tufts of manure appear and impede sowing. Of course, labour is reduced if artificial manure is used, because it need only be dusted on the ground and dug in, or in the case of Potatoes spread in the drills when planting takes place. And artificial manure is permissible when the ground has been dunged for several years. For exhausted soil, yard or stable manure is better.

But I started to give a record of a particular garden and I am becoming professional and didactic. That is the one serious drawback to gardening. It creates an irresistible tendency to instruct. I believe that the few non-gardeners owe their hatred of gardening and their proneness to write down all gardeners as bores to inherent dislike of instruction. Professional gardeners love to teach. They may have no education whatever, but they have a certain technical knowledge of a particular craft which they believe to be the only one that matters, and so they do not hesitate to ladle out wisdom to their impatient betters.

I hope that my work at all events will speak for me. Note that I have secured not only a high level of soil, but also an abiding evenness. I have not left the surface quite so lumpy as some critical gardeners might consider desirable, but I remember that it is April, and that I cannot rely on frost coming to crumble the lumps for me as I might if it was February. The earlier the period of the digging, the more lumpy the soil may be left; indeed, it is dangerous to crumble the soil much in early digging, because a long spell may turn the surface into something approaching grease.

The digger will soon learn to start his happy task while the morning is still young—perhaps at 6 a.m. It is raw sometimes at that hour, but as soon as the spade has carved through a few spits he has forgotten the keen edge in the air. And on those rare mornings when the sun has got through the morning thickness, it is the hour of hours for the digger. The atmosphere is fresh, but cool. The young leafage of the burgeoning Chestnuts is tinted with gold. The Plum pyramids glitter like frosted silver in their mantle of bloom. The spade cuts crisply. The soil falls in disciplined flakes, as though it knew just as well as the proud digger what was expected of it. I have learned that my particular pieces in the nursery garden between the prison and hospital were dug in previous years by a young man who got into an early draft for the front when he joined the Army, and within six months of donning khaki was back in the hospital, where he died soon after Christmas. I am sure that he was a

worthy creature, because he "joined up" with no more pressure than his own untutored soul applied. And besides, my soil shows unmistakable signs of past good handiwork. My spade sinks to the very top of the blade when my foot presses on it and an honest 14 inches of depth rewards my efforts. Wherefore, I have a feeling of respect for the unknown man who in years of peace was working methodically right to left, left to right, in a steady rhythmic motion on these plots of mine, putting into the soil the unsung poetry of an obscure and unnoticed soul, and passing hence without a record beyond that which I read in the soil I dig.

CHAPTER XIII

ON TILTH

THE sharing of common perils and common burdens tends to reduce the sharpness of social distinctions, even if it does not remove them altogether, and one can suppose that master and gardener have powerful sympathies in common when their sons are fighting side by side. And when owners of gardens are also workers in gardens one can imagine them taking an interest in their helpers such as they have never felt before. There will be less aloofness, less mistrust, less of that instinctive class antagonism which is none the less real because it remains unexplained and unexpressed.

Near me as I work are the labourers of the nursery, the warders who pass in and out of the wicket gate of the prison at fixed hours, the prisoners themselves—unseen until the day comes which sets them free, but often heard in the chapel—and the strings of attendants and nurses at the hospital who pass to and fro morning and evening, clean and even dainty in their neat dresses, with flowing white handkerchief bound around the head. These bright, wholesome-looking girls, with the snowy white head-dress which becomes them so well and which distinguishes them from ordinary nurses, have faces that bespeak good breeding and education. They live in large houses which one assumes have been converted into hostels for their accommodation. They have sweet, healthy, cheerful English faces that must come as visions of comfort and healing to the wounded who awaken from the troubled semi-unconsciousness of the Red Cross trains and ambulances to the soft restfulness of clean linen in the wards.

The labourers and I are fellow-workers and I feel a kinship with them. They are all past middle age and some are old men. They work slowly and stolidly, but honestly. Plying fork or hoe according to the strength of the weeds which they are attacking, they pursue a machine-like course, rarely pausing to stretch

themselves and still more rarely speaking to each other. I can well understand the silence. The communion of gardener and tool is a silent one. I feel little inclination to talk myself when working with a companion, so active is my mind in composition in response to the stimulus of the strong spin of blood through my body to my brain. I can only regret that the action of my spade and hoe cannot be translated into the operation of a pen or a typewriter, for if that were possible I feel confident that I could speedily win immortality. As things are, I have to wait, only to find that the divine afflatus has passed by the time I get to my desk.

It is perhaps too much to suppose that Pridgeon and Spratt, who generally work together and are often operating for many days together quite near to me, are subject to this sublime torture, yet who knows? Pridgeon's long, lean face is sometimes alight with an obvious exaltation when he passes me, all unseeing, and his lips break in smiles to the response, apparently, of conversations which he is holding, for his lips are muttering and his expression undergoes rapid changes, as of dissent, agreement, and protest. Perhaps he is an evangelist in his leisure moments, perhaps a reformer, perhaps—and more likely—one of the many inarticulate brooders whose real powers of mind are obscured by the combined influences of diffidence and want of education. He walks with a peculiar dipping motion, his head perpetually bowing to the unseen companion with whom he holds his muttered disputations. On the rare occasions when this musing labourer speaks to me I am conscious of a sense of pleasure and favour, as though an honour was being paid to me which I had cause to be proud of. This is quite beyond explanation.

The warders are gardeners almost to a man and their plots around the prison are a constant attraction to me; but they have a double interest in the nature of their duties. A large number of Irish rebels have been brought to the prison, sensitive, highly-strung, fervid men with souls of flame and passion; and it is a constant source of interest—an interest prompted rather by pity than morbidity—to speculate on the daily association of these men with the cold, phlegmatic disciplinarians who unbend

and become human only when they get out amongst their vegetables.

But there are hundreds of military prisoners too, and the gaolers of these are in khaki. Sometimes as I work I hear the sound of hymns from the prison, very tolerably sung, and I wonder what effect the services have on the criminals—for example, whether these unbalanced beings ever nourish presumptuous doubts of the wisdom of the law which dictates that in golden hours of daylight they shall be herded in a chapel when they might be at work on the land, producing that food of which a hard-pressed nation is so sorely in need, and leaving their hymns until evening.

One can understand a beginner in digging sighing, as he surveys a piece of rough, uneven ground, covered with weeds, for the moment when the spade can be laid aside at the end of a completed task and lighter tools taken in hand for the final tillage. And more especially can one understand this after the first spell of work, which has probably caused a disagreeable stiffness, and, having most likely been continued too long, has left an uncomfortable feeling of lassitude. But one can also understand that as the end of the digging draws near a feeling of regret asserts itself. Directly experience has taught how much work can be done with advantage at each spell—and by the time wisdom has come into her own the muscles will have accustomed themselves to the action of lifting and turning spadefuls of soil—stiffness and lassitude will alike vanish. Every bout will be anticipated with pleasure. Each breadth of freshly turned ground, high yet even, will arouse a sentiment of pride and satisfaction. Yes, there will certainly be regret.

But the digging is only the first stage of the tillage and presently rake and hoe must have their turn. There will be fresh joy in them. Is there not joy in those beautiful words of Anglo-Saxon origin, tillage and tilth? One wonders whether they influenced Maeterlinck when he named Tyl-Tyl. Assuredly the Blue Bird of happiness is found when the good brown earth is dug and raked and made ready for the seeds.

The "tilth" is the fruit of the tillage. One loves to hear a

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old gardener speak about a good tilth. It is a favourite notion of his. When he reads a paper to the local gardeners' he likes to tell his avid hearers that they must start by getting a good tilth. He does not tell them how to get it; nothing would occur to him. It is understood among gardeners everybody knows what a good tilth is and how it is got. To do the company credit, they seem to know perfectly well. Their air of comprehension and appreciation encourage the speaker. He punctuates every sentence, as though nobody was there to contradict anything fresh, but everybody to approve the old.

Good tilths are not born, they are made. That is one reason why digging must be good. For it is next to impossible to make a good tilth out of a badly dug piece of ground. The best digger makes things easy for the tilth-maker by crumbling the soil or not crumbling it as the case may be (we have already had our say about this important matter) and by laying it in "swathes." When frost has been at work on a piece of land dug in autumn or winter and left in a lumpy state, one soon finds that it crumbles readily under the rake. Some men ridge the soil in order to give the frost a better chance of getting well into it. One finds that ridging answers best on a slope, where superfluous water can escape quickly. It is always satisfactory on a low site where water lies on the surface for long periods in wet winters, for the reason that the surface gets into a greasy state and frost does not penetrate freely. Twice, therefore, before ridging ground. If new to the neighbourhood, it might be worth while to ascertain the general practice, because it is by no means the case that every farmer and gardener in a country district is necessarily a fool, more likely to be wrong than right in the staple facts that form the basis of his livelihood.

There are soils the tilth of which can only be won by making composts, in the form of leaf-mould, or mortar rubbish, or road scrapings, or lime, or wood ashes, or even all of these together. On the soil will not crumble under the spade and obstinately refuses to break down under hoe and rake, one finds that it is no wisdom to humour it. Persistence in worrying it may end in

nothing better than loss of time and temper. This is very apt to be the case with clays which are dug late after a wet spring and are hardened immediately by dry winds. Add lime and grit and after the next rain try again, then sweet reward may follow.

The rugged, uncompromising tool known as the Canterbury hoe proves very helpful in reducing stiff soil. On light land it will not be needed until the Potato drills come to be drawn. Softened lumps of clay go down under the impact of the Canterbury hoe with the grace of a wrestler who has found a foeman more than worthy of his powers.

One has got to positively the last stage of the tillage when the hour of the rake arrives, for it is the part of this tool to put on the finishing touch—to reduce the soil to that flouriness of texture which permits of drills for the smallest seeds being drawn at an even depth. The rake is the harrow of the garden—the harrow without the toad. It is to be used with the handle near the horizontal, not near the vertical. The most acute angle permissible is one of 45° and that is not really satisfactory, for it means a tendency to draw the soil into heaps when it ought to be kept perfectly level. At about 35° the worker can sweep the rake evenly up and down, himself at a comfortable stoop. The lumps dwindle to particles, the stones obediently approach their master the gardener. Behind the rake the soil is left smooth and level.

After days of digging one takes to the rake with a species of good-natured tolerance, as with a tragedian consenting to do a "turn" at a music hall. This is really an admirable spirit with which to work, for it insures a maximum of enjoyment. The element of patronage is particularly gratifying. A poor, insignificant tool, scarcely worthy of serious handling, and yet not without its uses. Therefore, lay on! Lay on with a last sigh for that noble and manly tool the spade, now resting on its peg in the store after good work worthily done, cleaned with the hand of affection and touched with an oiled rag, so that it may remain bright until the happy day arrives when it can be wielded once more.

And, to be sure, the finished tith brings its own enjoyment.

It is good to survey the completed work—the edges of the beds high-banked, the surface innocent of the smallest weed, the soil as smooth and level as a billiard table. “First of all get a good tilth.” Aye, old gardener, we will. We have got this tilth after much strenuous labour and we are frankly, boyishly proud of it. It is a tilth, we feel, which will stand scrutiny. We say no more than that we are not ashamed of it, but that, of course, is the modesty which becomes us so well. It was begun when the mornings were misty and raw and a real effort was required to get out of bed at 5 a.m. It was finished on a delicious morning of late April, when the Paeonies glowed with flaming tints of orange and crimson, when tender films of silver-grey floated over the awakening Birches (as the early haze sometimes floats like pallid smoke over the buildings along the Thames Embankment), when green shoots which yesterday were unborn revealed themselves in shining columns on the pillar Roses. And it has brought with it something more than this new scene in the pageant of Nature which has developed so marvellously during the past forty-eight hours. It has created within ourselves fresh powers of vision. It has given us the seeing eye. Slender tracery of swaying twig, changing colour of swelling bud, glint of noon sky in the blue rug of Squills—all are the gift of this dear and intimate intercourse with mother earth. We have been very close to her and we have gained by the contact. Mysterious affinities have asserted themselves. The creation of the War Garden has meant the creation of a soul-tilth receptive to unsuspected seeds of understanding and sympathy, precious gifts of Nature’s profound altruism.

CHAPTER XIV

WHAT SHALL WE GROW?—INTENSIVE CULTURE—
THREE CROPS A YEAR

THE interest of the soil-preparation, the movements in the avenue when warders are changed and prisoners are liberated, the drama of the military hospital, the charm of advancing vegetation, the movements of the birds—all these make insistent demands on attention, but through them there emerges the fascinating problem of the cropping. What shall we grow? How shall we arrange our crops? Where shall we procure our supply of seeds? When shall we begin? After all, this digging, this manuring, this raking, everything that we do, is a means to an end and that end the production of food.

Perhaps one may be pardoned if at times the major object of the enterprise recedes into the background of one's thoughts, always provided that the work of preparation goes steadily on. Have I worked the less energetically this morning because before my eyes, as my digging has proceeded, there has lingered an exquisite picture of early sunlight on a clump of *Magnolia stellata*, glittering like purest alabaster? I came upon this vision as I strode through the nursery garden a few minutes before six. It is at six that work begins, and I could not feel grateful enough to the gentle spirit which had touched my eyes to wakefulness by five, so that I was out early, and therefore able to stand for several glorious minutes and feast my gaze on this ravishing spectacle before the clanging of the workman's bell told me that it was six o'clock. In its sheltered nook the *Magnolia* was as fresh and serene as a nymph at dawn. There were no leaves on the shoots, but the silver blossom-stars turned them into wreaths of lucent loveliness.

And from this to planning accommodation for Potatoes, Onions, Celery, and so forth! Yet the transition was made without any sense of the incongruous, still less of the ridiculous.

Nay, one found that one turned to a grapple with the main duty refreshed and stimulated by the recollection of the radiant revelation of the shy shrub, gowned in the fairy fabric of the stellar ways. Remembering that Leek and Lily are of the same botanical order, we gardeners extend an equal respect to every plant that gives us sustenance, whether of body or of spirit.

This War Garden is to give us supplies of all the principal vegetables: Potato and Cabbage and Brussels Sprout, Carrot and Onion and Parsnip, Celery and Leek and Savoy, Beetroot and Broccoli and green Pea, Beans of sorts, autumn Cauliflower and winter Kale, Turnip and Spinach and Vegetable Marrow; saladings, too, such as Lettuce and Radish, Endive and Tomato, Mustard and Cress. But we propose that the list shall go farther. We have thoughts of the useful Shallot. We recall the distinctive oyster flavour of Salsify and Scorzonera. We have no particular illusions about Jerusalem Artichokes, yet affect no difference to the excellence of the soup they make. We know the sterling worth of Spinach (Perpetual) Beet. We have not forgotten the Witloef Chicory which we ate of old time in stricken Belgium, and which can be grown successfully in Britain. All these we propose to grow and perhaps some others of a personal or experimental interest, if space will permit. We have to remember, however, that a garden of oddities and experiments is rarely profitable, and as the War Garden has to pay at least twenty shillings in the pound, the vegetable waifs must take their chance.

Intensive culture has our consideration, and we weigh it as common sense always should weigh it, namely, in connection with the quality of our soil and our supply of manure. For Intensive culture is close cropping and repeated intercropping. Now, close cropping alone is weakening and close cropping with intercropping is exhausting. It would be folly to embark on a system of Intensive culture with a poverty-stricken and ill-tilled soil. As well begin an arduous undertaking with an enfeebled frame and an empty stomach. Soil which is to be intensively cropped must be fed and fed and fed again. It must be stored through and through with fertility. It must be dark in the upper spit, else it is short of humus. It must be friable and kindly—a soil of a “good

tilth." Is our soil fertile enough? Well, we have dug it honestly and indeed bastard-trenched it in part. We have larded selected portions of it generously with decayed stable manure. It has fallen well under the rake. A bag of artificials lies in the store. We may fairly expect that it will stand at least a moderate system of Intensive culture. And so we proceed to plan.

Our kinds are many, and our ground is limited. We must institute an order of precedence. We have to resolve ourselves into a kind of Lord Chamberlain, with Carrots in the place of coronets and Parsnips instead of peers. The Order of the Onion must command our privileges. But this duty is the less invidious in that a lowly place contains no stigma. It is among the humblest of the vegetables that we find the strongest candidates for first place, because their earliness and hardiness permit of their forming "catch crops." Thus, we put in Radishes before Cauliflowers, Shallots before Potatoes. It is often the little early crop that pays best, not the big late one. Huge Brussels Sprouts, taking up an extensive area of ground, may lose you money, when small Lettuces, occupying little space, show a profit. Rent and labour are both affected by the type of crop grown in quantity. One is apt to find an antithesis—the major crop of the household being the minor crop of the market.

Let me, however, particularise, and in doing so reject all fear of being too "professional" in tone. Intensive culture is a matter for plain speech. One would even be pardoned, presumably, if one descended to tabulation. First a grouping of the main crops and then a study of the ways and means of dovetailing others into them.

Potatoes defy any grouping which does not allow for access to the soil between the rows, because of the necessity for earthing. Unearthed Potatoes are likely to be green through exposure to the air, and therefore useless either for table or market, although quite suitable for replanting. It is for this reason that we are compelled to associate with Potatoes crops which can be planted after May, such as Tomatoes, Celery, Cauliflowers, Brussels Sprouts, Savoys, Kales, Broccoli, Vegetable Marrows, and Scarlet Runners. And as a rule it is best to restrict the intercropping

to early varieties of Potato, which, being ready for removal from the ground by August at latest, can be taken away before the intermediate crops require a great deal of room; and which, having no great spread of leafage, do not overgrow their smaller companions.

The intercropping of Potatoes with Greens as practised by the cottager can hardly be called Intensive culture, because the Greens do little more than follow the Potatoes; but when the gardener imitates the market man and sows Scarlet Runners between every other pair of Potato rows in May or June, following this up by planting Cauliflowers of a late variety on the site of every alternate Potato row after the Potatoes are lifted in June, July, or August, so that Runners and Cauliflowers share in summer ground that was occupied by Potatoes alone in spring, it is a genuine example of Intensive culture. The Scarlet Runners must not, of course, be permitted to run upwards unchecked like their sisters of the pole, but must be kept pinched back, so that they do not grow more than 2 feet high. And Intensity is intensified when, after the clearing away of Runners and Cauliflowers in autumn, Turnips are sown or Lettuces planted.

There are not wanting cases of Vegetable Marrows being planted between Potatoes in June, set 3 or 4 feet apart and the extending shoots trained between the Potato rows until such time as the Potatoes are removed.

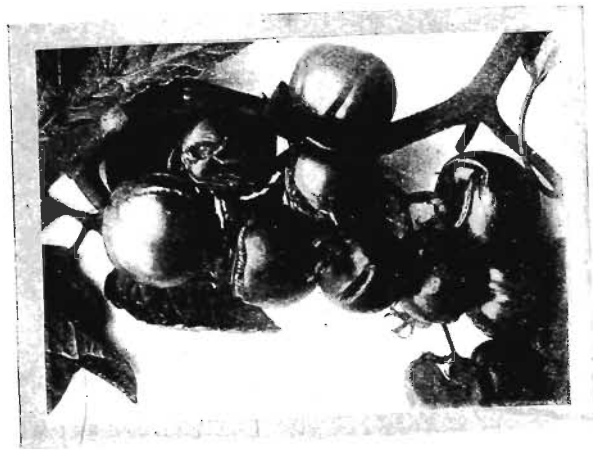
To plant Tomatoes between Potatoes is to associate cousins, for these crops are relations. We know that relatives often agree least well and while Tomatoes and Potatoes are satisfactory companions in health, they are the worst in disease, because what infects the one infects the other. On a well-drained site they may be put together after the Potatoes have been earthed, and followed by late Broccoli, spring Cabbages, or winter Lettuces. Here again is an example of genuine Intensive culture.

There may be Intensive culture without any intercropping and one finds that in the favoured districts where Potatoes are grown specially for early marketing, such as the Channel Islands and Cornwall, they are grown closely without companions and



A GOOD LOT OF TOMATOES ON A WALL

(For special notes on TOMATOES, see pages 144-45, and "VEGETABLES UNDER GLASS")



BUT THESE TOMATOES ARE BADLY CRACKED
Heavy watering after a period of drought
often causes outdoor tomatoes to crack badly.



Delicious Vegetables

WAX-POD BUTTER BEANS

The Mont d'Or Butter Beans of the seedsman are not the large white dry Butter Beans of the grocer, which are Lima Beans. The Mont d'Or, both tall and dwarf forms, is a wax-pod Bean, the young pod of which is eaten. Sow in May.

(See page 151)

cleared away as quickly as possible in order to make way for a successional crop. When other crops are grown between Potatoes there must be adequate provision of space; thus, to accommodate any of the crops mentioned as possible associates for them, the Potato rows ought to be $2\frac{1}{2}$ feet apart. With this allowance, there will be comfortable room for an intermediate crop after the Potatoes have been banked up.

As between growing Potatoes closely by themselves or wider apart and intercropped, what? Is anything gained by intercropping? Nothing is gained if the Potato crop can be lifted very early, say, up to mid-June; but if it has to stand longer, time may be gained by intercropping in early summer. The intermediate crops are prepared in advance by sowing in reserve beds and as a rule they are getting big and crowded by mid-June, so that it benefits them to plant them out in a place where they can have more room than they have in the seed-beds. In brief, the Potatoes are no worse and the other plants are a great deal better for the association.

There are cases of intercropping with Potatoes in which one works with a wide outlook; for example, this year one plants Potatoes and intercrops with a late variety of Broccoli, such as Late Queen, or Chappell's Cream, or Methven's June. The Broccoli crop is not ready until the late spring or early summer of next year, when the range of suitable successional crops is limited, if one excludes, as one should, the same tribe. But while the crop of Broccoli is approaching maturity in the second year, a batch of Tomatoes is being raised for the purpose of following the Broccoli and in due course takes their place. And even now the succession is not complete, for in early August, when the Tomatoes are beginning to fruit, Cabbages and Lettuces are sown, to be ready to succeed the Tomatoes. Thus we carry our chain of cropping into the third year.

The gardener does not need to fallow his ground as the farmer does, because in gardening there is greater concentration of cultivation than in farming. The spade goes deeper than the plough, especially if a portion of the garden is bastard-trenched every year. A correspondingly greater amount of manure is

employed. All things, therefore, in the garden are more highly developed than on the farm.

The only tuber other than the Potato which is grown to any extent in gardens is the Jerusalem Artichoke, that relative of the Sunflowers in which we have a remarkable example of name-corruption. For "Jerusalem" in this case is simply a corruption of *girasole*, an Italian word based on the habit of the plant of turning its flowers to the sun. There is no call for Intensive culture with the Jerusalem Artichoke; it is too slow, too bulky. The best thing is to relegate it to a quiet corner of the garden where it can stand undisturbed from April to December. The soil need not be rich, although fertility naturally increases the weight of the crop.

Considered collectively, the Brassicas are almost as important as the Potato, indeed, in a small garden it is often wise to restrict the area for Potatoes in order to find room for delicious little Cauliflowers, Broccolis, Cabbages, and allied plants. More especially will one do this if the soil is heavy clay, yielding Potatoes of inferior flavour. The Brassicas revel in such soil.

We cannot treat them as one culturally, however; indeed, their management differs widely. As we have already seen, the greater part of the winter greens—the Brussels Sprouts, the Broccoli, the Savoys, the Kales—can go out $2\frac{1}{2}$ feet apart between the Potatoes in early summer. Sown in a spare bed successionally from the end of March until the end of April, they will be ready for planting soon after the Potatoes have been earthed and the first rain is taken advantage of to get them established. From autumn until the end of spring one or other of these hardy and useful Brassicas will be yielding. And autumn Cauliflowers may have precisely the same treatment, or may be associated with early Potatoes and Scarlet Runners in an interesting example of Intensive culture—an example far superior to the planting of one Potato crop after another, as is sometimes recommended. Here let me say, parenthetically, that two successive crops of Potatoes in the year, both planted out of doors, are possible in most districts, but that it is not desirable to plant the second on the piece of ground from which the first has been lifted,

nor is it prudent to plant a late variety, an early one should be chosen.

But while the bigger Brassicas can be disposed of somewhat summarily, *finesse* is required with certain of the smaller kinds. Perhaps there is nothing more delicious than a young Cauliflower, the size of a cricket ball, so close in grain that one cannot see the incipient flower stems and almost as white as the driven snow. This is a delicacy which merits being eaten as a separate dish, with white sauce, and is half spoiled by being eaten with meat. One can get these milk-white balls of melting marrow by sowing in autumn and wintering the young plants in frames—even outdoors in mild places—and also by sowing in heat in winter, hardening in cold frames, and planting out in spring. Or one can buy seedlings. They will be in season in June and July, when probably the last of the Broccolis has gone. No large bed is required, for the crop is not one of the great staples of the garden; it is almost in the nature of a vegetable luxury, which one grows on a special bit of soil that perhaps carried winter Turnips and when they were cleared away was well dug and manured for the delicacy to follow. The plot will carry Celery or Leeks to perfection after the Cauliflowers and the two successions will be ready for planting by June if they are raised in a frame in spring.

And then there are Cabbages. What can be more palatable than a small hard Cabbage, white of stem, melting, marrowy, in April? We have already seen that we can get these by sowing out of doors early in August; and that we may, if we like, plant them to follow Tomatoes. But they may follow any crop, not being a Brassica, which comes off the ground towards the end of summer or in early autumn—Onions, for example. Summer Cabbages come from outdoor sowings made in spring and successions may be carried through to the autumn if they are wanted. But late Cabbages are a species of general utility crop which people are apt to "stick in" without much ceremony. They have none of the fascination of their spring sisters. The Coleworts are so often sold as simple "bunch greens" that home vegetable growers are apt to consider them unworthy of notice, but they have a

particular value for winter use and may be sown as late as May. The little Rosette Colewort is a charmingly pretty plant as well as a useful one, the leaves having reddish tips. And, by the way, there is ornament as well as use in some of the Kales, which I have seen used for winter bedding in the flower garden, not only at home but in Holland.

Various hybrid Brassicas exist, which the plain vegetable grower is apt to pass over untried, preferring to devote his space to crops which are old and proven. There is sound common sense in the view, no doubt, but it is a little wanting in inspiration. If it had always prevailed, we should certainly not have possessed the splendid array of vegetables which we have now, because no one would have given encouragement to the early raisers, and they would have faded away into the unhonoured obscurity of the debtor's prison.

On the face of it, there is an economy of space in reducing the autumn Cabbage and Brussels Sprout to the Cabbage-Brussels Sprout, for we get the two vegetables in one. In a word, the raiser has selected a Brussels Sprout which carries a heart at the top instead of a tuft of loose leaves. And a very good heart too when the plant is well grown in rich soil. There is not much of either Brussels Sprout or Cabbage when the crop is grown in thin, impoverished ground. It comes to this: to make the most of the crop, the cultivator must supplement the work of the raiser, or failure is likely to follow. On light land I should be disposed to grow my autumn Cabbages and Brussels Sprouts as separate vegetables and I should take care to choose large, strong varieties, which would stand a better chance of overcoming the inherent defects of the soil than small sorts. See Table under Kitchen Garden, Part III.

The same remarks apply to that other interesting composite, the Savoy-Brussels Sprout.

A Brassica producing large leaf-ribs, which when cooked are white and delicate in flavour, might be sure of popularity, but seedsmen do not find a great sale for the Portugal Cabbage, Couve Tronchuda. Perhaps we have enough good things without it, but there it is if wanted and its culture is simple enough, for it

comes without trouble from an outdoor sowing in spring. Where a small reserve section is kept for special things, the Portugal Cabbage should have a place in it.

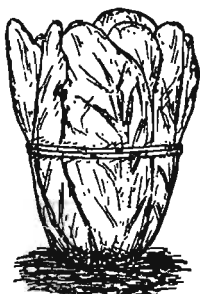
The so-called Celery Cabbage is the Pé-tsai of the Chinese. It finds its way periodically into the British newspapers, generally by way of America, whose seedsmen give catalogue descriptions of it well calculated to stir unsophisticated journalistic hearts. The plant is not of great importance.

We see that there is no difficulty in maintaining a supply of Brassicas, whether in the form of Cabbages, Cauliflowers, Broccolis, Brussels Sprouts, Savoys, Kales, or Coleworts, all the year round. And we see how for the most part they can be associated with other important crops, differing in character, but suitable companions for them in the economy of the garden. Those which are to occupy the garden in winter had better be put a good distance from the house, because the most delicious of green vegetables may be disagreeable to delicate nostrils after a spell of damp, foggy weather, when they give off sulphuretted hydrogen.

There is another Brassica to be remembered, although it hardly falls into the schemes of intercropping suited to Greens, and that is the Turnip. It differs from most of the green Brassicas in being quick-growing, at all events during the spring and summer, when it may sometimes be grown to maturity within six weeks. This makes it handy for use as a catch crop—a crop, that is, which fits in between others nominally more important. It may be drilled between Peas in spring, broadcasted after almost any crop cleared off in summer or autumn, such as Peas, Broad Beans, early Potatoes, or Onions; or sown in odd patches anywhere, at almost any time. As bulbs in summer and as bulbs or tops in winter, the Turnip well proves its worth. And if the flavour is too strong for the palate, either as to bulb or top, there is the Swede to fall back upon. The garden forms of this have delicacy of flavour without delicacy of constitution, indeed, they are hardier than Turnips. Kohl Rabi is another useful substitute.

An example of Intensive culture in which Turnips play a useful part is that in which a piece of ground is well prepared for Onions

sown in a frame in winter to be ready for planting in April or May, the rows a foot and a half apart. Early in March in many seasons, if not in all, Radishes and small early Turnips can be sown between the lines where the Onions are presently to come and they are off before the Onions have grown out so much as to want all the room. But all of it they will need sooner or later, liberal as the allowance of space appears to be, always provided that the plants are strong ones and the soil is rich and substantial. If a small Lettuce is preferred to Radishes and Turnips, it may be planted between the Onion rows in April or May.



BLANCHING COS LETTUCES

The band of raffia tied at the right point.



BLANCHING COS LETTUCES

The band tied too high.

Let us turn to Peas and Beans as primary crops. If it has been possible to trench only one portion of the garden, or otherwise to give special treatment to a particular part, allot this section to the Peas and Beans and arrange for Celery and Leeks to succeed them. For all these crops love deep soil and abundant manuring. In spring, Lettuces, Turnips, Spinach, and early Cauliflowers will make good use of the ground between the Pea rows, so abjure the temptation, which many people succumb to, to sow Pea rows nearer together than the height of the plants. With the small intermediate crops coming into maturity before the Peas, it may be feasible to plant Celery and Leeks before the Peas come off, but July is not too late to plant them. Early short Peas sometimes pay for sowing by themselves on a sunny sheltered

border in February and they are off in time to plant early Potatoes or some other selected crop.

We have already seen how Scarlet Runners may be associated with early Potatoes and late Cauliflowers, the Bean plants being kept short by pinching out the tips. Dwarf kidney or French Beans sown in rows 2 feet apart may be interplanted with Coleworts in June and be themselves succeeded in autumn by Cabbages or late Broccoli. Thus by an interesting example of Intensive culture we get summer, winter, and spring crops in a continuous succession. And before the Beans were sown a "catch" of Radishes might have been made.

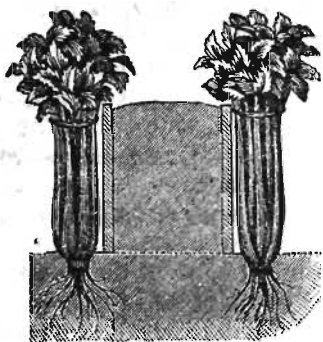
A remarkably successful way of getting heavy crops of Scarlet Runners with small crops between them is to provide for two rows 8 feet apart, the poles 2 feet apart and 9 feet out of the ground. At each end of the row strong horizontal poles are lashed across the top, thus connecting the two lines. A central wire is taken from one horizontal to the other. The framework is completed by setting poles 4 feet high equi-distant between the 9-foot poles; and taking stout twine from them to the central wire. We now have accommodation for two sets of Runner plants: one growing up to the top of the tall poles and the other growing up the short poles and along the twine to the wire. The former set follow a vertical line throughout; the latter change from the vertical to the diagonal when they are 4 feet high and the change of direction, by checking the flow of sap, induces earlier and heavier fruiting on the lower part of the plant. Tremendous yields are secured in this way and the space between the rows of Runners is not wasted, because Lettuces, Turnips, and other short crops are sown between them. This is one of the most modern examples of Intensive culture.

Waxpod Beans are a delicacy appreciated by the few. The "Butter Beans" of the grocer's shop do not mature in Great Britain. Haricots as sold in shops are the ripened seeds of white-seeded varieties of dwarf Beans, many of which, contrary to the general belief, can be ripened in Great Britain.

Broad Beans are not very good subjects for Intensive culture, although useful enough as standard garden crops. If one sowing

is made in autumn and another in early spring a crop will be secure and after it is cleared Brussels Sprouts may be planted for succession.

In connection with the association of Peas and Celery, it may



Potatoes and Celery are two of the best crops for new ground.

The figure shows how high Celery should be earthed before winter. Earlier in the season Lettuces may be grown on the ridges of soil beside the trenches.

be noted that the order may be reversed if desired; Peas following Celery instead of Celery following Peas. This would be the better order on new ground, which in its crude state would not be likely to give satisfactory crops of Peas and is better filled with Potatoes and Celery the first season. The second season Peas ought to do well on the ground which carried the Celery, because the trenching and feeding for the Celery will have sweetened the land. When the trenches are made for the Celery good use can be made of the ridges of soil, which will give useful crops of Lettuce.

The tap-root crops as a whole do not lend themselves to Intensive culture, particularly Parsnips and Beetroot. But round Beet comes off early enough for Coleworts to be planted for succession. Carrots can be worked in, because the small "Horn" and other French varieties are very rapid growers when the soil is moist and warm and can be sown as late as July on ground which has been cleared of an early crop, such as Potatoes. The roots do not come very large, but are very sweet and melting. In gardens where there is no difficulty in making the ground friable in spring, a main crop of the larger Carrots may be sown; but on damp, stiff soils which cannot be brought into a fine state, it is wise to be content with smaller roots. If these can be got early, they may be succeeded by Coleworts, which are so useful in winter.

The Spinach supply varies in importance enormously in differ-

ent households. There are families in which Spinach is preferred to any Brassica crop and even to Beans, perhaps in some cases because the medicinal virtues of the plant are highly valued. Whatever the reason, disappointment when the crop fails is keen, and what gardener can feel confident of maintaining a supply through hot weather? The plants betray a most exasperating weakness for running to seed and cannot be prevented from doing so. Spinach Beet sown in rows 18 inches apart in April and thinned to 9 inches makes a splendid substitute. And Spinach lovers have another alternative besides Spinach Beet and that is the New Zealand Spinach, a plant the flavour of which approximates closely to that of Spinach proper. It has thick, fleshy leaves which radiate from the centre close to the ground and remain prostrate. It is not a hardy plant and the best way of growing it is to sow seed in heat in early spring, transfer the seedlings from the seed pot or box singly to small pots, harden them in an unheated frame, and plant them out a yard apart in May. A small bed will give a long succession of produce and there will be no "bolting" in hot spells.

Silver (Seakale) Beet is esteemed for the leafstalks, which make an excellent substitute for Seakale, but it should not be forgotten that the leaves themselves are more than merely eatable, they have a palatable Spinach flavour. If sown out of doors about the middle of May, it will be serviceable in the autumn and the following spring.

It is still common to sow Tripoli or Rocca Onions with the spring Cabbages, Lettuces, and Endive early in August. These Onions are ready for use in July of the following year. Late Turnips may be sown on the ground which they vacate. That useful allied crop the Shallot, which gardeners like to get planted in February (they run the risk of being left out in the cold if they apply to the seedsman for bulbs much later), is ready to gather in July and may also be followed by a sowing of late Turnips or by early Carrots.

The Onion crop really only lends itself to Intensive culture with young plants grown for salads. The most that can be done with the main crop is to grow a batch of plants of a large variety from a sowing made in a frame and plant them out in rows 15 inches

apart, so that a crop of Radishes, Lettuces, Turnips can be grown between them. The main outdoor crop will hardly pay for intercropping and is best sown with the rows about 9 inches apart and the ground kept very firm, so as to get hard bulbs that will keep for several months. After the Onions are cleared off in August or September the space can be filled with Coleworts, or may be planted in October with Cabbages for spring use, or sown in September with winter Spinach.

We have seen that the market grower of Vegetable Marrows sometimes starts them between early Potatoes, but another plan worth mentioning for this useful crop is to plant it 3 or 4 yards apart in a bed of Lettuces, the plants in which, set a foot apart, can have an intercrop of Radishes in their early stages. After the Radishes have gone, the Lettuces will be none the worse for a Vegetable Marrow here and there and will have gone the way of the Radishes long before the Marrows need the whole of the room. But Vegetable Marrows can of course be grown on manure heaps or banks of decaying turf.

Let me add to these suggestions for the intercropping and Intensive culture of vegetables that I am fully aware that the hints thrown out raise obstacles in the way of those stately "rotations" which were the pride of the old-fashioned gardeners. But I do not think that that matters very much, always provided that the soil has had the thorough preparatory treatment which was talked of in previous chapters. But there is nothing against a simple system of rotations, on the principle of learning to walk before trying to run. We can still intercrop to some extent, but we will not embark on quite so intricate a system as Intensive culture at its best certainly is. The plans given under Kitchen Garden in Part III. make rotation-cropping clear.

Amid all this scheming of crop within crop in order to squeeze out of the soil every ounce that it can be made to yield without impoverishment, the novice may wonder what happens to the perennial crops, such as Asparagus, Rhubarb, Seakale, Globe Artichokes, Horseradish, and various aromatic Herbs. They are provided for separately. Unsuitable for dovetailing in with the rotations, they are given plots of their own. They have their uses,

indeed, there are gardens where one or other of them, particularly, perhaps, Asparagus and Seakale, is considered far more important than Parsnips or Cabbages; but whatever their qualities, they are not the vital crops of the war garden. When we are making a garden for war purposes alone, which, like this of mine, will assuredly revert to other uses when peace comes again, we can well afford to dispense with the perennial crops. But if we badly want them, then we must buy plants, because we cannot get them from seed quickly enough. And even plants should have a full season's growth before gathering begins.

We can, however, sow a pinch of Parsley seed in order to supply graceful greenery for garnishing dishes. It germinates slowly, but grows fast afterwards.

CHAPTER XV

THE WEATHER AND THE GARDEN—THE BIRDS—WHIP AND SPUR AMONG THE CROPS

IN spite of the gardener being to so great an extent a creature of the weather, he does not, if you notice, discuss it one half so much as your barber or your haberdasher. The weather makes all the difference to his crops, but it is the crops rather than the weather which he discusses. He knows that the crops will come, weather or no. They always have come and they always will come. The truth is that the gardener is too much in the middle of the weather, so to say, to be always talking about it. When the weather is fine he does one job, when it is wet he does another. He always has work waiting to do and there is rarely a kind of weather to which a job cannot be fitted.

It was annoying that when, in the late winter of 1916, my War Garden was mooted, there should have been a record rainfall in March, followed by a most inclement April. As day succeeded day, with pitiless downfalls of rain, with bitter winds, with blizzards, with sleet and snow, a spirit unsustained by past experience of the balancing power of Nature might have lost hope. But old memories of gardeners and gardening cheered us. Not until the eve of Good Friday was there real promise of better things and Good Friday fell as late as April 21. Yet on the first day of May, what did we survey? The last inch of ground dug; the greater part of it already sown and planted; Peas, Turnips, Radishes, and Cabbages already through; the earth flooded with brilliant sunlight; the fruit trees sheeted with bloom; the beautiful Chestnut spires rising; the whole of Nature pulsing actively. The days when we went to our work between five and six huddled in thick overcoats, even then shivering in the horrid rawness of a grey and toneless dawn, seemed to be very far away—nightmares, as it were, of past years.

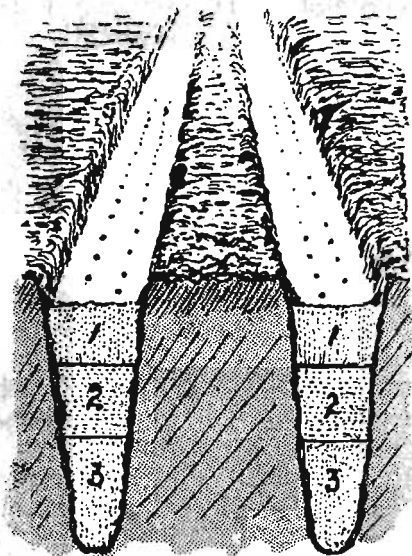
One encouraging factor of some importance was that the soil

came readily to a good sowing tilth. No sooner was it dug than it was raked down, the line set, and the drills for the seeds were drawn. With rake on end we bustled cheerfully along the line, making drills for small seeds. A drill-drawing hoe forms a part of the equipment of some gardeners and is admittedly a handy tool; but it is not a necessity and by adding to the expense and to the demands on storage accommodation, it becomes an adverse factor. I want nothing better than a rake for narrow and shallow drills such as Cabbages, Turnips, Lettuces, and a great many other small seeds call for. One does not work directly backwards, as in drilling with a hoe, but stands sidewise to the line of the drill and flicks the soil out lightly as one walks slowly forward. With a little practice there is no difficulty in varying the width and depth of the drill sufficiently for the small-seeded crops, always provided that the tilth is as fine as our previous references have shown that it should be.

And now the seedlings are comfortably through. The fine, smooth tilth which we prepared has received the cordial approval of the birds, which revel in happy dust-baths. Every morning we find the surface pitted with their "tubs." It would be useless to pretend that we are free from misgivings. Birds can be a severe trial in the garden, even to those who love them most. And when we see flocks of house sparrows, many starlings, blackbirds, and thrushes, we are a little subdued. We are not particularly apprehensive of damage by starlings, blackbirds, and thrushes to our seedling Turnips and Radishes, because we know that although they are herbivorous on occasion, they prefer a diet of grubs, worms, snails, and other carnivorous delicacies. But the house sparrows give us furiously to think, and they appear to outnumber all the rest of the feathered tribe by fifty to one. Fortunately there do not seem to be many finches.

We had taken the precaution to damp the Peas with paraffin before sowing them and therefore are not worried about them and are not surprised to find them safe; but why do the sparrows, which in most gardens are so destructive to small seedlings, leave our Radishes and Turnips alone? We have used no thread, no netting, no anything. But we have been on the alert, ready for

instant threading in case of necessity. We have noted these peculiarities of bird activity before. Perhaps they are too entirely due to local conditions to be explainable. Meantime, we retain



HOW PEAS MAY BE SOWN

Among several good ways of sowing Peas is that of putting a foot below the surface a layer of fresh manure (3), with another layer of decayed manure or old hotbed manure and soil mixed (2) above it. The seed bed (1) is fine soil. The seeds are moistened with paraffin oil to keep off vermin and then sown an inch apart.

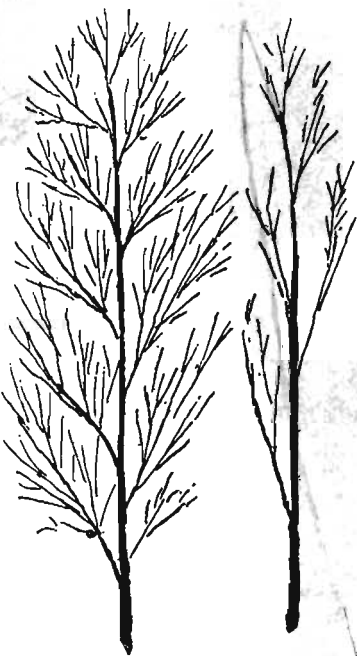
our love for those birds which we know are often unjustly maligned: tits, swallows, hedge-sparrows, wrens, flycatchers, white-throats, redstarts — yes, and cuckoos — which we know to be exclusively insectivorous and therefore friends of the gardener. It is easy to lump all birds together as enemies and go in for unlimited destruction; but gardeners as a body are not the indiscriminate haters of birds which they are often credited with being and for the most part have a very clear and correct idea of the habits of the commoner birds and of their relations to the economy of the garden.

The beginner in gardening who has not learned soil-love as a result of

the experience of years does not really enjoy his work thoroughly until the plants come through. Then, however, interest may flame to enthusiasm in a night. The magic of life asserts itself. Here is something at last to reward the resolution which led to quitting bed soon after daybreak on raw mornings and to much hard plodding with the spade. Now, if never before, the gardener feels that it was worth while and more than worth while.

He has called new beings into existence. He has played the creative part. There is a natural desire to hasten the growth of the seedlings, so that early crops may result. A praiseworthy ambition, because it is the early crops which pay. But whip and spur must be applied with discretion. As a rule, the more natural the growth in its early stages the better the crop. As long as the seedlings make steady progress and retain a deep colour, they are best left without stimulants; only when they lag and the foliage is thin and pale should they be fed. But certainly one has seen feeble seedlings improved greatly by waterings with weak sewage or liquid artificial, such as $\frac{1}{4}$ oz. nitrate of soda in a gallon of water. One finds that as soon as the plants have fairly taken a turn and are in healthy growth the "nips" are best discontinued; to pursue them uses time and material to no advantage. For my part, I should feel embarrassed if detected by a horticultural expert in the act of dosing seedlings, because I should expect to be blandly reminded that the preliminary treatment of the soil is supposed to have rendered such unprofessional devices superfluous.

The hoe is the orthodox tool for stimulating growth, because it operates naturally; that is to say, it provides the conditions



STAKING PEAS

Put the sticks to the Peas early. If they are thickly branched, as shown on the left-hand side, remove the lower branches and use the sticks as shown on the right. The branches cut out should be placed near the young plants to protect them.

favourable to sturdy growth. It does this mainly by maintaining an equable state of moisture in the upper layer and by admitting air freely.

It hastens the growth of Peas to put the sticks to them early.

There are certain apparent anomalies in the matter of firm and loose soil, as recommended by gardeners, and it may be well that I should say a few words about the matter. By digging the soil deeply we naturally loosen it; we have to loosen it, indeed, for if we did not we could not draw drills for our seeds. Thereafter, firmness and looseness have to alternate. I admit this proposition seems a little disconcerting, but it improves on acquaintance.

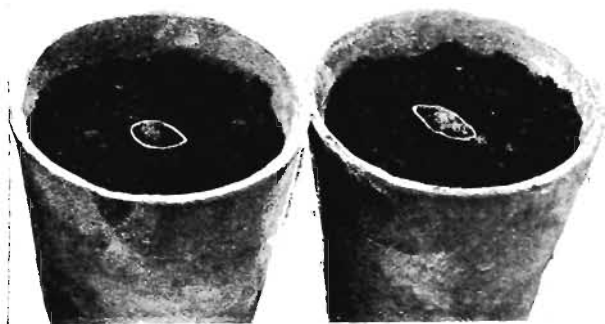
To begin with, I think that a firming process should immediately follow the sowing of the seeds. The gardener practises it with Onions, but rarely with other things. I wonder why. For my own part, I have no sooner sown seeds than I trample them in, small or large. Before filling in the drills with soil I walk along them, treading the seeds firmly down. I should not do it if the soil was clayey and sticky. Peas, Turnips, Carrots, Lettuces—these and the rest all get the same rough-and-ready treatment. If I broadcast a bed of Radish seeds, I forthwith tread the seeds hard in, then sprinkle soil over them. I believe that I get just as quick a germination as my neighbours by doing this and perhaps a little quicker. The pressure brings the moist soil into intimate contact with the seeds, for one thing. Multiplication of root fibres follows, for another, on the principle of young grass spreading at the root into a mat of fibres under the weight of the roller. In loose soil, one sometimes finds that the energy released by the bursting of the seed coat dislodges the new-born plant, bringing the root to the surface, there to be dried and withered; this cannot happen when the seed is trodden in. With treading, one can afford to sow shallower than without it, thus getting a quicker germination. Some there are who, agreeing with me in my practice of firming seeds, claim another advantage—that a firm bed attracts and retains sunheat. I am interested to hear that this is so, but I am fain to confess that it appears to me to be somewhat of a disadvantage after germination has taken place, because of the probability of the soil cracking and permit-



A LESSON IN ASPARAGUS GROWING

Mark out a bed 6 feet wide and any desired length, remove the top soil in strips and dig over the subsoil, spread on manure, replace the top soil, set two rows of plants a foot from each edge on slight ridges, and one row along the centre, all 18 inches asunder in the rows, and cover with 4 inches of soil. Plant 2-year-old or 3-year-old roots just when growth starts in spring, taking care that they do not get dry during the planting. Do not cut till the following year.

(See page 154)



HOW TO RAISE VEGETABLE MARROWS

Sow the seed in a small pot and cover with $\frac{1}{2}$ inch of soil. Put in a greenhouse or frame in February or March. The plants will be ready for the garden in June.

(See page 154)



HOW TO SOW PEAS

The proper way to sow Peas is to sprinkle the seeds clear of each other over a wide drill and cover with $2\frac{1}{2}$ inches of soil.

(See page 158)

ting of the escape of moisture. Surface firmness before germination, please, but not too much of it afterwards.

And this brings us to the next stage in the alternating process. We loosened the soil in order to make our drills and then we firmed it so as to encourage a good germination. Now, with the seedlings moving steadily and the sun daily getting more and more power, we must look ahead and anticipate a time when the moisture in the soil is being withdrawn by capillary attraction at a dangerous rate. The same soil that is saturated with moisture in April may be parched in June. Before the summer is half over it may be cracking badly and the crops languishing. This catastrophe we must avert and we can do so by keeping a loose surface layer of soil, which prevents the full operation of the capillary process. We may fear in April that our soil is too wet, but we shall be only too glad to have it damp in June.

The spring moisture can be preserved. The soil can be made to act as its own reservoir. By keeping it hoed from the moment that the seedlings show through until the crop is mature, we shall counteract the capillary process. Hey for the hoe! There never can be a happier man than "the man with the hoe." He may be debased from the poet's standpoint, but he does not realise his degradation. He is looking downward instead of upward, but he is looking at the base of all life and thinking of its wonders. His eyes are lowered but his thoughts are elevated. He sees the bare earth break into a myriad forms of creation. He sees beauty bound from the fallow. What a week ago was barren clod is now green and luxuriant life. Ah! beautiful mystery! And the hoe helps on its marvellous unfolding.

There are various kinds of hoe and of course gardeners love to disagree as to which kind is the best. My ideal hoe is one that operates with a pull and not with a push, that has a rectangular blade of about 6 inches by $2\frac{1}{2}$ inches and that is mounted on a stiff ash handle between 5 and $5\frac{1}{2}$ feet long. It is not what seedsmen call a swan-neck draw hoe, for that has a crescent-shaped blade with an arched shank. I believe that the latter is the most popular of all pulling hoes, but it is not my favourite, although I should be glad enough to use it if I could not get the shape

which I happen to have a particular partiality for. All "draw" hoes are good in competent hands, because the soil is easily crumbled and loosened to a depth of 2 or 3 inches, and that not only keeps down weeds most thoroughly but effectually checks capillarity.

One finds it desirable to give the first thorough hoeing as soon as the seedlings are fairly through, but if the surface has dried considerably it may be well to wait for a shower. With the soil moist the tool shears pleasantly through and leaves a soft, loose crumb, which is slow to dry and which, while it can be maintained, is an effectual safeguard against cracking. The action is a chopping one in the main, but when running along the edge of a row of seedlings, one finds that it is best to slice the soil gently with the hoe on one of its corners.

The term "draw" in connection with this hoe is misleading. One does not draw. If the soil is drawn towards the worker it is pulled into heaps, which have to be pushed back again in order to keep the level. By chopping and slicing, the soil is cut well and at the same time the level is maintained.

After heavy spring rain, the soil is apt to look a little beaten and glazed. Set the hoe to work and it is crumbly and fresh again. And there is no prouder man than the gardener when he surveys a piece of newly hoed ground, with lines of green crops intersecting it. Freshened alike by the rain and the hoeing, which have carried down abundance of oxygen, the plants almost bound along, certainly they progress as they have never done before. And henceforth, as we have seen, the loose surface layer will check evaporation and conserve moisture.

There is a horticultural process called mulching which maintains moisture in the soil and at the same time actively feeds the crop. A coat of manure from the stable or yard is spread between the rows and allowed to remain. Peas particularly benefit by it, especially in those long spells of dry weather which so often bring growth to a standstill and render the enfeebled plant liable to a devastating attack of mildew.

Water, and particularly water in the form of liquid manure, is a boon in dry weather, however carefully one may conserve the

moisture by hoeing and mulching. Gardeners have a strong objection to giving outdoor crops small quantities of water in long spells of dry weather, on the ground that the moisture attracts roots to the surface, which perish immediately the damp has dried up, leaving the plant worse off than it was before. This is perhaps somewhat far-fetched, but certainly good soakings at long intervals, followed by mulching or hoeing, do more good than dribbles at short intervals without the supplementary operations. I think that the best system of watering is to give plain water and liquid manure alternately. Diluted sewage is a great stimulant to growth, but special brews of artificials are also helpful. There are few crops which do not respond to a liquid prepared by adding $\frac{1}{4}$ ounce of nitrate of soda and $\frac{1}{2}$ ounce of superphosphate of lime to a gallon of water. Sewage and other forms of liquid manure from animal sources are always improved if they are first well watered down and then strengthened with $\frac{1}{2}$ ounce of super. per gallon.

By hoeing, by mulching, by watering, by liquid manuring, we stimulate our crops. We keep them "on the run." While they are moving actively and healthfully insect and fungoid enemies are at a disadvantage. They attack, but they attack a well fortified citadel. They are never wholly subdued, but they are beaten off again and again, and presently the battle is finally lost to them through the ingathering of a bountiful and profitable crop.

CHAPTER XVI

GATHERING AND PRODUCTIVENESS—THINNINGS—
MATURITY AND WASTE—STORAGE

THE market grower of vegetables must make his profit in one of two ways: by getting a special price for a small crop or by growing as large a crop as possible at a small profit. If he can get on to the market before the majority of his competitors he will realise high prices. Flavour is not a vital point with him. He will gather his crop when it pays him best to do so, not necessarily when it is in the best table condition. A town eater of Peas might grumble that they were old and flavourless, and through the medium of the cook the complaint might come back on the greengrocer, but it is not likely to disturb the producer, so long as he has been able to sell at a remunerative price. Greengrocers are supposed to know what they are buying. Besides, it is easier for the market grower to tell the greengrocer that the fault is in the cooking than for the greengrocer to tell that to the cook.

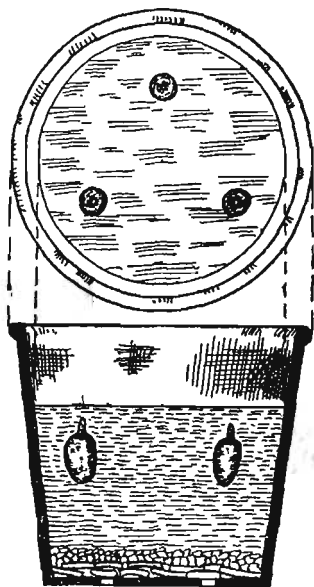
One of the strongest points in the home culture of vegetables is that freshness and flavour are at the command of the grower. If his Peas are old, if his Beans are stringy, if his Turnips are lumpy, the fault is with himself. Are they? Too often, perhaps. Gathering is made periodically. Or it is left till there is a given quantity. Or one hears that "it is a pity not to give the things a chance." The meaning of this is clear enough. The "things" have got to get a good deal bigger before they are gathered, so that there may be a larger helping on each plate.

Now, let us forthwith establish the point that in the case of many crops early gathering not only makes for good flavour but also for increased productiveness. A few popular examples are Peas, Beans, Turnips, Carrots, Vegetable Marrows, Asparagus, Cucumbers, and Tomatoes. Peas, Beans, Marrows, Asparagus, and Tomatoes continue growing and fruiting longer if picked early and continuously than if allowed to bring their crop to maturity. The nearer that they get to seediness the sooner they will go off

bearing. Turnips and Carrots swell out a heavier crop if they are thinned progressively than if they are left to themselves. Both of these useful crops give delicate pickings if they are thinned in the seedling stage to a couple of inches apart, because by the time they begin to crowd each other again the roots are of a nice table size and of pleasant if not rich flavour. Those that are left of course grow bigger and give the crop its ultimate bulk. For these reasons it is true economy to gather early.

The same remarks apply to Potatoes when it is possible to get access to the crop without checking the growth of the plant, as, for example, when they are forced in pots. With the soil firm and moist, the pots may be turned upside down, tapped, and lifted off the ball so as to give access to the roots, from which the small tubers which have formed can be picked; the plant grows away as merrily as before after the pot has been replaced. When the plant has to be lifted to get at the root, as is the case when the crop is grown in the open

ground, the case is different and early gathering becomes wasteful, unless the smaller tubers are forthwith planted for a second crop. But the small early Potato is one of the greatest of garden delicacies and, always provided that an adequate provision is made for autumn and winter by the planting of later sorts, a concession to a weakness of the flesh which we all share is perhaps permissible. When all is said and done, there are certain Potatoes which lose rather than gain in flavour with keeping



FORCING POTATOES IN POTS

Early crops may be obtained by putting three small tubers in an 8-inch pot; see transverse section at top. The longitudinal section below shows drainage, depth of soil in pot, and depth of covering.

—Epicure and the Ashleafs, for example—and these should be eaten young and small, later and larger varieties being provided to carry on the supply. But a serious horticultural misdemeanour is perpetrated if a late variety, which requires most of the summer to develop its full crop and flavour, is lifted in June for the sake of a few small tubers.

When circumstances do not permit of selling the surplus of such crops as Peas, Beans, Cucumbers, and Tomatoes from a private garden they had better be preserved than allowed to mature. The housewife only needs to be reminded of the value of bottled Peas, pickled Beans and Cucumbers, and chutneyed Tomatoes to make preparations for treating each particular crop before it is actually ready, so that there may be no delay when the right moment arrives. And while she is adding delectable things to her store-room the lightened plants are pushing another gathering of young stuff on.

Progressive productiveness is a sound principle for a great many crops, and the grower should take care to recognise its value. It gives him a long succession of produce, good flavour, and a heavy yield. But because in the case of several useful crops there are substantial advantages in early gatherings, it does not follow that maturity is always wasteful. The writer is one of those who rarely, at home, eat vegetables and meat together. And, eating vegetables by themselves, he claims a nicety of taste with respect to them which he is not prepared to concede to those who mix meat and vegetables or vegetables and meat gravies. It is entirely impossible to taste the true flavour of vegetables when they are eaten with meat—and that meat very likely half smothered with mustard. Claiming, then, the power of effective discrimination, he affirms disagreement with those who invariably extol the flavour of immature vegetables and condemn that of the mature. This has become a "pose" with thousands of gardeners, who by their eating habits effectually deprive themselves of the ability to exercise proper discrimination. It is not the fact that the flavour of young Carrots, young Cauliflowers, young Potatoes, young this, that, and the other, is superior to that of mature specimens of their kind; on the

contrary, it is generally the reverse. Half-grown Cauliflowers from frames are very melting and delicate, but they have nothing like the flavour of a large Broccoli which has passed the greater part of the year in the open ground. Baby Carrots are delightfully marrowy, but they cannot compare in flavour with a full-grown specimen as big as a shillelagh. "New" Potatoes are immensely esteemed, but generally they are almost devoid of flavour, while a huge baked autumn giant is full of it.

The condemnation of large size and maturity should not be accepted blindly and unthinkingly and without proper test. It is advantageous in every way to grow portions of most crops to maturity. Thin a bed of Carrots by all means, eating the thinnings, but do not use the whole bed before it is half grown, for that means waste—waste of bulk and also waste of flavour. Do not sacrifice to a delusion an entire bed of spring Cabbages before the hearts have become hard. Least of all take up a piece of Potatoes of a late variety while the leaves are still green—unless, indeed, for the purposes of seed or to avoid disease. Not until the tops have withered completely has the crop its full bulk, its full flavour, and its full value.

In the case of pod-bearers, maturity cannot be permitted, because in the case of Peas and Broad Beans it is attended by an objectionable hardness, and in the case of kidney Beans by stringiness. But because immaturity is preferable to ripeness in these instances, it does not follow that it is desirable in other vegetables which have nothing whatever in common with them. Each must be considered in relation to its own properties and characters. It is a somewhat peculiar fact, and one which appears to have escaped comment, that young Turnips of some varieties have a stronger and more pungent flavour than old ones, but the tops are milder. It seems that as the leaves mature they extract pungency from the root.

One is prepared to feel a great deal of sympathy with the person who wants real Potato flavour, and yet wants the Potatoes to be small. Appetising and nourishing as baked Potatoes are, they are far from meeting every household purpose. Boiled or steamed Potatoes are still wanted, and very large tubers are not

suitable for the purpose. It is possible to get mature Potatoes that are nevertheless quite small, even with varieties which come large of tuber when grown in the ordinary way, by the simple plan of planting them close together. It may be true that Potatoes planted wide apart yield heavier crops than crowded plants; it may be true that they are more easily protected from diseases; the fact remains that they produce a much greater proportion of large tubers. If late varieties are planted 2 feet by 1 foot in fertile soil they may be expected to throw up a thick mass of foliage from a large number of comparatively weak shoots and to yield a considerable proportion of small tubers, which will ripen in just the same way as large ones if they are left in the ground until the foliage withers. These small mature tubers generally possess splendid flavour. Risk of disease is reduced if the crop is grown on an elevated and well-drained site. A crowded crop on a damp site could not be kept healthy in a wet season, but would almost certainly suffer severely from blight. And the flavour may be expected to be better from a light than from a heavy soil, so that if the natural soil is stiff it will be well to lighten it by adding leaf mould or other friable matter before planting.

Too much is said about the low standard of British cookery, and too little about the mistakes of using immature stuff and of mixed eating. The best of cooks could not make half-grown Cabbage eaten with rich meat or gravy enjoyable. The result is a sloppy mess which the true vegetable lover recoils from. There is nothing more easy than to repeat a platitude, and of all platitudes there is none more popular than that the British do not know how to cook. I venture to say that 90 per cent. of British women of the lower classes can provide an appetising and satisfying dish of vegetables if they are given fresh produce, a proper utensil, and sympathetic encouragement to take an interest in their task. I have eaten delicious Potato and Cabbage in the cottage, and I have eaten—or at least been offered—for-bidding messes in the villa. The overworked and unencouraged "general" does the worst vegetable cookery, because she has too much to do and too little interest to look properly after the pans; moreover, she often has to deal with produce which is both

immature and stale; and she has to serve it up with a joint and a boat of unctuous gravy. Of course, she herself believes profoundly both in the meat and the gravy, and considers that the vegetables are merely supplementary. It may be that she can never be taught different, but she can certainly be taught to deal better with vegetables than she sometimes does. The rest is the concern of the eater. He may continue to have meat, vegetables, and gravy on the same plate, or he may have the vegetables kept apart, like the salad. In reality, there is a much stronger case for keeping the vegetable plate than the salad plate at the side of the meat plate.

Maturity and soundness in roots become still more important when a reserve of nourishing and palatable food is wanted for the winter. Gardeners with frames, pits, and glasshouses can produce small, tasty crops in a practically unbroken succession throughout the winter, but the small cultivator without frames and greenhouses and vineries will have to rely on "greens," Celery, and Leeks in the absence of roots. With a store of Onions, Beetroot, Parsnips, and Carrots—not to speak of Potatoes—he will be better placed. It maintains the interest of the garden at a period when indifference might tend to grow up if the root store is made near the place where the crops have grown. Not only the Potatoes, but also the Carrots and Beetroot, keep splendidly in a mound under straw and earth, like the Mangels of the farmer, provided they are ripe and free from disease when they are put away. Immature and diseased roots will not only not "keep" themselves, but will prevent their sounder neighbours from doing so. With a full *cache* in being, the householder will feel the cheerful confidence of the explorer, knowing that whatever his trials and tribulations may be, starvation will not be one of them. And visits to the garden for the sake of collecting provender will be to its ultimate benefit in the reminders which will spring from them that there is work for the next season to be done.

The ripened Onions will be hung in a frost-proof store. The Parsnips will be left in the ground and dug as wanted. Late-sown Turnips will keep them company. And so the root supply will be complete.

CHAPTER XVII

FOOD FROM TURF—THE LAWN AND ITS AMENITIES

OF all the amenities surrounding the home, probably the lawn is considered by most people to be the nearest to an absolute luxury, for which not one word can be said. When the well-meaning, but often ill-informed critic who loves to adjust the errors of the nation through the correspondence columns of the daily papers, wishes to drive home with the most deadly emphasis examples of neglect in home food production, it is the vast areas of mown grass which he quotes first and last. There they are, in the public parks, on the golf links, around the mansions and the villas, the last word in the callous wastefulness of a people given up to self-gratification.

Let me hasten to admit forthwith that there is absolutely no defence for the elaborate mowing and dressing of large areas of grass in private places in a time of national stress, when men are wanted for the armies and hay for the horses; and that there is none in public parks save such advantage as is derivable from providing the youth of the great towns with facilities for playing games. Turf as an amenity is a luxury pure and simple. Every acre of dressed grass takes up at least as much labour as an acre of land under food crops. It yields nothing, for the mowings are practically valueless. It makes demands on the time of mechanics through the necessity of repairing mowing machines. There ought to be no such thing in war time as large dressed lawns. With respect to the public parks, more can be said for mown grass, without, perhaps, making out an entirely convincing case for it. Games keep the town youth active, supple, and healthy; they keep him, to some extent, out of undesirable places; they bring in money through the medium of the fees which are charged. Whether these considerations are adequate each reader must decide for himself.

But, keen vegetable grower though I am, I am still very far from agreeing that the proper thing with every lawn is to make a kitchen garden of it. I have broken grass and I have learned what it means in hard labour, in setting free ravenous hordes of wireworms and leather jackets and in slow, impatient waiting until the soil has "mellowed" sufficiently to produce crops compensating for the work and expense. There certainly are cases in which small areas of grass can be turned into vegetable plots with advantage, but as a rule the large lawns of private and public parks can be dealt with most economically by allowing them to run to hay. There is no work involved except that required for cutting, "making," and stacking the hay. And if hay is not human food it is horse food, and by facilitating transport and the operations of armies has an influence for good on the food supply of the population.

It is pardonable to consider the amenities to some extent, and this can be done by mowing a strip a few feet wide along the most important paths, if only with the scythe. This simple plan, taking up but little time, preserves the garden aspect of the place. Or perhaps there is a group of beds near the windows round which the scythe can be run occasionally, thus maintaining horticultural interest without any sensible waste.

People inexperienced in the management of grass naturally suppose that when a lawn has once been allowed to run to hay it can never be restored. It would be regrettable if such were the case, because many lawns have been the work of generation after generation of gardeners, working in the interests of old families, each as interested as the other in maintaining and improving what have come to be looked upon as permanent institutions. There are thousands of cases in which the lawns are as much a part of the demesne as the house and the lake and the "immemorial elms." To ruin the lawn would seem to be little less disastrous than razing the mansion or cutting down the noblest of the trees. But happily the return to prairie does not necessarily mean final return to the wild. Grass can be restored inexpensively and expeditiously. When the time comes that the last crop of hay has been taken; when the gardener has laid aside

his sword and again taken up his pruning-hook ; when the peaceful routine of the garden is operating as in happier days, rolling and mowing, supported by dressings of sifted soil and fertiliser and lawn sand, will encourage the finer grasses and speedily give something like the old beautiful sward. In two seasons at the most complete restoration may be achieved.

On the " whole-hog " principle, those who decide to put their lawns to hay will determine that the crop shall be as good as possible and will dress the grass with a mixture of artificial manure in early spring. The following is a good combination: sulphate of ammonia, 1 part; superphosphate of lime, 3 parts; steamed bone flour, $\frac{1}{2}$ part; use $4\frac{1}{2}$ cwt. per acre. But the weight of the hay crop will turn a good deal on the proportion of fine grasses in the lawn. In this connection, it would be interesting to know the origin of many old lawns. Probably a good many were originally made from meadow turf, in which the coarser grasses would predominate at first. With skilled treatment, encouraging the finer grasses, the texture of the lawn, as lawn, would improve. And certainly in those cases where the lawn was made from seed, the fine grasses would preponderate. Broadly speaking, the greater the proportion of fine grasses, the lighter the crop of hay. Bearing this in mind, one would expect a lawn newly made from turf to give a heavier yield of hay than either a new lawn made from seed or an old lawn made from turf and " improved " by the long-continued operations of the gardener, because there would be a larger proportion of the coarser meadow grasses in it.

In seeding a lawn with a view to strengthening the herbage, such vigorous grasses as Hard Fescue, Fiorin, Smooth-stalked Meadow Grass, and Crested Dogstail, known to botanists respectively as *Festuca duriuscula*, *Agrostis stolonifera*, *Poa pratensis*, and *Cynosurus cristatus*, would be the most serviceable. When, however, restoration to lawn was the object in view, the finer grasses, such as Fine-leaved Fescue (*Festuca ovina tenuifolia*) and the Wood Meadow Grass (*Poa nemoralis*), would be called upon in greater quantity. And white Dutch Clover would be used where it was required. With Clover in demand, the best

FOOD FROM TURF

fertiliser would be basic slag, which could be used with advantage in autumn or early winter at the rate of 8 cwt. per acre.

Harassed gardeners in the midst of a struggle to improve a foul lawn freshly made from weedy turf would conceivably welcome permission to let the lawn go to hay, in the hope that when necessity had passed and the time for restoration came they could start afresh. But why make the initial mistake? Turf is a short cut to a lawn, but only if the turf is free from weeds is it the right road. Unless good turf can be ensured—and contractors need to be closely watched—the lawn-maker should school himself to patience and use seed, taking care to procure it from a dealer of repute, for there may be weeds in seed just as there may be weeds in turf. And if the seed be sown in early autumn, there will be grass the next year, if not grass fully suitable for supporting strenuous games.

The base of "lawn sand" is really sand—fine, clean sand; but the fertilising ingredient in it is sulphate of ammonia. The reason why lawn sand helps in developing fine turf is that the sulphate of ammonia stimulates the fine grasses, which, unsupported, are always subject to extinction by the more rampagous sorts.

We come, then, to much the following position with respect to lawns:

(1) A large lawn does not justify its existence in times of food and labour shortage.

(2) It can be used for hay far more economically than it can be broken up and cultivated.

(3) The better it is as lawn the lighter the crop of hay produced, because of the greater proportion of fine grasses.

(4) The respective proportions of coarse and fine grasses can be governed by the kinds sown.

(5) It can be restored to lawn expeditiously by dressing with fine soil, lawn sand, and fertiliser, combined with mowing and rolling.

Let us, however, by all means weigh the fact that there is a considerable amount of potential food in turf. There is no gardener but knows that good turf is richly stored with nitrates,

which can be concentrated on vegetable production if circumstances favour that course. But by whatever method the turf is turned into fertiliser: whether by putting it forthwith under the soil, by stripping it and burning it, or by stacking it and letting natural decay operate, the process is necessarily laborious. Only, therefore, where the labour supply is adequate is it economical to break up turf.

The farmer who breaks old turf does it with the plough, taking the risk of the crop which he puts on suffering through the attacks of the various formidable grubs which subsisted on the living turf. He is aware of the danger, but he knows that it is the inevitable penalty of the course he is adopting and he pays it with his accustomed stolidity, taking care, of course, to put on the land such a crop (Potatoes) as will feel the injury least. The farmer cannot economically strip and burn or stack turf; the operation would be too costly for his large areas and paid labour. But with small areas, or with abundance of cheap labour, stripping is true economy, because the burning of the turf or rotting it down in stacks with lime between the layers not only gets rid of pests but actually increases fertility. And with the turf removed, the gardener can proceed to that process of deep digging or bastard-trenching which we have seen is so conducive to successful vegetable-growing without being hampered. He can prepare a fine sowing tilth and draw his seed-drills free from the impediment of the lumps of turf. Even if he is only growing Potatoes the first year he will appreciate the advantage of a free soil; and if he is venturing on growing small-seed crops he will appreciate it still more.

The ultimate use of the turf is a matter of local requirement. Part of the decayed stack (which while decaying will support a useful crop of Vegetable Marrows) will probably be utilised for potting mixtures, for Tomatoes, and for other special crops; the bulk will go back to the soil through Pea or Celery trenches. In days of peace it will form a base for Rose beds and Chrysanthemum composts in addition to other special uses.

Is it only the turf of the private garden and the public park which is open to the criticism that it is occupying ground which

might be used to better advantage? When one observes the meagre output of food from thousands of farms a considerable area of which is devoted to turf, one feels that there is room for reform here also. A great deal of the turf is of the poorest quality and gives but an indifferent yield of mutton, beef, and milk. I refrain from repeating the oft-quoted figures which show how much land has been taken out of arable cultivation during the past twenty-five years and put down to grass; everybody knows that it is considerable. What everybody does not realise is that the change has made for less home-grown food, largely because the turf manufactured by farmers who have been unable to see a profit in cereals is so weak and sparse. "Grass" is merely a word to urban millions—something to lie on in hot weather and litter paper and bottles on in hours of diversion. But the varieties of grass and the soils on which they grow best are a study of national importance. There may be food values to the amount of a few thousands of pounds wasted in private lawns, but the loss extends to millions on the wide acres of wretched turf which once were thriving arable farms. At last, happily, we are in a way to get that altered.

CHAPTER XVIII

ECONOMICAL MANURING—SHORT CUTS TO FERTILITY

It is not surprising that educated people should look for a better system of increasing the fertility of the soil than by applying manure from stables, byres, and yards. One might expect them to do this even if there were no signs—as there certainly are—of that source of supply failing, because it can only be applied slowly and with a great expenditure of labour. It is right and proper that they should ask for less bulk and greater speed, as tending to economy. And their attitude becomes still more comprehensible when we remember that in certain of its stages yard manure is offensive and dangerous to health, besides being dirty and difficult of application except in dry weather. What is not so satisfactory is the tendency—doubtless due to reaction—to accept almost any substitute which may be suggested without adequate investigation. In this respect the educated classes are almost as credulous as the proletariat, which will believe any claim for a pill or a lotion provided it gets sufficient “personal testimony” from relieved sufferers through the advertisement columns of the papers.

Those engaged in gardening or farming frequently ask themselves with amazement why it is that the average man of the world, sagacious in commercial matters, sane in outlook, shrewd in judgment, appears to lose all his acumen and to be ready to accept any nostrum or imposture where agriculture is concerned. Poultry-farming, Market-gardening, Bee-keeping, Nitro-bacterine, French Gardening—all these and more have had their turn. Interested parties have started a propaganda in connection with them, the papers have taken it up, and behold! the public are in full cry, firmly convinced that here at last a short cut to fortune has appeared. Why does it never occur to them that just as there is the play of competition in the factory so there is the play of

competition on the land? That just as there are keen minds watchful for every opening in manufacture, so there are alert and observant operators in husbandry? The belief that everything connected in any way with agriculture is necessarily stagnant and that farmers and market-gardeners as a class are hopelessly incompetent and antiquated is far from being justified. When the successful commercial magnate acquires an estate, does he by the application of his trained knowledge and judgment immediately prove that farming is highly profitable? No, he almost always loses money at it. He finds that the prices of his Wheat and his meat are governed, not by the standard of his own ability as a farmer or marketer, but by the operations of speculators thousands of miles away. He realises that he cannot, by mere energy and forethought, command results which turn largely upon the weather. He learns, in fact, that the land has its own problems, which little in his past training helps him to solve.

Short cuts to fortune are as difficult to find in the country as in the town. Prosperity is only to be reached through assiduous and patient labour, carefully and intelligently applied. More fortunes are made out of blouses than out of Beetroot.

In preparing to study manuring, let us first of all abandon the delusion that the yield of the garden can be doubled by some revolutionary change in our present system. Presently we may see an announcement of the discovery of what I will call Ozonene, which a scientific investigator of acknowledged repute has made by charging seaweed with nitrogen by a special process. Ozonene has been tried on a large number of important crops and has quadrupled the yield of all at infinitesimal cost. The wondrous news is imparted that small quantities of it are available and an eager crowd of "farmers," who barely know the difference between Turnips and Mangel Wurzel, scramble for the precious substance. The fact that Ozonene has been tried and failed at more than one scientific institution goes for nothing, because the reports have been confined to their own magazines, which no daily paper that knows its public would think of quoting. We are not above trying Ozonene on a small scale, but we are not of that fortunate class which is able to believe all that it wants to believe, and so we

base our principal operations on proved things, because we know that the courses of the seasons do not permit us to remedy the effects of failure. A crop lost is a year lost. It is because those who live by the soil and by favour of the weather know that they cannot redress an error that they walk warily. The wisdom of experience is easily mistaken for apathy by those whose training does not permit them to form correct judgments.

It has been suggested in a previous chapter that the "science" of manuring consists in giving the right kind of manure for the soil and the crop, whether it be natural or artificial. Those who keep a good deal of stock would be guilty of most unscientific cultivation if they did not arrange for rotations which would permit of its ordure being used. Gardeners who have not access to the refuse from yards and stables, but have to pay in direct cash for every particle of manure which they use, may still do well to procure dung manure if their land is light and deficient in humus, especially if they want heavy crops of green vegetables, Celery, Onions, Peas, and Beans, and bountiful yields of fruit. On the other hand, if the land is heavy, and more particularly if they favour root crops, they will do better to go in almost exclusively for artificials. And their mixtures need contain little potash. A compound rich in phosphates and nitrogen, such as sulphate of ammonia, superphosphate of lime, and steamed bone flour in proper proportions, will do them good service. It will strengthen the substance and heighten the colour of the crop, ultimately increasing the yield. Appended are a few suggestions for suitable mixtures, based on the special requirements of several of the most important crops:

POTATO FERTILISER WITH POTASH

1	cwt.	sulphate of ammonia
1	"	sulphate of potash
3	"	superphosphate
$\frac{1}{2}$	"	steamed bone flour
		<i>per acre</i>

"

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POTATO FERTILISER WITHOUT POTASH

1½ cwt. sulphate of ammonia
4 „ superphosphate
¾ „ steamed bone flour
per acre

A fertiliser containing potash is particularly desirable on light soils. If unobtainable, or too dear for use in a time of great scarcity, wood ashes should be added to the soil if possible. A potash fertiliser is not so important on good loamy and clayey soils. The principal potash fertilisers are kainit, sulphate of potash, muriate of potash, and nitrate of potash. Dried seaweed (kelp) also contains a good proportion of potash and some nitrogen, but no phosphates. Yard manure contains potash in addition to nitrogen and phosphates (phosphoric acid).

When using a complete fertiliser such as either of the above on a small scale, it may be dusted in the drills at the rate of a handful per 2 yards, equivalent to about 4 lb. per square rod.

In particular states of the market, nitrate of soda can be purchased cheaper per unit than sulphate of ammonia, but the latter is given preference in the mixtures specified because nitrate of soda cannot be used with superphosphate without a chemical reaction taking place, and they are therefore best kept apart unless they can be used immediately after the mixing, in which case there need be no hesitation about associating them. Another plan of using nitrate of soda is to use only the potash, or potash and phosphatic, manure in the drills and to apply the nitrate at the time of earthing up. This course has something to commend it, but in practice it is most convenient to use fertilisers in the complete form.

If a crop of Beetroot is grown, the tops should not be wasted when removed for storing the crop in October, but should be dug into the soil, as they yield potash.

A FERTILISER FOR CARROTS

Heavy soils rich in potash do not suit Carrots, which thrive

best on sandy or light loamy soils comparatively deficient in potash. The following mixture, which, it will be seen, is identical with the non-potash Potato fertiliser named above, will suit Carrots:

1½	cwt.	sulphate of ammonia	.
4	„	superphosphate	
¾	„	steamed bone flour	
		<i>per acre</i>	

For use on a small scale scatter it over the surface of the soil at the rate of 4 lb. per square rod. This could be done at digging time if the work were being done in spring. In the case of autumn digging, the fertiliser could be lightly forked into the soil a few days before sowing.

A FERTILISER FOR BEETROOT

A fertiliser to suit Beetroot may be somewhat on the same lines as for Carrots, and the above would serve in case it was convenient to get as much as possible of one mixture at a time. But if the grower is compounding his own mixtures, he will do well to reduce the provision of phosphates and to increase slightly the percentage of nitrogen. Thus, the following would give heavy yields:

1½	cwt.	sulphate of ammonia
3	„	superphosphate
½	„	steamed bone flour
		<i>per acre</i>

When working on a small scale, use 4 lb. per square rod, spreading evenly and forking in just before sowing.

A FERTILISER FOR TURNIPS AND PARSNIPS

While none of the three-item fertilisers given above is expensive, the cost can be reduced for Turnips without loss. This crop does not need a highly manured soil, but thrives on compara-

tively poor, stony ground containing a fair supply of phosphates. Thus the following cheap mixture would be quite adequate:

$\frac{3}{4}$ cwt. sulphate of ammonia
3 „ superphosphate
 $\frac{1}{2}$ „ steamed bone flour
per acre

Turnips cannot be relied on in a dry summer whatever the fertiliser used, but good spring and autumn crops can be got with the mixture quoted. It may be spread on the ground just before sowing at the rate of 3 lb. per square rod.

The same inexpensive mixture would suffice for Parsnips, which do not require rich soil.

A FERTILISER FOR PEAS AND BEANS

These important leguminous crops need a soil well charged with phosphates. Nitrogen is comparatively unimportant, but a small proportion is desirable in order to give the young plants a good start. Potash is not needed. The following mixture meets the case:

$\frac{1}{2}$ cwt. sulphate of ammonia
4 „ superphosphate
1 „ steamed bone flour
per acre

The mixture is a cheap one, owing to the relatively large amount of superphosphate, which is the cheapest of the three ingredients. It may be forked in at the rate of 4 lb. per square rod just before sowing. In poor soil, much lacking in humus, an endeavour should be made to supply a good dressing of yard manure.

A FERTILISER FOR CABBAGES, CAULIFLOWERS, AND GREENS GENERALLY

A fertiliser comparatively rich in nitrogen is needed by the green Brassicas and consequently a mixture tends to be relatively

expensive. But if the crop can be put on ground which has been well done with yard manure in previous years, the amount of nitrogen in a mixture of artificials need not be great. The following would give good results:

1½ cwt. sulphate of ammonia
 3 „ superphosphate
 ½ „ steamed bone flour
per acre

Four pounds per square rod could be used in small cultures, being applied just before planting out the seedlings.

A FERTILISER FOR CELERY

This crop generally occupies the ground for a considerable period and there should be a good proportion of the phosphates which it loves in the insoluble form represented in steamed bone flour. At the same time, the importance of nitrogen should not be overlooked. The following mixture will give bountiful crops of good flavour if the soil is in pretty good condition. If the soil is light, shallow, and deficient in humus, yard manure ought to be applied; and, if possible, liquid manure should be given when the crop is in full growth:

1 cwt. sulphate of ammonia
 3 „ superphosphate
 1 „ steamed bone flour
per acre

In the case of a few rows only being grown, spread the mixture in the trenches at the rate of a handful per yard run just before planting.

A FERTILISER FOR ONIONS AND LEEKS

Both of these useful crops thrive with a complete manure and consequently a mixture containing potash should be used if possible. In the absence of a potash ingredient, wood ashes should

be applied to the soil. It may be noted, however, that if the crop is grown on heavy soil—as it should be whenever possible—and more particularly if yard manure has been liberally supplied in previous years, there should be a good reserve of potash stored in the soil. Nitrogen should not bulk largely, otherwise the Onions will not keep well.

ONION FERTILISER WITH POTASH

$\frac{3}{4}$	cwt. sulphate of ammonia
$\frac{3}{4}$	„ sulphate of potash
3	„ superphosphate
$\frac{1}{2}$	„ steamed bone flour

ONION FERTILISER WITHOUT POTASH

$\frac{3}{4}$	cwt. sulphate of ammonia
4	„ superphosphate
$\frac{3}{4}$	„ steamed bone flour
	<i>per acre</i>

In small cultures use 4 lb. per square rod just before sowing or planting.

A FERTILISER FOR LETTUCES, RADISHES, AND SPINACH

All these useful crops—and with Spinach may be associated for the present purpose Spinach Beet and Seakale Beet—benefit most from a fertiliser containing a moderate proportion of nitrogen and a high proportion of soluble phosphates. Thus the ideal mixture runs much on the following lines:

$1\frac{1}{2}$	cwt. sulphate of ammonia
4	„ superphosphate
$\frac{1}{2}$	„ steamed bone flour
	<i>per acre</i>

In small cultures use 4 lb. per square rod just before sowing or planting.

A FERTILISER FOR TOMATOES

As this crop differs but little from the Potato in its requirements, it will be most convenient, and at the same time meet the needs of the crop, to work on the mixtures recommended for Potatoes above. Four pounds per square rod will be a suitable quantity to apply.

The hints given cover all the most important vegetables and they work on a strictly limited number of ingredients, which should tend to the convenience of growers. It may be mentioned that there are many strengths of superphosphates, but that known as mineral super. 26 per cent. is suitable for the mixtures named here.

GREEN MANURING

The application of what is known as green manure is an admirable system of increasing the fertility of the soil at moderate cost. A crop is sown, allowed to grow to a certain stage, and then dug or ploughed into the soil, there to decay and impart fertility. Mustard may be sown in summer on a fallow at the rate of 1 lb. per square rod and turned in during autumn; or may be sown in autumn and dug in during spring. Or 2 bushels of Italian Rye Grass and 12 lbs. of Rape per acre may be sown in summer. Vetches (tares) may be sown in autumn at the rate of 3 bushels per acre and turned in during spring. If thousands of acres of the waste land of the country could be sown with tares for lifting and digging into cultivated land, the national food supply would benefit at very moderate cost.

ODDS AND ENDS

The gardener must not overlook the usefulness of common agricultural salt, especially for light, shallow, dry ground; nor of the benefit of soot, hoof parings, and house slops. Even unburnt vegetable refuse improves the fertility of the soil if dug into the

bottom spit during trenching, and, needless to say, the amenities of the place are improved by its disappearance.

Few of the special fertilisers advertised by commercial firms differ in any marked degree from the above formulae, but they do not necessarily yield exorbitant profits because a comparison of the prices of the separate fertilisers shows a considerable margin. The labour in connection with mixing and canning fertilisers is considerable, and advertising is expensive. Let us remember that the manufacturer has his rent, taxes, labourers, clerks, etc., to pay. Only where the sale for specially prepared fertilisers is very large is the business profitable. For these reasons we will not be hard upon the dealer, even though we resolve to save money by buying our fertilisers separately and compounding our own mixtures. Perhaps those writers who expend ingenuity in devising a hundred formulae for different plants are as much open to criticism as the vendors of those marvellous invigorators of which we read so much, for their efforts savour of claptrappery. A dozen compounds, at the most, made from half as many ingredients, will serve every purpose of the grower of vegetables and fruit. To toy with more is bad economy, because it wastes time. If the whole of the time of the gardener is devoted to the compounding of a few mixtures, he will learn to prepare them well, and proper mixing is of great importance.

CHAPTER XIX

DIFFICULTIES AND DISAPPOINTMENTS—FIGHTS WITH
GARDEN FOES

THE fact mentioned in a previous chapter, that soils which suit all kinds of vegetables equally well are rare, is sufficient warning that the rank and file of vegetable growers must expect ups and downs. The gardener who has stiff clay will do well with Greens, Onions, Celery, Rhubarb, Beans, Peas, and other useful crops, provided his work with spade, hoe, and rake is what it ought to be. But he is not likely to be equally successful with Potatoes, Carrots, Asparagus, and Seakale.

This matter of soil alone may create disappointments unless *its significance is fully grasped at the outset, and there are practically sure to be others owing to the influences of the weather and the attacks of insect and fungoid pests—factors, by the way, which are closely related.*

It is assuredly desirable to cultivate a philosophic spirit when starting out to garden. While acting for the best, one should be prepared for the worst. The gardener who goes to the garden in an odour of sanctity, bred of the knowledge of work well done, must not "down tools" in a fit of pique if he finds that some of his crops are doing badly owing to the weather or noxious insects. These adverse influences are in the day's work. They are in a measure inevitable and unavoidable. They are to be acknowledged, but in a combative rather than a submissive spirit.

"Cut your losses and count your gains" urge the men of the exchanges. It is a useful workaday principle. But in the garden we cut first at the influences which are operating against us. Is it drought? We water, we hoe, we mulch. We draw a little earth up to the stems of our Peas and Beans, to protect the "collar" of the plant. Is it this pest, or that, or the other? We fly to remedial measures promptly, attacking the enemy vigorously, before he has had time to entrench himself securely.

On the day that gardeners recognise that insects and fungi

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grow just as surely as plants, and order insecticides and fungicides at the same time that they order seeds, a great step will have been taken towards overcoming the difficulties and disappointments which so often spoil the pleasure and mar the benefits of gardening.

Let us glance at some of the principal crops and see what may be expected to happen to them, taking the Potato first.

Our plants ought to be through the soil in three weeks at the most, but nothing is more certain than that all of them will not do what they ought. The sets may appear to be identical, but they will not behave in precisely the same way. Some plants will be more forward than others. Here and there will be a set which shows no growth for a full week or even a fortnight after its fellows. Isolated cases of tardy growth need cause no apprehension, but if a good many of the plants are late without a natural explanation, such as a spell of cold weather, still more if the growth when it does show is puny and twisted, there may be serious trouble. During recent years early Potatoes have often disappointed the growers, more particularly the varieties May Queen, Duke of York, Midlothian Early, and Sharpe's Victor. Even Scotch seed of these varieties, usually so full of health and vigour, has failed. There may be a fungus—*Macrosporium Solani*—present in affected plants when they are put under examination by mycologists, or there may not. Readers will find a good deal about *Macrosporium Solani* in Board of Agriculture Leaflet No. 164, which they can obtain free of charge and post free from the Board's offices in Whitehall Gardens, London. But I do not think that they can do much to remedy matters with a crop badly affected; they can only take precautions in the future. One of these is to avoid sources of seed which have proved unsatisfactory. Another is to condemn susceptible varieties. A third is to cut off the heel of a few tubers before planting and see whether or not a yellowish ring is discernible just under the skin; if such is the case, return the whole of the seed to the dealer. It may be added that the varieties Myatt's Ashleaf, Epicure, Sharpe's Express, and Sharpe's Eclipse are rarely afflicted with "curl" and all are good croppers.

If the spring growth of the Potatoes is satisfactory, they may be expected to continue until July without giving cause for anxiety, but subsequently their health will depend on the weather. With warmth and drought they will be safe, but with cold and wet they will be in danger from summer and autumn blight, *Phytophthora infestans*. If the leaves become blotched and partially curled, with brown patches on the under side which give off a disagreeable musty odour, this destructive fungus is at work. There is little hope for the crop if the leaves become badly infected, and the best thing is to lift the crop in August if it is fairly advanced. But fortunately there is a preventive in the fungicide Bordeaux Mixture, and so beneficial is it to the crop, apart from its direct action on the fungus, that, wherever possible, it should be applied whether the weather is threatening or not. A spraying at the end of June can do nothing but good; why, then, do growers shirk it? Probably because the process is unfamiliar and consequently irksome. But let us be fair and admit that in small cultures the price of a knapsack sprayer, amounting to perhaps £2 10s., is serious. In such a case, let the grower see what he can do with a No. 3 gas burner brazed on to an old syringe. Whatever instrument will distribute the fluid in a fine spray without becoming clogged will answer the purpose.

Bordeaux Mixture is prepared by dissolving 9½ lb. of freshly burnt lump lime in water, dissolving simultaneously, but in a separate wooden vessel, 14 lb. of sulphate of copper in water, and then pouring the two solutions together, bringing the total quantity of water up to 100 gallons. This would be enough for an acre in June. Many would find a much smaller quantity suffice, keeping the same proportions. If the sprayer which is being used does not automatically apply the fluid to the under side of the leaves, the tops must be turned back so that it may get underneath.

One application will suffice if the weather remains dry, but with much rain in July another spraying ought to be given, when a larger quantity per acre will be needed.

I should be glad if I could say that I have found the Burgundy

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Mixture as efficacious as the Bordeaux, because with fresh lime sometimes difficult to get when it is wanted, one would be glad to substitute the common washing soda which takes its place. But I regret to say that in my repeated experience it is not so good a preventive of disease as Bordeaux. The proportions in the case of Burgundy Mixture are: sulphate of copper, 12 lb.; soda, 15 lb.; water, 100 gallons.

A good spread of healthy foliage may reassure the grower who is keeping an anxious lookout for "curl," but it means little when weather conditions favour the development of *Phytophthora infestans*. The few tough-leaved varieties which resist its attacks are not good croppers and cookers, and consequently relief cannot be found in that direction. If spraying is quite impracticable, I should recommend the grower to lift as early as possible, to dry the tubers well before putting them in pits for the winter, and to throw some lime among them.

Peas are sometimes afflicted with a spring malady which affects the crop much in the same way as "curl" affects Potatoes. The plants do not develop strong stems and broad leaves, but have thin stems and small leaves, while the tips of the shoots are crinkled. Of course the grower, ever ready to put the responsibility for any trouble on to the back of the unfortunate seedsman, declares that "there must have been something wrong with the seed." But it sometimes happens that the same stock of seed is good and bad in different gardens. The cause of the trouble is obscure. I am not aware, indeed, that it has ever been investigated. Of one thing I am sure, namely, that when the malady shows itself, the grower will be well advised to make another sowing forthwith. Fortunately, Peas are renewed more easily and cheaply than Potatoes, because the seed is in much smaller compass and the crop occupies a smaller area of ground. Resowing a row or two is no great matter. This, be it understood, in the case of ordinary varieties. If I had paid a special price for a new one I should be disposed to try what an application of sulphate of ammonia or nitrate of soda, sprinkled as lightly as may be along the rows, would do. Or $\frac{1}{2}$ oz. nitrate per gallon of water in a liquid manure.

The prospects of a row of Peas are easily discernible within a month from the sowing, except in the case of Peas which have been sown in autumn or winter, when the ground is cold. If at the end of a month spring-sown Peas are growing freely and are of good substance and colour, it may be assumed that they are safe up to the podding stage. Then, in a dry spell, they may be attacked by thrips, which cause the incipient pods to shrivel. The best remedy for this pest is nicotine solution, of which a wineglassful may be mixed in 3 gallons of water and syringed on.

How weevils get into the pods of Peas is as much a puzzle to some people as the way in which the Apple got inside the dumpling. They get in through the flowers and the only preventive is to apply something to the plant while it is in bloom which will act as a deterrent. The nicotine solution has that effect, but in the absence of thrips the same result can be secured by the simpler plan of dusting the plants with a mixture of soot and lime. Weevils, however, are rarely in evidence except when the pods have been allowed to grow old on the plants.

More dangerous to Peas than weevils is mildew. Would that I could say that good soil and good culture will always keep this fungus at a distance. In extremes either of wet or drought it is liable to appear in spite of the best of treatment. More especially is it liable to attack the plants during a spell of summer drought, perhaps when they are in their prime and yielding heavy crops of delicious Peas. A good soaking of liquid manure and a simultaneous application to the foliage of a solution of liver of sulphur, 1 oz. per 3 gallons of water, form the best preventive.

There remains the question of the birds—that thorny question which so many try to solve by the barbarous method of the gun, and which so many others, blinded by the beautiful bird-love, refuse to admit is a problem at all. It is a problem, but the gun is not the proper solution, except on occasion under the infliction of a scourge of finches. Protective measures move in stages: for the seeds, a moistening with paraffin oil, or quassia water, or linseed oil with a supplementary dusting of red lead; for the seedling plants a canopy of black thread; for the pods the syrin-

ging with liver of sulphur solution or nicotine solution recommended for other purposes, or the use of scares or netting.

Kidney Beans, both French and Runner, are singularly free from insect and fungoid attack, except when grown on a dry, hot site, in which case red spider may destroy them. The remedy is obvious. But Broad Beans are subject both to aphid and weevil, and the former alone is formidable enough to dishearten all but the most determined grower, especially when the plants are held back by drought. Experience teaches that the enemy can be mastered provided the plants can be got to, say, 2 feet high by the beginning of June, either by sowing in autumn or winter or as early as possible in spring, because with the plants well in bloom by the time the aphid appears, the pinching off of the tops, followed by an occasional rubbing-over of the tips with finger and thumb (gardeners are not a squeamish class), will subdue it. Happily the insect works from the top downwards, not from the bottom upwards, hence the efficacy of topping. Syringing with an insecticide may help the grower, but it is not in itself the proper remedy. The soot-and-lime remedy mentioned under Peas is the best for weevil. In practice, however, there is but one enemy of Broad Beans which counts, and that is the black aphid. Of its gravity no grower will utter a slighting word. It is always serious and often disastrous.

The grubs which attack respectively the leaf of the Celery and the bulb of the Onion, causing the practical collapse of the crop in bad cases, are best circumvented by means of a paraffin oil emulsion, soft soap being boiled at the rate of 2 oz. per gallon and paraffin oil stirred in vigorously at the rate of a wineglassful per gallon while the water is still very hot. The time for application in the case of the Onion is May and June, fortnightly; and in the case of Celery, July, August, and September, fortnightly. But both of these crops are subject to fungoid attack also, and the oil emulsion will not protect them. Dustings of sulphur, or of sulphur and freshly slaked lime in equal parts, may be tried, but the application is only effectual in the first stage of the disease.

The beginner may be forgiven if he does not always do the right thing at precisely the right moment for every crop which

he grows. How, for instance, is he to tell whether grubs are attacking his Onions, his Celery, his Carrots, or other of his crops? One can only say, as a general thing, that grub attacks are recognisable by discoloration and wilting of the leaf, and fungoid attacks by a powdery covering. Should the Carrots become rusty and flabby, let the grower pull one or two up, and he will probably find small white grubs in the root. Thenceforth he knows from observation when grubs are at work. With this crop, as with others, the procedure is preventive. Let the soil be trodden close against the crowns after every thinning, and a few fine ashes moistened with paraffin oil be sprinkled along the rows, then there will be little trouble.

Each crop has its enemy or enemies. The young Greens are subject to attack at the root by a grub which establishes itself in a smooth white excrescence. By slicing this off when transplanting, and dipping the root in a slime of damp mould and soot into which a very small quantity of Vaporite has been stirred, the enemy can be subdued. But a general failure of young Greens to make headway should awaken suspicion of "anbury" or "fingers and toes," a fungus which causes coarse, foul swellings on the roots. The remedy is a complete change of soil and the use of gaslime left in a thin coat on the surface for 6 weeks and then stirred in. Older Greens may be assailed by caterpillars, especially in a dry summer, and here a good dashing of brine is the best remedy. As Brassicas, Turnips are subject to the same root attacks as the Greens; and they are often pestered in dry weather by a small beetle, which perforates the leaves and reduces them to shreds. Early morning dustings with soot will check it.

The Tomatoes are not likely to be seriously affected by insect attack, but they may suffer from disease the same as Potatoes, and should be protected by similar spraying, but take care not to coat ripening fruit with copper powder.

Vegetable Marrows, again, may escape injury from insects, but cause disappointment through failing to set their fruits. This is most likely to happen in wet weather, which checks the spread of the pollen and thereby impedes fertilisation. The

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grower can avert it by bringing the two types of flower into contact, thus insuring that the pollen does its work.

And always there will be the problem of the birds, which one comes back to again and again. Scares, threading, liming: all are resorted to. In the garden there is a bird battle almost constantly raging. It may be a bloodless one, except in dire emergency. But rage it does.

Ever and always, in moments of difficulty and disappointment as well as in times of success, the gardener must maintain a cheery and buoyant spirit. He must base himself on that law of averages which teaches that when sound principles are buttressed by steady effort, crops will come. All are not equally good, but there is a sum of achievement, even with the novice, which shows a profit and points the way to still better things when the lessons of experience have had time to operate.

CHAPTER XX

FRUITFUL FOOD TREES—PLANTING AND PRUNING—THE
BEST VARIETIES—PESTS

THE amateur food-grower rarely thinks in the first place about fruit, especially when food-production presents itself to him as the work of an emergency, not necessarily to be permanent. If, however, utility gardening gets a hold upon him for its own sake, he generally comes, sooner or later, to consider the addition of fruit to his garden. This is almost invariably the case when deepening horticultural interest takes him into other gardens, there to make that comparison of crops which gardeners of all classes find so fascinating. There is nothing more seductive than a heavily laden Apple tree, unless it be a prolific Plum or a ruddy bed of Strawberries. And when all three are to be seen, in various stages of ripeness, in the same garden, their influence is irresistible.

It is noticeable that professional gardeners acquire a much deeper interest in fruit than in vegetables. This is partly explained by the fact that the trees are permanent, whereas the vegetables pass; partly by the more intricate nature of the cultural processes. The gardener loves best that which taxes his skill the most. These influences may be expected to operate equally as strongly with the amateur when familiarity has robbed the fruit tree of that awe which ignorance is apt to inspire. Certainly few who learn how to manage fruit trees successfully fail to find deep enjoyment in cultivating them.

But we must realise here and now that fruit culture is entirely uncasual. By the very nature of the processes which build up stem and bud and bloom, it is constitutional. The fruit grower must bring to bear on his task a permanent sense of responsibility, looking beyond the claims of the passing hour and building for more than the present generation. Something less than the complete round of a year will see all the most important vegetables carried from seedtime to harvest, but it will do little more than

start the fruit tree on its course. There is, however, this encouraging fact: the system of using early-fruited foster parents which is now almost universal gives crops sooner than the old plan of using stocks distinguished mainly for hardiness and vigour. Thus, while the first year puts little on the table—little, that is, without a dangerous strain upon the trees—and the second may not pay expenses, the third may be expected to yield abundantly.

Fruit is not a mere luxury, it is a food. The analyst may tell us that an Apple is principally composed of water; so is milk. The natural acids of fruit are of the utmost benefit to the human system. Admittedly no kind of fruit grown in the United Kingdom is a complete food, capable of sustaining life for a long period unaided; but all supply constituents which tend to keep the body in health.

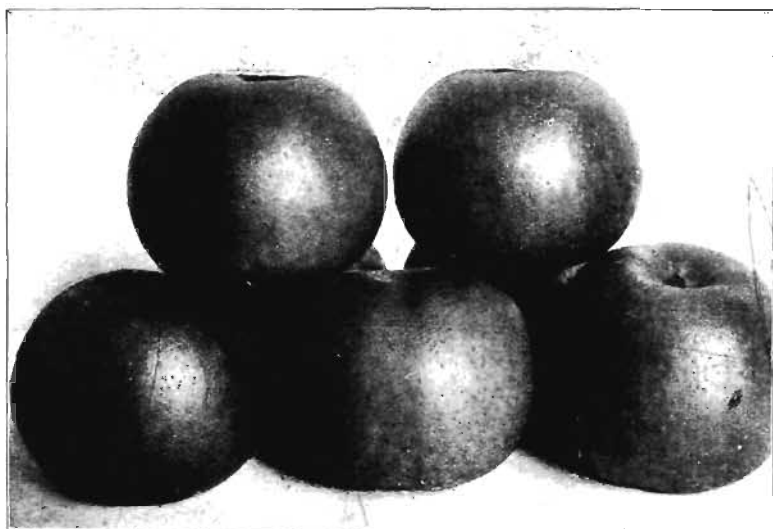
Perhaps the most perplexing matter for the small gardener to decide is the kind of fruit to choose. The ten-rod man can grow quite respectable quantities of all the most important vegetables, as we have seen in previous chapters, and he can even provide himself with successions of several by sowing both early and late varieties; but a fruit tree is a different proposition from a Cab-bage. The most compact variety of Apple needs 7 square yards of ground to do itself justice as a bush, while Plums and Pears call for more. There remain Cherries, Gooseberries, Currants, Raspberries, and Strawberries of the most popular kinds, with a few in reserve that are quite worthy of inclusion. Decidedly fruit-growing is a different proposition from vegetable culture.

In the smallest of gardens there is but one way of solving the problem of getting not only several kinds but several varieties of each and that is to substitute the cordon for the bush system. With the single-stem principle under adoption, each tree calls for no more than half a square yard of ground. Of course it does not bear so much fruit in any one season, but on the whole it bears more regularly and on an aggregate of several seasons the balance is not heavily against it. A more serious obstacle to its general adoption is the greatly increased cost of filling a given area of ground, because not only are there more trees to buy, but there are supports to provide, cordon trees not being self-supporting.

The fruit-grower cannot have it all ways; as with the rest of us, he has to strike a balance between contending factors. But it is something to know that however small the garden may be, there is room for fruit trees in it.

In making up a small collection of trees, to include Apples, Pears, Plums, and Cherries, we might select two dozen Apples, one dozen Pears, half a dozen Plums, and half a dozen Cherries. We could have four trees each of six Apples, two each of six Pears, two each of three Plums, and two each of three Cherries. This gives us the opportunity of providing for a succession of fruit without reducing the quantity of each to a negligible amount. Our Apples might be Early Victoria (Emneth Early), Lord Derby, Lane's Prince Albert, and Bramley's Seedling for a succession of culinary varieties; Worcester Pearmain and Cox's Orange Pippin for successional dessert varieties. By growing a smaller number of trees of each, we could lengthen our list to bring in such useful sorts as Potts's Seedling, Bismarck, Peasgood's Nonsuch, Warner's King, Newton Wonder, Gladstone, James Grieve, and King of the Pippins, but this is a matter of taste, which each grower can decide for himself. Our Pears could be Jargonelle, Williams's, Beurré Hardy, Louise Bonne of Jersey, Doyenné du Comice, and Glou Morceau, with extension to bring in Conference, Marie Louise, Beurré d'Amanlis, Pitmaston Duchess, Josephine de Malines, and Easter Beurré if more variety and less quantity of each appealed to the grower. Our Plums could be Czar, Victoria, and Jefferson's Gage. Our Cherries could be Early Rivers, Napoleon, and Black Eagle. And, incredible though it may seem, all the foregoing could be got into a piece of ground equivalent to 1 square rod ($30\frac{1}{4}$ square yards) in area without crowding.

The trees might be expected to cost 1s. 6d. each, stakes to support them 6d. each; but stakes may be economised by reducing the number and using wire. One can often make a bargain for stakes which effects an economy, but the bargain is a bad one if the stakes are soft or weak. They must be tough and seasoned and the base must be dressed with tar, creosote, or some other preservative, or renewal will soon be necessary. If the rows are 4 feet apart and the trees $\frac{1}{2}$ yard apart, it will suffice.



APPLE. WYKEN PIPPIN

Dessert Apples

The following are a few of the best dessert apples in order of ripening:—

BEAUTY OF BATH	WILLIAM CRUMP
BEN'S RED	COX'S ORANGE PIPPIN
WORCESTER PEARMAIN	WYKEN PIPPIN
ALLINGTON PIPPIN	ROUNDWAY MAGNUM BONUM
RIVAL	STURMER PIPPIN
JAMES GRIEVE	BAUMANN'S WINTER REINETTE

There are few better Apples to eat from December to the end of the season than Wyken Pippin and considering its excellent quality it is rather surprising that this old Apple is not grown more extensively. In the West Country, Wyken Pippin is well-known and highly popular, and in some of the orchards there are old trees that are thought more of than many other varieties of more recent introduction.

(See APPLES, page 200)



HOW TO GRAFT A FRUIT TREE

Cut the tree back to stumps 2 or 3 inches across in spring, split the top of each stump as shown above, cut grafts wedge-shaped and let in, tie with raffia, and coat with clay or grafting wax. (See other grafting figures.)

(See page 204)

Here we have multum-in-parvo fruit-growing, absolutely satisfactory, full of interest, with nothing laborious about it after the first soil-preparation and planting, including stake-driving, is done. It is a system easily within the compass of thousands of people who are now languishing for a hobby which will be at the same time inexpensive, interesting, and free from strain, either of mind or body. It can be carried out on almost any soil, in almost any district. A start can be made at any time between the end of October and the end of March, provided the weather is not too wet or frosty—admirable, it will be seen, to follow up the summer operations among the vegetables.

Four dozen fruit trees and a bed of Strawberries on 2 square rods of ground—is it not tempting? Does not the mouth water at the very thought of it? It is not a chimera; it is real. A constant succession of fruit from July to March in small quantities, for several of our chosen Apples and Pears are keepers. Something worth thinking about, is it not? Aye, and something worth working for, too!

The pruning of the various kinds of fruit trees is not quite the same in detail, but there is not a great deal of difference in principle; what there is turning on the extent to which the tree bears on young or old wood. The slightest consideration suffices to teach the pruner that if one kind of tree bears mainly on wood a year old and another on wood two or more years old, some difference in pruning is likely to be necessary. I cannot give a beginner a better guide to the principles of pruning than to suggest that he begin by classifying the kinds which he may be growing into two sections: young-wood bearers and old-wood bearers. Here they are:

Young-wood Bearers : A few varieties of Apple, all Peaches and Nectarines, all Black Currants, Morello Cherries, Raspberries, Loganberries, Gooseberries (to some extent).

Old-wood Bearers : Most Apples, all Pears and Plums, most Cherries, Red and White Currants, Apricots (chiefly), Gooseberries (to some extent).

By young wood is here meant wood in the second year of its growth—wood, in short, which is formed one year and bears the

next. (The production of fruit on wood the same year that it forms, as *Roses* bloom, is abnormal.) By old wood is meant wood which does not bear until at least the second year after formation. The principle of pruning the former class is to cut out the fruiting shoots as soon as the fruit has been gathered and of the latter to cut out most or all of young wood annually, leaving only the ripe wood.

It would save the pruning-student some amount of work if fresh wood of all the fruits sprang direct from the ground annually, like a *Raspberry*, because then he would understand clearly that all he had to do was to cut out a complete set of canes the year after they had pushed up; but the habit of the *Raspberry* is exceptional among fruits, only the *Loganberry*, of all those named, coming near to it. With the others in the two lists, there is the framework of the tree to consider; that is, the foundation wood which carries the fruiting wood. And the foundation wood may prove somewhat perplexing, especially if the grower comes into possession of trees which have been planted for a good many years and have developed a constitution, which may be good or bad. Whether the fruit is a young-wood or an old-wood bearer, the foundation wood must be there to carry it, or we have no real tree.

Broadly, the foundation wood consists of the bole or main stem, the primary forks from it, and the secondary forks. The bole is formed from the bud or graft which is put on to the *Paradise* or other stock by the nurseryman who propagates the tree, and which, after the extension of one complete growing season, is shortened to within half a yard of the ground (except in the case of standard trees). The primary forks are the branches which result from the shortening referred to. The secondary forks are the branches which result from the shortening to one-third of their length of the primary forks at the end of a complete growing season. In a word, the tree is built up in tiers. It is given a foundation by pruning back in two successive years. What if the foundation work is omitted? The tree will be straggling and top-heavy. It will bear no fruit anywhere near the ground.

When a would-be fruit grower buys a tree three years old, he

finds that the foundation work has to some extent been done by the nurseryman who sold it to him ; nevertheless, another shortening to at least one half the length is desirable after planting, giving a tertiary set of forks. Older nursery trees need not be pruned back after planting, but they should be relieved of most of their fruit the first year, in order to give them a chance to concentrate all their energies on rooting.

Good foundation work is the making of a fruit tree and ought never to be omitted. Call, in August or September if possible, at the nursery where the trees are to be bought and note the uniform structure of the foundation tree. It is trim and orderly. It is developing under a considered plan. You see it in its different stages: the first growth from the bud, the first fork, the second fork, and the third fork in the case of the older trees. The various stages teach an unforgettable lesson. The trees are there in their thousands, all the kinds and all the best-known varieties. Truly the nursery garden is the place to learn the first lesson in pruning. Perhaps some particular trees give the visitor special satisfaction. Very well, let him ask for tallies bearing his name to be put on them forthwith and a few weeks later those very trees will be his own, at the catalogue price.

Having given his order, he will have justified his presence at the nursery and may proceed without compunction to follow up what he has learned about the foundation tree by an examination of the older fruit trees which the nurseryman is sure to have. And he will then perceive how the foundation system and the fruiting system are blended. Fresh from a study of the two- or three-year-old Apple tree, he will be able to study the six- or perhaps ten-year-old tree of the same variety and will be able to trace the stages by which it has developed. He will soon be able to indicate the points where the tree was shortened, even if the marks are quite overgrown. The bifurcation of the branches will teach him where the pruning has been done. Thenceforth he is in a fair way to becoming a master of his subject.

Let me walk by the side of the visitor and make notes of what is seen.

APPLES

We see a limited number of trees which are like and yet unlike Apple trees. The leaf resembles the leaf of an Apple, but the trees are not bearing any fruit (or if any, it is small and insignificant) and they are of a wide, spreading habit, as though they had never been systematically shortened like the long ranks of Apple trees. Another thing which strikes us about them is that some of the branches have been drawn to the ground and are partially covered with mounds of soil. These are Paradise stocks—low-grade Apples whose fruit is useless but whose strong growth and fibrous root system make them valuable as foster-parents to Apples, which are budded or grafted on to them.

The branches drawn down will push roots into the mounds of soil, and having been severed from the parent stock will be planted in long lines to themselves; in three years at the most they will grow out into sturdy little bushes and be ready for grafting. Here they are in their thousands. If we take one up, we find that it has no tap root, but only a mass of fibres spreading in a shallow network. Probably the nurseryman does not raise a quarter of the stocks which he uses, because he can buy them more cheaply from our French friends, who are adepts in raising cheap fruit stocks.

Proceeding, we find quarters of young stocks from the main stem of which pieces of raphia are drooping and examination reveals that buds have recently been cut out of varieties of Apples which are to be propagated and inserted in the stems of the stocks, one in each about 6 inches above the ground. If our visit is paid in early August we may find the work of budding actually going on, but in September it will be finished. We see the budder slicing pieces out of the Apple shoots of the current year's growth about $1\frac{1}{2}$ inches long, each piece with a dormant growth bud in it; we see him cleverly picking out the pith at the back of the bud; we see him inserting the piece hollow side inwards within a T-shaped cut made in the stem of the stock; and we see him tying the bud in firmly but not very tightly with raphia. Being greatly interested in a highly ingenious operation,

we naturally want to make an attempt of our own and after a failure or two to emulate the professional budder, we succeed.

Another stage, and we see a quarter of trees with single stems 4 to 6 feet high. These are the offspring of the previous year's budding. The 4, 5, or 6 feet stem has grown from the little bud put in the year before; and it has done all this work since April, because the bud did not start growing before winter, lying dormant—or apparently dormant—in the stock from the late summer of one year till the spring of the next. This sapling Apple tree is called a "maiden." It is shortened to half a yard high in winter as we saw a page or two back.

A little farther, and we find a plantation of two-year-olds, or trees a year older than the maiden. The mark of the shortening is clearly discernible. Side branches have pushed from the thickening bole and have extended 2, 3, or even 4 feet; whatever their length, they are shortened in their turn to a third and we see the result when we come to the three-year-olds, where the second bifurcation reveals itself.

A modification of this practice of shortening and encouraging side branches is observable when we come to the cordons. These have only one stem. There is the preliminary shortening of the maiden as for the bush tree; thenceforward, the trees are allowed to extend against strong stakes and the side growths are removed.

Our inspection of the Apples shows us that by far the largest proportion of trees are bushes, and that next to them come "standards"—trees on tall, strong stems which have probably been raised on Crab or Free (seedling) stocks and not on Paradise stocks; these standards are more suitable, we see, for orchards or large gardens than for small gardens, because of their wide-spreading heads. In some nurseries we may perhaps find that there are more cordons than standards. But we find fair quantities of another type of tree—a flat tree with branches in tiers a foot apart, one above another to a height of 6 feet or more. These are the "espaliers" for training on walls and fences—splendid trees, but a little expensive, because of the cost of the early training.

So much for the propagation and the formation of different

types of tree; now let us look into the fruiting parts of the older trees, in order to round off our preliminary lessons. It is near the end of the summer and we find fruits on the older wood, but not on the quite young wood of the current year's growth, which has now finished extending, as we see by the bud at the very end. This young wood comes from various parts of the old wood—from the end as well as from the sides. One shoot at the end the pruner shows us that he leaves, but the side shoots he "summer prunes," except in the case of the few varieties (Irish Peach, Lady Sudeley, and Cornish Gilliflower are, we find, the most prominent of them) which bear their fruit on the young wood when it is in its second year. Summer pruning means, we perceive, shortening the young shoots to five or six leaves of the base, where, later, a fruit bud forms as a result. In winter the remainder of the shortened shoot is pruned back close.

Not the least interesting of the lessons which we learn from this ramble of ours among the fruit trees is that an appreciable amount of pruning can be done in summer with benefit to the future crop. But we are glad to know that summer pruning is not vital, because during August and September we have much to do in other departments of the garden. If we can fit a bout of summer pruning in we resolve that we will. Nay more, we are so impressed with the spectacle of the heavy crops of large fruit on the maturer trees, that forthwith we begin to scheme out plans for providing time to thin out and regulate some of the crowded veterans at home, so that haply we may, by reducing the tangle of wood to order and clarity, induce them to give us better fruit. The trees which have run up for many feet without forming any fruiting wood in consequence of neglect in shortening we will head back and graft in spring, so giving them a fresh start under happier auspices. Those which are full of spindly, ingrowing wood we will thin rigorously, working with one of the nursery models before our mind's eye, and taking care that when our task is done, not a single ingrowing or downstriking shoot is left on the tree.

The student of fruit-pruning is sometimes nonplussed when he reads or hears advice on the one hand urging the importance of

making soil fertile in order that the trees may be encouraged to start away strongly, and on the other that excessive growth is undesirable, because it tends to retard abundant fruiting. There is certainly an apparent if not a real inconsistency, but it is not always easy in practice to strike the happy mean with exactitude. The grower wants his trees to grow healthfully; rather than have them drag, he would have them luxuriant. But moderate growth is the best—that is to say, growth represented by an extension of 2 or 3 feet per shoot per year. Heavy loam will give this without much manuring; chalk or sandy soil only with liberal manuring, except in the case of the strongest sorts. This point of the different habits of varieties makes the matter hard to generalise upon. Perhaps it might be put in this way: if the annual growth exceeds 3 feet per shoot, the trees are too vigorous; if less than 2 feet, they are weak. Luxuriance can be counteracted by root-pruning, weakness by manuring.

The Pear, Plum, or Peach which is extending gross wood in its second year without sign of fruit bud or spur should be root-pruned, otherwise it will get quite out of hand and three years later will be full of thick branches incapable of forming flowers. And while Apples generally are not likely to cause similar trouble, strong varieties in rich soil may do so and thus call for root-pruning also.

Valuable hints about budding and pruning have we learned and we can get an idea of grafting too, although it is spring work. We can study, for example, the growth which has pushed from the grafts of the past spring, noting the points where they were put on and their extension. Paradise stocks which were not budded the previous summer were grafted in spring, the heads being taken off 6 inches from the ground, a downward cut made in the sloping first cut, a piece of Apple shoot 5 inches long of the previous year's growth fitted in after making corresponding cuts in the base to those on the stock, and the whole area round the cuts bound with raphia and coated with a wax of resin, tallow, red ochre, and Burgundy pitch melted together in the proportions of 8, 3, 3, and 1. The process is called "whip" or "tongue" grafting. If grafting old trees instead of young

stocks, we should have to adopt a different system because of the thicker wood, slicing the bark down to a length of a couple of inches with the point of a knife after shortening the branch to a stump, cutting a scion with a thin, sloping face, slipping it into the slit and pressing it carefully down so as to avoid splitting, tying round and waxing as before. This is "crown" grafting. A few notes as to these matters carry the educational process still further and we resolve to apply them when April comes round again.

Observing the behaviour of varieties, we see that the Apples already named are good croppers and that others worthy of culture where space permits are: Stirling Castle, Ecklinville, Keswick Codlin, Lord Suffield, Lord Grosvenor, Golden Noble, Golden Spire, Grenadier, Royal Jubilee, Norfolk Beauty, and Wellington (culinary); Beauty of Bath, Ben's Red, Allington Pippin, Rival, Charles Ross, Roundway Magnum Bonum, Adams's Pearmain, Sturmer, Baumann's Red Winter Reinette, and William Crump (dessert).

A fact that is interesting in itself, besides being important from a practical point of view, is that few varieties can fertilise themselves and therefore that varieties which produce pollen freely, such as Baumann's, Bramley's, Grenadier, Early Victoria, Worcester, Lord Derby, and Newton Wonder (note that all these appear in our select lists) should always be planted, because with wind and bees at work their abundant pollen passes from flower to flower and assists cropping. A large block of trees might bear badly for no other reason than that it wanted the pollen from another sort to assist in its fertilisation.

Is the district a cold one, where late frosts are apt to work havoc? Then let us take care to plant some late-blooming varieties, such as Keswick Codlin, Northern Greening, Royal Jubilee, Bramley's, Newton Wonder, Court-Pendu-Plat (often called the Wise Apple because of this late-blooming habit), King Edward VII., and Dutch Mignonne. We are then pretty sure of a crop.

We learn that thinning the clusters of fruit which often form thickly in spring to two or even to one fruit per spur is wise,



Economical Gardening

INCREASING FRUIT PRODUCTION

Do not tolerate neglected trees such as this, rather prune them to make them bear better fruit, or, if the variety is poor or the tree diseased, cut it back and graft it with a stronger one. (See Illustration facing page 204.)

(See page 204)



Economical Gardening

AN UNSATISFACTORY FRUIT TREE CUT BACK AND GRAFTED IN SPRING
Branley's Seedling, Newton Wonder, Worcester Pearmain, and Allington
Pippin are good varieties to take grafts from.

(See page 204)

because the tree produces larger fruits of higher market value with less strain on the tree.

Nothing that we learn impresses us more than the importance of keeping the trees free from caterpillars, insects, and fungi. Here is a summary of some of the worst pests of the Apple, with suggestions for subduing them:

Canker.—A fungus which flourishes on enfeebled constitution, injury to the bark, and poverty of soil. In most cases the best remedy is manure, either in the form of a mulch of yard manure or a dressing of an artificial fertiliser, such as the following: $\frac{1}{2}$ part sulphate of ammonia, 1 part sulphate of potash, 3 parts superphosphate, 1 part steamed bone flour, 2 oz. per square yard from the bole of the tree to the farthest spread of the branches. Badly infected wood to be cut away and the remainder of the diseased part to be brushed with tar.

Winter moth and other spring-feeding caterpillars.—Every year the greenish caterpillar of the Winter moth does enormous mischief by attacking the flowers and foliage directly the buds burst. Immediately it is seen the trees should be sprayed with 2 lb. arsenate paste in 50 gallons of water.

Codlin moth.—Attacks the young fruit and eats right in. The above spray, applied before the fruit turns down, is efficacious.

Apple sucker (Psylla).—The yellow wingless larva of a green, filmy-winged insect which is seen flitting about in autumn. The sucker feeds on the buds in spring. Remedy: 6 lb. soft soap, 8 lb. quassia extract, 100 gallons water, sprayed on in spring.

Apple aphid, American blight.—The aphid infests the shoots, the blight forms white fluffy masses on the wood, old and young. Remedy: 1 lb. Nico-soap in 30 gallons of water.

There are many pests in addition to the above, but the multiplication of remedies becomes serious; rather would one reduce them if possible. The best all-round plan is to spray the heads of the trees with a lime-sulphur wash (procurable from all seedsmen and agricultural chemists) in spring and later, varying the strength according to the season of application (stronger when leafless than in leaf). To be more exact, $2\frac{1}{2}$ gallons of lime-sulphur preparation and 4 lb. arsenate of lead may be used to 100 gallons

of water when the trees are in young leaf if there is fungus and also caterpillar. There are, however, one or two prominent varieties, notably Cox's Orange Pippin, which are liable to injury from the spray.

The method of planting the Apples has a direct bearing on their health. If the soil is broken deeply, well manured, and the trees planted with a shallow coat of thoroughly firmed soil surfaced with manure over the roots, they will generally make vigorous and healthy growth which can be kept clean without much difficulty. Very few Apples will thrive on a damp site, or on shallow sand or chalk. The best culinary variety for poor soil is Bramley's Seedling and the next best perhaps Newton Wonder. Both should be planted, the former in the larger quantity. The best for dessert is Worcester Pearmain. Other things being equal, heavy soil is better than light, but it should not be stiff clay, which is often damp and always expensive to work. A dark loam is the best. Avoidance of crowding is desirable; an average of 12 feet apart for bushes and 30 for standards is justified, as it is easy to crop between them until they require all the ground. But it is pernicious to crop close up to the stems, even with vegetables, as is often done. A south or south-west aspect is better than a northerly or easterly one. The contiguity of water is no disadvantage, provided the site is well drained, because the temperature is more equable.

PEARS

The idea behind the suggestion that fewer Pears than Apples should be planted is that the former is less valuable for cooking, although delicious raw. In a word, there is a suspicion that the Pear is rather more of a luxury than the Apple. To a certain extent it is a matter of taste. There are not wanting people to contend that stewed Pear is every whit as desirable as stewed Apple, especially where so fine a stewing Pear as Catillac is grown.

Our nursery walk reveals that Pears are raised by budding and grafting in the same way as Apples, but that the principal stock used is the Quince, with the Pear stock for standards and extra

vigorous varieties. But it also teaches us that there is a complication with many good Pears which does not exist in any popular Apple, namely, that there must be an intermediary variety between them and the stock. Fortunately, this does not affect those named on a previous page, with the possible exception of Marie Louise, which grows better with Beurré d'Amanlis between itself and the stock than it does direct on the Quince.

As to pruning, we learn that the principles are the same, and that as to practical details the Pear is more markedly an old-wood bearer than the Apple; consequently after the foundation has been laid the routine will be the annual cutting-back, preferably after a preliminary summer pruning, of the wood of the current year, leaving the ripe wood with its clusters of stubs which the gardener calls spurs. These agglomerations take a few years to develop, but once formed, they will give fruit annually if caterpillars and frost are circumvented. It is because of this that Pears are particularly adapted to the cordon system.

With respect to soil, the remarks under Apples apply in the main, with the modification that the Pear is even less happy than the Apple on light soil and is better adapted than its sister fruit to clay. Perhaps one may add here that the Quince itself thoroughly enjoys a damp site.

In addition to certain enemies common to the Apple, the Pear often suffers from the attacks of what is known as Pear slug; the best remedy is nicotine solution, a wineglassful in 3 gallons of water.

PLUMS

Good varieties of Plums in addition to the select few already mentioned are Early Rivers, Heron, Morocco, Belle de Louvain, Pond's Seedling, Bush (Waterloo), White Magnum Bonum, and Monarch (culinary); Oullins' Golden Gage, Denniston's Superb, Early and Late Transparent Gages, Greengage, Belgian Purple, Kirke's, Primate, Coe's Golden Drop, and President (dessert). In each case the varieties provide a succession.

Plums love a deep loamy soil over limestone. They do not

object to clay if it is well drained. Shallow chalk and sand do not suit them. Pruning is practically the same as the Pear, except that once the spurs and stubs have formed less young growth is made, consequently very little pruning is needed. The same remark applies to Damsons. The stronger Plums, such as Victoria, Pond's Seedling, Czar, Monarch, Bush, Morocco, and White Magnum Bonum, together with Damsons, are best suited to culture as standards and when well established in a soil which they like are very profitable, as they bear heavily year after year.

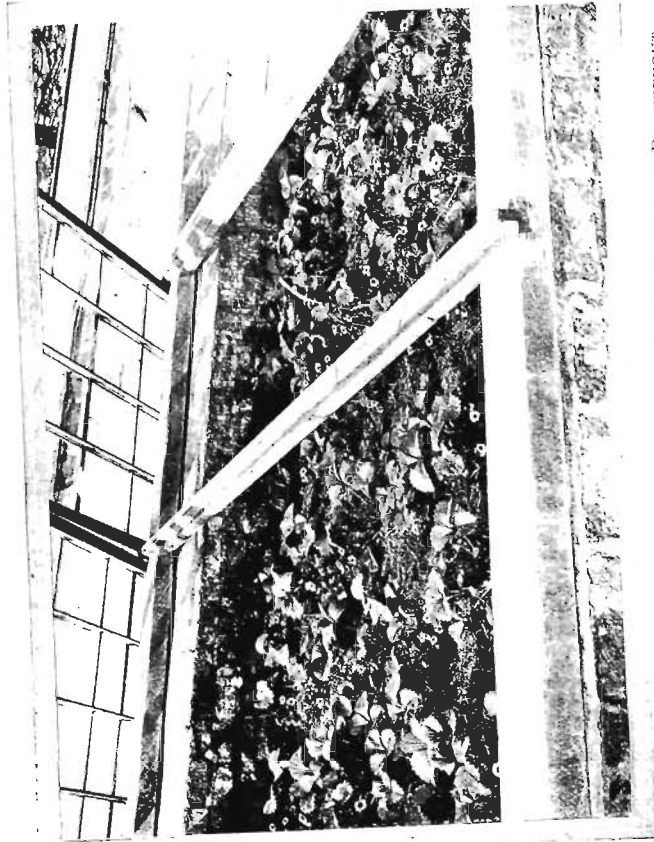
The worst insect enemy is Plum aphid, which may be combated with the wash recommended for Apple aphid. But in recent years thousands of Plums have been destroyed by "silver leaf," a mysterious fungoid pest for which no remedy has yet been found. As soon as the foliage turns pale and glazed the tree should be uprooted and burned. Fresh Plums should not be planted on the site.

CHERRIES

May Duke, Bigarreau, Waterloo, Governor Wood, Elton, and Archduke may be added to those who want more varieties than were named on a previous page. Bigarreau and Waterloo make good standards. Governor Wood and Elton are splendid varieties for growing as trained trees on walls, and do very well as cordons. On walls they should be trained with the branches horizontal, like espalier Apples and Pears. They like best a loamy soil over limestone or a sandy loam. They are impatient of clay, especially if stiff and undrained.

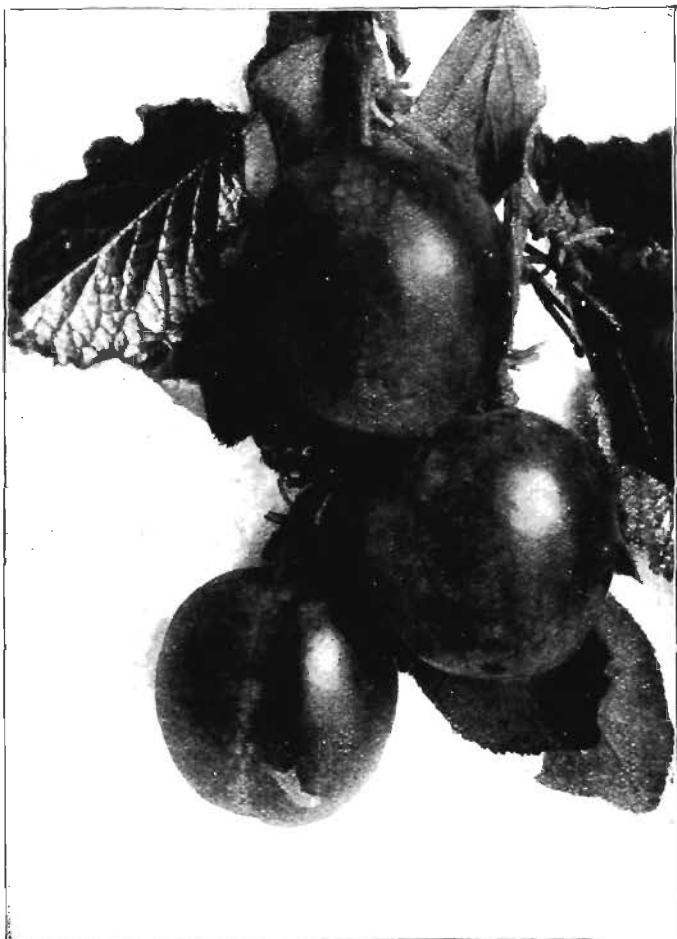
Black aphid is the worst insect enemy and it loves to establish itself in the tips of the young shoots in spring. By tipping these in May and spraying with the aphid remedy recommended under Apple the pest can be subdued. Unfortunately, the silver leaf disease of Plums also attacks Cherries, destroying many trees.

It is worth noting that although Cherries do not as a rule care for a north or east aspect, the Morello will thrive thereon, as will Coe's Golden Drop Plum if not too exposed. The Morello bears on the young wood and must not be spurred like other Cherries, which are suited by the Plum treatment.



AN EARLY CROP OF STRAWBERRIES PROCURED BY PLANTING IN A PIT WITHOUT
ARTIFICIAL HEAT

The plants may be put 15 inches apart all ways in a bed of soil a foot deep in spring with
or without a mixture of manure and leaves below them to give bottom warmth.
(See page 215)



Economical Gardening

Plant food trees, including Plums, which are amongst the most valued of hardy fruits. Kirke's, illustrated herewith, is one of the best of the richer flavoured dessert varieties.

(See page 207)

When we turn to the small fruits we find that the same foundation treatment which builds up good Apples, Pears, Plums, and Cherries gives first-class Currants and Gooseberries, but these fruits are generally grown from cuttings and therefore grow on their own roots and not on the roots of stocks. The allied plant *Ribes aureum* is, however, used as a stock for standard Gooseberries.

CURRANTS

For planting among larger fruits, the reds and whites 7 feet apart, the blacks 8 feet, or even for planting to themselves, Currants are extremely useful. Two-year-old bushes are so cheap that it may seem hardly worth while to wait for home-raised ones, but cuttings inserted in autumn will give fruit in two or three years. The black bears earlier than the red and white, because the young wood fruits. The cuttings may be 8 to 10 inches long, with all the buds left on from top to bottom. The reds and whites may be the same length, but the lower buds should be cut out before the cuttings are inserted. In all cases the lower part of the cutting should be firmly embedded in 3 or 4 inches of soil. By pruning back in two successive years to insure bifurcation, the foundation of a well-shaped bush is laid.

Currants are fortunately not fastidious as to soil. They are suited where Apples are and blacks in particular are at home on the heavier soils beloved of Pears and Plums; at the same time, such strong blacks as Boskoop Giant and French Black tolerate chalk. When grown on light soil liberal manuring should be practised, not only at planting time, but also subsequently in the form of autumn mulches. This is particularly desirable in the case of blacks, which love rich fare and abundance of moisture and soon suffer from drought and poverty. There cannot be too much growth in a black Currant, because apart from the fact that the bush bears on its young wood, we have to consider the mite or "big bud" disease, for which annual pruning and picking out of swollen buds is the best remedy. There is no better plan of managing black Currants than to have two batches and to cut one hard back every spring, leaving the other to fruit and be cut

back the following year. The pruned bushes, cut to within a foot of the ground, will throw up abundance of vigorous wood which will not fruit the same year, but will do so splendidly the next, when their sisters are resting. Thus each set of bushes fruit in alternate years. It is rare for big bud to be seen when this drastic but effectual method is adopted. Only one thing is needed to make it thoroughly effective and that is fertile soil; if the soil is poor and dry the plants do not break up vigorously after the pruning. But the stronger the variety naturally is, the more likely the plan is to be a success. This is a point in favour of that supremely vigorous black Currant, Boskoop Giant, which with the slightest assistance from the soil will throw 4- and even 5-foot shoots in the course of a few weeks. The fruit, too, is large. The French is nearly as strong, while Baldwin's is not to be despised.

The grower of garden Currants may only need one red variety and that a large-fruited one, in which case he can hardly improve on Comet, but La Versailles is equally large. If, however, he wants a succession, he might grow two or even three, the Scotch for an early, the Dutch for a succession, and Rivers's Late or La Constante for a late. One may mention, however, that a succession of any good general variety, such as the Dutch, can be secured by growing a few of the bushes on a north aspect and they do well as *cordons* on walls. Red Currants will hang a long while if covered with garden netting, which serves the double purpose of keeping them back and protecting them from birds.

The white form of the Dutch meets all the requirements of those who want a white variety. The cultivation is identical.

Cutting back similarly to the blacks would be disastrous with reds and whites, because the fruiting system is quite different. They have to ripen their wood well before they can bear freely, so that they really require Pear pruning, *i.e.* steady development and ripening of a limited number (six or eight) main branches, which are retained year after year, and removal of the summer wood each winter. Those who would be prepared to agree that red Currants are as well worth cultivating as Pears may of course summer prune; the benefits are proportionate.

GOOSEBERRIES

Most homely of fruits, the Gooseberry often suffers from too much domesticity of the go-as-you-please type. Thousands of worthy folk raise children, run a Potato patch, keep fowls, and grow Gooseberries on the same happy-go-lucky principle of letting them look after themselves. The children become men and women if they do not happen to get hanged in the meantime; the Potato patch gives Potatoes unless they are all destroyed by disease; the fowls lay eggs which may or may not be deposited on other people's property; and the Gooseberries bear crops or are killed by mildew as the case may be. It is all very casual and very easy and very happy. Nobody is excited or worried. Things either go right or they don't. If they don't go right they go wrong and you put up with what you cannot help.

People who go through life in this way may not get as many Gooseberry tarts as those who take more trouble; but they enjoy them more. There are generally a few Gooseberries of sorts and when there are no Gooseberries there is something else. Why bother if the Gooseberry bushes are unkempt? Is not hair sometimes uncombed and clothing awry? These are trifles unworthy of philosophic minds.

But Gooseberries do respond to proper attention. They give more fruit and larger fruit. By choosing good varieties and giving them such skilled treatment as pruning entails, far more produce can be got off a given area of ground than by leaving them to take their chance.

It is open to a person to declare that he does not want big Gooseberries. The "big Gooseberry" has a peculiar reputation, which sensitive people fight shy of. And he thinks that on the whole small Gooseberries are better than large ones for tarts and stews. This is really a question of pulp *versus* skin. Those who like a preponderance of skin should get small Gooseberries, first by selecting a small variety, secondly by letting the bushes become crowded; but let them not forget that the crowded bush presents difficulties in the way of quick and painless gathering. Those who like abundance of pulp should grow large varieties

. . .

thinly. There will be a smaller number of much bigger fruits. Gathering will be more pleasant and more expeditious.

A few of the best of the smaller Gooseberries are: Berry's Early Kent, Crown Bob, Whinham's Industry and May Duke; while some of the best of the larger varieties are: Whitesmith, Lancashire Lad, Speedwell, and London. It is noteworthy that the best of the Gooseberries generally grown for eating raw, such as Pitmaston Greengage, Red Champagne, Bright Venus, Golden Drop, and Langley Gage, are comparatively small-fruited.

Gooseberries thrive on almost all soils, but like best a good loam over limestone. Crown Bob is perhaps the most adaptable, as it succeeds on shallow limestone soils as well as on clay. Its principal defect is a habit of turning its branches downwards, and unless this is corrected (or, conversely, taken advantage of for getting stock with a minimum of trouble) the ground around the bushes will become in a few years a thicket of prickly undergrowth. But it is easily adjusted by pruning.

Gooseberries may be said to gush fruit. It exudes from almost every pore of healthy bushes. For this reason want of pruning will not cause sterility. All the old and a good deal of the young wood will bear. But taking one year with another, the grower will find it to his advantage to prune. In the early stages there should be the foundation work described in connection with the large fruits. Later, the excision of crowding wood (with summer pruning if time can be found) will repay the time it takes. On the whole, red Currant rather than black Currant pruning suits Gooseberries. That is to say, there should be a good framework of ripe wood to yield the nucleus of the crop.

Loss of buds from birds in winter will have to be guarded against, otherwise the shoots may be stripped. It is particularly the young shoots which suffer and this presses hardly on the big-fruit man. Threading—that is, twining thread in and out among the branches—is the best preventive. This is a bothersome business with bushes greatly overcrowded with small shoots, but is not so inconvenient with those kept open and thin.

Two other formidable enemies are the American mildew and the caterpillar. The former fungoid disease has spread rapidly

during recent years and is very destructive, spoiling the fruit and crippling the bushes. An attack often comes in May or early June, the signs being a blackening of the tips of the upper part of the young shoots and sooty patches on the leaves, followed by down on the fruit. Experts recommend the removal of the tips and spraying the bushes towards the end of May with Burgundy mixture at the following strength: 40½ ounces sulphate of copper, 45½ ounces washing soda, 100 ounces soft soap, 100 gallons water, the chemicals being dissolved separately and the solutions mixed when cold, the soap then added. The application is made at the end of May. The fruit must be rinsed in water in order to remove the deposit before it is used. It is further advised to spread ½ bushel of slaked lime on the surface of the soil among the bushes in April in order to prevent the growth of hibernating spores.

Chemical sprays are of no avail in the case of the caterpillar, which can only be kept under when once it puts in an appearance by dusting a poisonous substance among the branches. Hellebore powder is generally used. It may not develop before the fruit has been gathered, in which case there is no further trouble; but if the bushes are in fruit, the berries should be rinsed before use. One observes that caterpillar attacks are entirely absent in some seasons and then come with great severity, completely defoliating the bushes unless promptly subdued.

Red spider may cause trouble on dry sites, but I have not found the ever-reliable Crown Bob, with its tough and vigorous growth, affected by it. It is the crowded bush growing on poor soil and fully of puny shoots which suffers the most severely.

RASPBERRIES AND HYBRID BERRIES

One would grow Raspberries if it were only for the sake of their supplementary value for Currant, Loganberry, Strawberry, and other stews. What soft fruit is not improved by Raspberries? If a little insipid by themselves, they certainly form a perfect corrective of the acidity of red Currants and the sharpness of Loganberries. Of their importance for preserving, one need say

little, beyond reminding intending growers that in the preserving season jam manufacturers are always ready to give a remunerative price for sound fruit. Thus, whoever can produce good crops of Raspberries may rely upon being able to sell them at a profit provided he is within the range of a jam factory. Failing that, he must market his surplus fruit in the usual way.

The crop thrives on all good fruit soils, but particularly on heavy loams. The weaker varieties, such as Carter's Prolific and Maclaren's Prolific, do not care for very stiff soils; but strong varieties like Norwich Wonder, Baumforth's Seedling, Northumberland Fillbasket, and Perfection will succeed on heavy land. The popular variety Superlative, one of the best for vigour and size of fruit on medium soil, is somewhat impatient of very stiff and also of shallow limestone soils. Hornet and Profusion are two other fine Raspberries for medium soils. The autumn-fruited section, of which Abundance, Perpetual de Billard, and Yellow Antwerp are good examples, are useful in their season.

The Hybrid Berries, of which the Loganberry is by far the best known and practically the only one taken up by market growers, may have consideration for private gardens when the allocation of space for Raspberries is under consideration. The Mahdi, the Lowberry, the Laxtonberry, and others of somewhat similar habit all thrive on similar soils to Raspberries and may be grown on stout stakes in the same way. But they are not so amenable to cultivation on low wire frameworks as the dwarfed Raspberries are. Neither low wire frame nor stake is much use for the Loganberry, which is so vigorous as to call for a long head run. There is nothing much more useful for covering trellis-work or tall rough erections of any kind. Marketers grow it on long frames of wire, four tiers stretched on stout posts. The long, bristly shoots are tied diagonally. The plants are put in 12 feet apart.

Raspberries, Blackberries, and Hybrid Berries generally respond well to cutting-back after planting, but this is not necessary with the Loganberry. With all, including Loganberries, there is no better pruning system than the annual removal of the previous year's shoots after the fruit has been gathered. The new wood

which will spring up every year if the soil is good will supply the crop of the next season. When new stock is wanted it is at hand in the sucker growths, but it may be mentioned that the Loganberry roots readily at the tips if the shoots are bent down and pegged, indeed, fruiting plants can be had in three years.

The inevitable enemy appears in the cultivation of these fruits. The commonest and worst of the pests attacking Raspberries and Loganberries is that called the Raspberry beetle, the larvae of which, hatching from eggs laid by the beetle on the flowers in May, eat into the fruit. It is found that the best remedy is to shake the canes above tarred boards or greased pans in May, so as to dislodge the beetles. When the grubs have got into the fruit nothing can be done except to pick off the affected fruit by hand and that is a tedious process. Unfortunately, most people do not think of the pest in May, but only realise its existence when mischief has actually been done. A few canes here and there ought to be examined in May in order to see whether the enemy is at work.

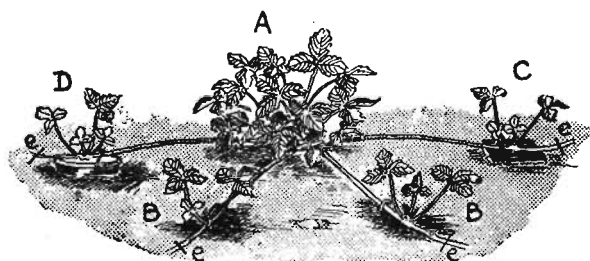
STRAWBERRIES

This is the "quick money" crop *par excellence*, but sometimes money is lost instead of gained. Good soil, a reliable variety, healthy plants, a rainy May, a sunny June, a roasting July—these are the combination which brings swift and heavy profit. Provide them and Strawberry-growing is an easy and pleasant means to a comfortable fortune. A dry spring and a wet summer are not favourable.

A light, free-working loam is the best soil for Strawberries, but in garden culture any soil can be made to do, for Sir Joseph Paxton and Givons Prolific will thrive on heavy land provided it is worked well, while Royal Sovereign, Fillbasket, and some of the older sorts will succeed on light soil. Royal Sovereign is the most generally useful sort. Laxton's Maincrop and King George V. are excellent newer varieties. There is interest, but no great importance, in the "perpetual" sorts, such as Laxton's, St. Anthony, St. Joseph, and various other "saintly" berries. The

fruit is small, but in most cases has a brisk and pleasant flavour.

Taking Royal Sovereign as the typical Strawberry, the rows may be $2\frac{1}{2}$ feet and the plants 2 feet apart and the planting may be done any time from autumn to spring from the open ground; but summer planting may be and often is done from pots, watering as required. The gardener who has struck runners into small pots in early summer likes to get them planted out before autumn is far advanced, because he feels confident then of having strong



PROPAGATING STRAWBERRIES BY RUNNERS

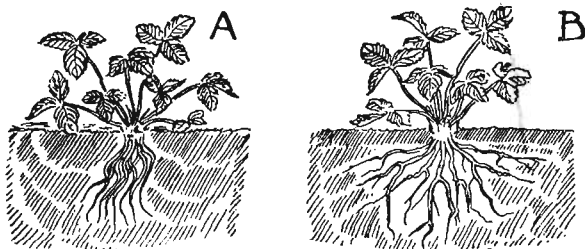
A, parent plant; B, runners rooting in the soil; e, point of stopping the runner; C, runner rooting in a piece of turf; D, runner rooting in a small pot filled with soil.

fruiting plants the next summer. He therefore fills his small pots well up to the brim with loamy soil in June, sets them round the old plants in suitable positions for the runners, places the runner-plantlet on the soil and fixes it in position with a stone, which keeps it cool and thereby facilitates quick rooting. By September at latest he is able to cut the newly rooted plant away from the parent and plant it out. Pieces of turf reversed answer.

Lettuces and Onions may be grown between the rows of Strawberries in a young bed, thus making a profit out of the ground before the Strawberries want all the room.

Many Strawberry growers fail to give their beds a proper chance of doing good service year after year because they neglect to "do up" the beds after fruiting. If, towards the end of the

summer or early in autumn, the decaying foliage and superfluous runners are trimmed away and the soil forked over, rain has a good opportunity of getting in and helping the development of the fruiting crowns. Follow this up by giving a light dressing of a complete fertiliser in spring—say 2 ounces per square yard—and the plants are greatly invigorated and made capable of yielding good crops for many years. The weight of the crop depends upon the size of the crown which the plants form and from which the truss of bloom bursts in June. Early and liberal



PLANTING STRAWBERRIES

A, bad work; B, good work.

strawing protects the blossom, as well as ultimately preventing soil from being splashed on to the fruit in wet weather.

The principal enemy is mildew, which is apt to cripple the plants in extremes of weather, either in the direction of wet or drought, but generally the latter. Liver of sulphur, 1 ounce per 3 gallons of water, may be tried, but in commercial culture it is perhaps the best economy, in view of the expense of chemical and labour, to rely upon the average results of general good culture and weather.

PEACHES, NECTARINES, AND APRICOTS

These are essentially wall trees, not because they cannot be grown in bush form, but because they are much more satisfactory when trained flat and moreover can be more easily protected, the

shoots from frost and cold wind, the fruit from birds. This is particularly important in the case of Peaches and Nectarines, which are liable to attack from a fungoid disease known as "blister" when checked by cold winds in spring. True, the fungus can be attacked with Bordeaux or Burgundy mixture, but it is best avoided. Culturally speaking, Peaches and Nectarines are the same, the only difference between them being that the Peach has a downy and the Nectarine a smooth skin. Waterloo, Hale's Early, Early Grosse Mignonne, Stirling Castle, and Sea Eagle are good Peaches, fruiting successionally. Cardinal and Pine Apple are reliable Nectarines. They are almost exclusively grown under glass in these days, but may be grown successfully on walls, the main branches trained diagonally a foot apart, the fruiting shoots laid in between them.

The most failures with Peaches arise through hesitation in pruning back during the early stages. They are naturally vigorous growers and have to be curbed rigorously while young, otherwise the proper "fan" framework cannot be secured. A glance at well-trained trees in a good garden shows immediately what is here suggested. When the foundation has been laid, the procedure is simple, as it is only necessary to cut out the fruited shoots and train in young ones for the next year's fruiting. But each of these new fruiting shoots will show several buds in spring and the usual procedure is to rub off all of them except one at the base and one at the tip. The former is the bud which will give the new shoot for the following year and must, therefore, be preserved, but the latter is only retained to encourage the sap flow and need not be allowed to extend far.

The grower of Peaches and Nectarines has little to fear from insufficient growth, but much from excessive stem and leaf. In addition to the pruning procedure here indicated, he must protect himself by the negative process of providing moderately fertile soil; rich, loose soil is bad.

The worst enemy other than the blister already referred to is black aphid, which attacks the young shoots in spring. The aphid wash recommended under Apple is efficacious.

The bloom must be protected from frost in spring with tiffany

or netting, which should be hung in front of the trees and removed when the danger is past.

Not more than two fruits per shoot should be allowed and if large fruit is required only one.

The Apricot gives fruit on young wood, but is not so markedly a young-wood fruiter as the Peach, as it will bear on the ripened wood.

A framework of mature wood, with a moderate amount of young wood between, will give satisfactory crops, other things being right. A rich, loose soil should be avoided, or the branches will be gross and later will be cast. The splendid variety Moor Park is particularly liable to sin (or perhaps I should say suffer) in this way. It is, however, almost indispensable, owing to the fine quality of the fruit. Shipley's and Breda are less liable to premature decay, but the fruit is not so fine.

PART III

THE GARDEN IN SUMMARY, WITH USEFUL TABLES AND CULTURAL DATA

PART III

THE GARDEN IN SUMMARY, WITH USEFUL TABLES AND CULTURAL DATA

ROSE GARDEN

A.—PLANNING

B.—USEFUL TABLES

A.—PLANNING

It is with Roses as with fruit—more often they are spread over the garden than put together: Roses in the bed here, Roses on the arch yonder, standards in this border, Ramblers on that summer-house, a Rose on the house wall, a group pegged down in a lawn bed. Only one grower here and there plans for Roses, the rest just plant them.

It is well that Roses should be grown in many parts of the garden, so that their beauty and fragrance may be met with everywhere; we can hardly have too many. And there is this particular advantage in spreading the Roses over the garden—there is no serious want of colour when the majority of them are out of bloom, because other things near them are in flower. In a Rose Garden proper one looks for a great panorama in early summer and merely sporadic flowering for the remainder of the year. But the joy, the beauty, the glory of the season are something that remain a tremendous and moving memory, giving happiness for many months. The Rose garden gives opportunities to many Roses which are not capable of producing flowers of special individual merit, but which by their good habit, fine colour, and freedom of flowering have particular qualities as plants. Planted together in a bed, they produce a beautiful effect. And there is a special fitness in giving the Queen of flowers her

own Court, there to reign supreme. The gardener who considers the Rose a plant apart from and above all others—and there are thousands such—will always try to give some of his Roses a selected place together, even if he grows others separately in different parts of the garden. The Rose Court may be a small one—a Luxembourg or a Monaco rather than a St. James's; but the point is that it is regal.

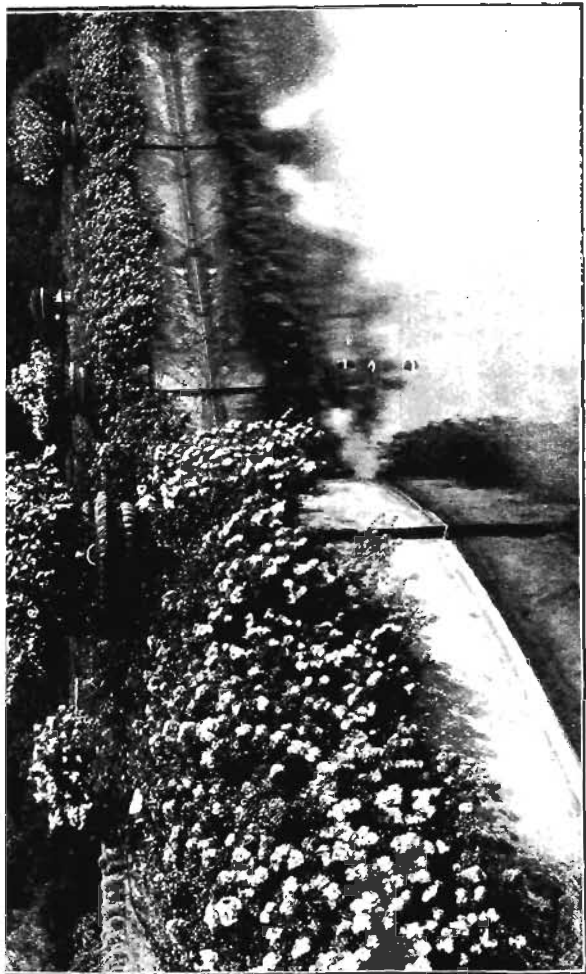
The Rose may form its own enclosure, as it is well capable of doing in its stronger forms. Perhaps the boundary is a Sweet-brier hedge, perhaps a rustic framing enmeshed with Dorothy Perkins, Alberic Barbier, and other hardy, vigorous, free-blooming varieties which form a thicket of foliage and blossom, perhaps a more elaborate series of wire frames connected with arches, perhaps simply a line of old rope on which Roses trail. The garden may be circular, or it may take any particular form which the taste of the grower dictates. A garden planned so that the paths converge on a central area is admirable. A seat, a pool, a sundial—perhaps all three—can be provided at the garden's heart and from this favoured spot the whole of the garden can be seen and enjoyed. The paths should be of grass or, if grass surrounds the beds, of stone flags.

The site for the Rose garden must be considered with care. It shall not be overhung with trees, otherwise it will be damp and the plants will be "drawn," moreover, overhanging means a nearness which suggests encroachments of greedy tree roots on the food meant for the Roses. A certain amount of shelter is desirable, none the less, if the district is a cold one, or there is exposure to strong winds. And the gardener may sometimes be able to scheme to get shade for a part of the garden during the burning noon hours, to the benefit of particular varieties which lose their colour in fierce heat and to the increase of his own comfort. He can, perhaps, contrive to utilise a Copper Beech as background for a flaming pillar of Madame René André or Carmine Pillar, or a *Prunus Pissardii* as a foil for an arch of Blush Rambler. It is in arrangements such as these that the individuality of the gardener asserts itself.

A bottom on clay, so bad for most crops, is good for Roses if



HOW TO PRUNE STANDARD ROSES IN SPRING
Left— a plant marked for pruning; right—a plant pruned.
(See page 230)



A FOUNTAIN OF ROSES

There are no limitations to the many ways in which Roses may be grown, or as the late Dean Hole aptly summed the matter up, "There should be beds of Roses, banks of Roses, bowers of Roses, arches of Roses, fountains of Roses, baskets of Roses, vistas of Roses, "A fountain of Roses is, perhaps, least often seen, and yet what could be more delightful than rambling varieties in full flower planted near the margin of fountain or pool and allowed to droop carelessly over, perhaps touching the water. The variety shown in the illustration is Dorothy Perkins.

(See page 231)

not heavily shaded. They are not so impatient as fruit trees, for example, of a wet subsoil. The one serious drawback to such a site is mildew, but that, to be sure, contrives to flourish under most conditions if left alone. It must be fought, together with Orange Fungus and other fungoid pests of the Rose garden. Let us remember, however, in connection with this question of soil, that while Roses unquestionably enjoy clay they will flourish on any ordinary soil provided vigorous varieties are selected, plenty of manure is used, and deep cultivation is practised. What the kitchen gardener will do for Peas and Onions the Rose-lover will assuredly do for Roses.

There will be little or no intermixture of varieties in the beds of the Rose garden; if different varieties are put together, they must be sorts the colours of which blend and the flowers of which are out together. A simple arrangement of beds is better than an intricate one. Such arrangements of circles and crescents and stars as one sometimes sees on lawns are not suited to Roses. A group of oblongs side by side, narrowing towards the base, with a large circular bed in the centre, are appropriate. Or the garden may be planned similarly to the kitchen garden: an outer border with circumferential path all round the garden, and two central intersecting paths dividing the garden into four quarters. There will be pillars or rope at the back of the borders, which will be planted in part with dwarf Roses, such as *Chinas* and dwarf *Polyanthas*. There will be an arch at the entrance to the garden and inner arches at each point where the circumferential and central paths meet. There will be an object of interest in the middle of the garden as already mentioned. It may be a summerhouse, but a good place for this would be the north-east corner, so that the aspect was south-west; this would command the whole of the garden, bathed in sunlight. The centre could then be devoted to a bold group of pillars or some other conspicuous object. The planting of the quarters would afford much scope for taste and ingenuity. An admirable plan of treating the principal area of each would be to put it down to grass and dot it with weeping standards, using such varieties as *Wichuriana rubra*, *Dorothy Perkins*, *Hiawatha*, *Excelsa*, *Lady Godiva*,

and Shower of Gold. These are beautiful objects when well grown and they would produce a much richer and more dignified effect than a cluster of small fancy beds. The beds would be disposed beside the paths, the corners of which would be rounded in order to "legalise" oval and round beds, which would alternate. The ovals could be planted with vigorous Hybrid Perpetuals and Hybrid Teas, the rounds with pegged-down plants, Teas, and Chinas. If it was desired to make use of ordinary standards, they could be planted on that part of the outer border immediately to left and right of the principal entrance.

A Rose Garden which had to yield show flowers would have to house a representative collection of recognised exhibition varieties as well as a selection of "garden" sorts. This collection would presumably include some varieties which were not distinguished for vigour, consequently it would have to be given the most sheltered part. Assuming that the north and east sides had shelter, whether from wall, fence, hedge, or frame of hardy Ramblers, the portions of the outer border which they protected, and which would have south and west aspects, would be the most suitable sites for the show collection. Moreover, being unseen from the western entrance, they would be unlikely to interfere with the general effect. One does not suggest that a mixed border of Roses is an object so unsightly that it is to be hidden away in a remote part of the garden; on the contrary, it is attractive; but we start with the assumption that having made a Rose garden which is first and foremost to be a garden, we group our beds and varieties to produce particular effects, with which mixed plantings would not harmonise.

A Rose garden planned as suggested might be made on a large or a small scale with equal effect. It is not in large places alone that Rose gardens, with all their charms and joys, can be brought into existence. The villa could have its Rose garden as well as the palace. Better far, indeed, a finished feature such as this than the hotch-potch of plants and styles which does duty for gardening in the grounds of most villas.

The confirmed Rose-lover will not repine if the Rose garden is not full of bloom every month in the year. At periods when there

A good deal of work is involved in the laying-out and cultivation of a Rose garden, therefore a start cannot be made with advantage in spring, unless, indeed, there is abundance of labour available and the job can be completed quickly. It is better to start as soon as rain has softened the ground in late summer or early autumn, so that everything can be ready for the planting before winter comes on. It has to be remembered that laying turf, digging ground two spades deep, making paths, and fixing posts for pillars and arches are all tasks which, however pleasant, take up a good deal of time. Rather than scamp the soil preparation, the planting had better be left till spring. The making of the garden could then be a source of recreation for the winter. There would be no feeling of haste and worry. And while spring planting may not be ideal, Roses well planted in spring in thoroughly

prepared soil—soil, that is, which has been trenched and manured—may be expected to do better than Roses planted hurriedly in ill-prepared soil in autumn. Take time, therefore. Making a Rose garden should be no more a matter for rush and worry than furnishing a home for a start in married life. Everything connected with Roses, from beginning to end, must be a source of enjoyment, the preparation equally with the fulfilment.

B.—USEFUL TABLES

I.—GOOD VARIETIES FOR INDIVIDUAL BEDS

References: H.P.=Hybrid Perpetual; H.T.=Hybrid Tea

Variety.	Section.	Colour.	How to Prune.
Augustine Guinoisseau	H.T.	silvery	Cut out wood 2 years old or older, but prune previous year's growth very lightly, as if well ripened it will flower along its whole length
Chas. Lefebvre	H.P.	crimson	Ditto
Caroline Testout	H.T.	pink	Moderately, leaving about 9 inches of the previous year's wood
Ernest Metz	Tea	coppery	Ditto
Hugh Dickson	H.T.	crimson	Leave about 4 inches of the previous year's wood
Frau Karl Druschki	H.P.	white	Same as Caroline Testout
Mdme. Abel Chatenay	H.T.	salmon pink	Same as Caroline Testout
Mrs. John Laing	H.P.	pink	Same as Hugh Dickson
Richmond	H.T.	carmine	Same as Caroline Testout
Viscountess Folkestone	H.T.	cream, salmon centre	Same as Hugh Dickson

For bedding in town and suburban gardens choose: Baroness Rothschild, pink H.P., same pruning as Caroline Testout, see above; Boule de Neige, Duke of Edinburgh, and M. Boncenne,

see Table II.; Mrs. John Laing, see above; Caroline Testout, see above; La France, silvery peach, same pruning as Hugh Dickson, see above; and Viscountess Folkestone, see above. All will thrive if the air is not very impure. Caroline Testout is perhaps the best of all.

The following Dwarf Polyantha and China Roses are also good for beds or for groups in borders; they produce clusters of small flowers throughout the summer; after the flowering is over they should be pruned hard back; they should be planted close together—about a foot apart:

Anna Maria de Montravel, white
 Cecile Brunner, blush
 Georges Pernet, yellow, tinted rose
 Gloire des Polyantha, pink
 Laurette Messimy, rose
 Leonie Lamesch, copper
 Mignonette, rose
 Mrs. W. H. Cutbush, pink
 Perle d'Or, nankeen yellow

If Roses are wanted for edgings, a selection may be made from the above varieties.

II.—GOOD VARIETIES FOR PEGGING DOWN

Variety.	Section.	Colour.	How to Prune.
Boule de Neige	H.P.	white	Cut out old wood, but leave the growths of the previous year nearly full length, as they will bloom from end to end. This applies to all the varieties in the present table
Chas. Lefebvre	H.P.	crimson	
Duke of Edinburgh	H.P.	vermilion	
Mdme. Gabriel	H.P.	silvery pink	
Luizet			
Margaret Dickson	H.P.	white, tinted	
M. Boncenne	H.P.	dark crimson	

III.—GOOD VARIETIES FOR STANDARDS

Reference has already been made to the value of tall weeping standards for prominent positions in the Rose garden and suitable varieties have been named. Most of the more vigorous H.P., H.T., and Tea Roses are good for ordinary standards on stems about a yard high, and these the grower can form for himself by budding in summer on hedgerow Briers obtained the previous autumn.

Variety.	Section.	Colour.	How to Prune.
Anna Ollivier	Tea	ivory	Cut previous year's growth to about 4 buds
Augustine Guinoisseau	H.T.	silvery pink	To 9 buds
Caroline Testout	H.T.	pink	To 6 buds
Chas. Lefebvre	H.P.	crimson	To 9 buds
Ernest Metz	Tea	coppery	To 4 buds
Frau Karl Druschki	H.P.	white	To 9 buds
Hugh Dickson	H.T.	crimson	To 6 buds
Jean Ducher	Tea	coppery rose	To 4 buds
Lady Hillingdon	Tea	yellow	To 4 buds
Madame Hoste	Tea	white	To 4 buds
Mrs. John Laing	H.P.	pink	To 6 buds
Mrs. R. G. Sharman Crawford	H.P.	pink	To 6 buds
Marie Van Houtte	Tea	cream and rose	To 4 buds
Perle des Jardins	Tea	yellow	To 4 buds
The Bride	Tea	white	To 4 buds
Ulrich Brunner	H.P.	cherry red	To 6 buds
Viscountess Folkestone	H.T.	cream, salmon centre	To 6 buds

IV.—GOOD VARIETIES FOR PILLARS, ARCHES, AND ARBOURS

Pillars may be used in the Rose garden with noble effect. They make a splendid background for a border if set 3 yards apart and connected by top pieces, or they may be established in groups

of three or more, the poles about a yard apart. The following are fine varieties:

Variety.	Colour.	How to Prune.
Alberic Barbier	pale yellow	Needs little, as it does not throw up a thicket of canes like Dorothy Perkins, but produces strong twiggy breastwood on which the flowers are borne
Carmine Pillar	carmine	Thin out old canes when the stool becomes crowded, but otherwise do not prune
Crimson Rambler	crimson	Same as Carmine Pillar, but more old wood will have to be removed, as it is more vigorous
Blush Rambler	blush pink	Same as Crimson Rambler
Dorothy Perkins	pink	Thin the stools freely in summer, after flowering, cutting out old wood and tying in the best of the new shoots. Lady Gay is nearly identical
Félicité-et-Perpétue	white	Same as Carmine Pillar
Leuchstern	rose, white centre	Same as Carmine Pillar, but needs little pruning
American Pillar	carmine, white centre	Same as Carmine Pillar
Mrs. F. W. Flight	pink	Same as Carmine Pillar
Rêve d'Or	yellow	Much the same as Alberic Barbier
Paul's Single	white	Same as Carmine Pillar; does not, however, make so much growth on poor soil; needs rich ground
White		
Penzance Briers in variety	various shades	Same as Carmine Pillar

V.—GOOD VARIETIES FOR WALLS AND LOW FENCES

There are many Roses which have very vigorous habit and consequently are commonly described as climbers, but which are not well suited to clothing tall pillars, being better adapted for training on walls and low fences, which they will cover; here are a few such varieties:

Variety.	Colour.	How to Prune.
Alister Stella Gray	yellow	Thin out to prevent crowding, removing old and weak wood, but do not prune back healthy shoots, which should be <i>nailed</i> or tied in
Bardou Job	crimson	Do.
Claire Jacquier	nankeen	Do.
Cheshunt Hybrid	rose	Do.
Gloire de Dijon	yellow	Do.
L'Idéal	coppery yellow	Do.
Mdme. Alfred Carrière	white	Do.
Mdme. Pierre Cochet	deep yellow	Do.
Reine Marie Henriette	red	Do.

Alister Stella Gray, Cheshunt Hybrid, Gloire de Dijon, L'Idéal, and William Allen Richardson are four of the best climbing Roses for town and suburban gardens; they will thrive where the air is not very impure.

VI.—A TABLE OF PESTS AND REMEDIES

The insects and fungi which attack Roses are often a great source of worry to the amateur gardener, who sees the plants which he has cultivated with such assiduity gravely endangered. The following table of descriptions and remedies may be useful:

Pest.	Description.	Remedy.
Aphis	Small green fly	1 wineglassful commercial nicotine, 6 galls. water, $\frac{1}{2}$ lb. sulphur, boil and use very hot; or use any well-known proprietary insecticide
Beetle	Small gold - marked beetle	Hand-pick
Grub or maggot	Grub, $\frac{1}{2}$ - $\frac{3}{4}$ inch long, which lurks in curled leaf	Hand-pick; shake tree and gather up grubs which descend by threads; it is important to attack early
Galls	Red or moss-like swellings	Cut off and burn
Mildew	White powder on leaves	Dust with flowers of sulphur or syringe with 1 ounce sulphide of potassium in 3 gallons water
Red rust	Brown spots on leaves	Do.; pick off and burn worst leaves
Orange fungus	Large bright orange pustules on leaves	Do.; do.

VII.—A PROPAGATING TABLE

Roses are propagated by budding, grafting, cuttings, layers, and seeds. For general garden purposes, buds, cuttings, and seeds suffice.

Method.	Time.	Description.
Budding	Summer	Make a longitudinal slit about $1\frac{1}{2}$ inch long through the bark of each side shoot of the Brier close to the main stem with the point of a sharp knife; make a cross cut at the top of the slit; raise the edges of the bark with the flat handle of the budding knife. Choose a Rose shoot of the current year's growth and cut out slices of stem $1\frac{1}{2}$ inch long just below each leaf; remove the pith but leave the bud. Slip the slices into the slits in the Brier and tie with raffia. The buds will grow and flower the following year. (See page 77.)
Cuttings	Autumn	Take pieces of the current year's growth about 8 inches long, remove the lower buds, insert in gritty soil almost up to the top of the cutting, and tread firmly in. Briers for stocks may be raised in the same way and afterwards budded. Cuttings may also be struck in heat in spring. Plants raised from cuttings will flower the first or second year.
Seeds	Spring	Take the hips when quite ripe in autumn—protecting them from birds if necessary—lay in sand and keep in a dry place till spring, then rub out the seeds and sow them with the sand in gritty soil in pans in a frame or greenhouse. Cover with shaded glass till germination takes place. All the seeds are unlikely to germinate simultaneously; some may lie for several months before they start growth. Plants raised from seed will flower in the second or third year. Briers may be raised from seed in the same way and afterwards budded.

HERBACEOUS BORDERS AND PLANTS (INCLUDING ANNUALS)

A.—PLANNING

B.—USEFUL TABLES

A.—PLANNING

THE herbaceous borders will probably bear relation to the principal paths and lawn, on the boundaries of which they are likely to find places. Is there a curving carriage drive or walk up to the principal entrance to the house? Then the herbaceous border shall curve beside it, with a width at least as great. Is there an area of ground beyond the lawn? Then a border of shrubs, or of fruit trees faced with selected shrubs and Rose pillars, shall form the back portion of it and a belt of herbaceous plants the front. It is immaterial whether the border be straight or curved, because any stiffness of outline can be overcome in the arrangement of the plants.

Herbaceous gardening is intrinsically economical gardening; only when the gardener permits himself to despise the thousands of fine standard species and varieties which are at his command and to become obsessed with an unwholesome craving for new varieties—half of which have nothing new about them except the name—does it become costly. It is economical gardening because the plants can be propagated rapidly through the medium of seeds, cuttings, and divisions; because they can be grown without special soil and manure; and because they grow quickly, many to a large size, thus filling up considerable ground in a very short period of time. One might add that they do not call for skilled labour, but for the fear that this would be construed as meaning that they do not require proper cultivation. Treatment they certainly need, but it is only such as any flower-lover can soon learn to provide. And herbaceous gardening being

intrinsically economical gardening, it is a phase of floriculture which should increase rather than diminish in the near future.

A well-managed herbaceous border will not only be one of the best features of a garden, it will also yield abundance of flowers for cutting. Most plants bloom the better for being cut freely; and while some flowers are not adapted for cutting, although very beautiful in the garden, it is easy to find kinds which serve both purposes.

Let the herbaceous border be studied, alike as to site, preparation, and furnishing—the three cardinal matters. It must have an open, unshaded position if a wide selection of the best plants are wanted. A densely enclosed, heavily shaded site need not go entirely plantless, because, as our tables show us, there are plants which flourish in shade; but it will not grow everything. Overhanging trees mean shade and drip, which the majority of herbaceous plants dislike. There is the further trouble that the nearness of many large trees means an obstacle to cultivation and plant nourishment in the form of strong, far-reaching roots. The remedy for tree trouble may be to cut down some or all of the trees, but it is more likely to be to make the borders some distance away from the trees. Roots are not likely to be a source of embarrassment more than 20 yards from the trees, because at that distance most of the roots have got away from the surface and will not therefore hamper the tools. If trees of any size have to come down, let the work be done under skilled advice, because the feller will then contrive that the weight of the falling tree brings the stump and stronger roots out with it, thus saving much laborious work. Never, however, embark hastily on tree destruction, whether in the interests of herbaceous plants or anything else, because repentance will not compensate for a mistake.

Shelter has its value, especially in gardens swept by cold winds, and one will not despise a wall, a fence, a hedge, or a belt of shrubs and trees if it is obviously serving a good purpose; but to a considerable extent the border can provide its own shelter in the form of kinds which are of strong, hardy growth. For example, Michaelmas Daisies move early, grow fast in good soil, and are

unaffected by the strongest and coldest of winds. *Boltonias*, *Goatsruess*, *Ox-eye Daisies*, and *Golden Rods* are also both tough and bulky. It is merely a question of stout stakes well driven down.

In choosing a site for our principal herbaceous border we shall try to provide for a bold sweep near the front of the house—a sweep which shall bring under the eye all the best portions of the border, if not, indeed, the whole of it. And if we cannot so arrange matters, we shall at least take care that one portion, specially treated and cunningly planted, shall give us a good effect. A whole series of gardens within gardens can be provided by the simple device of setting strong Rose pillars at equal distances along the back of the border and treating each “compartment” thus created separately. There might, for example, be one “bay” of *Phloxes*, another of *Delphiniums*, a third of *Paeonies*, a fourth of *Pyrethrums*, a fifth of *Spiraeas*, a sixth of *Heleniums*, a seventh of *Poppies*, an eighth of *Meconopsis*, a ninth of *Kniphofias*, and so on. These bolder things for the main area of the bay; for the front, *Pentstemons*, *Campanulas*, *Coreopsis*, *Gaillardias*, *Geraniums*, *Geums*, *Inulas*, *Iris*es, *Day Lilies*, *Linarias*, *Potentillas*, *Statice*s, *Polyanthuses*, *Arabises*, *Aubrietias*, and various bulbs. Indeed, this is almost the ideal method of arranging herbaceous borders, because, in the first place, herbaceous gardening is linked with Rose-growing in one of its most delightful forms; because in the second the border is never bare; and because in the third individual and local interest is combined with general effect. The gardener who is a lover of climbing and rambling plants generally need not confine his pillars to *Roses*, but may introduce *Clematis*es and such noble plants as the *Silver Pillar Knotweed*, *Polygonum Baldschuanicum*. With the first mild spell towards the end of winter a film of green will run along the Rose pillars, giving the border a finished appearance before the herbaceous plants proper have made a foot of growth; but not, perhaps, before the earliest bulbs have broken into bloom. Thenceforward there will always be interest, always beauty, always perfume, without a suspicion of stiffness or sameness, until the hard frosts of autumn come.

Where there is a long, unbroken line of border, one of the first objects of the gardener must be to provide material for continuous flowering or leaf-beauty at short intervals, otherwise there may be considerable lengths which are entirely without colour at particular periods of the year. Paeonies are invaluable for this "spacing," so to term it, because from the first day that they come through the soil in winter until they wither in autumn they are handsome. Funkias, too, are helpful, together with such things as Lavender Cotton, Silver Salvia, Silver Milfoil, Day Lilies, Flos Jovis, Sea Hollies, Verbascums, and Veronicas (for full selections see tables), nearly all of which have leaf as well as flower beauty to recommend them.

Colour-grouping is an interesting phase of herbaceous gardening, but apt to be disappointing, not so much owing to faults of composition, nor even of execution, as to the effects of the weather on growth. Some of the group-components are larger and some smaller than the normal. Or influences of soil or weather cause changes of colour which upset calculations. Nevertheless, those who aim at beautiful harmonies are animated by high artistic ideals and deserve every encouragement. They attain their desire with experience. The beginner will do well to content himself with the simpler objects of making a good selection of plants, getting a knowledge of their habits, and arranging them in such ways as to keep every section of the border bright and well-furnished from spring to autumn. When he has got thus far he will have paved the way for more advanced work. Our tables give guidance as to selections and habit, while further assisting with information on colour and season of flowering. Perhaps they alone would suffice to put the beginner on the right path, but there are a few general rules worth stating. In the first place, there is background. An area of ground in which herbaceous plants alone are set at given distances apart, and more or less in tiers according to height, will give a satisfactory effect at mid-summer, when most of the plants are at their best, but it is incomplete and in winter will be bare. With a background of selected shrubs, still better with the shrub-background supplemented by pillars for climbers, it will be furnished at all seasons

of the year. Shrubs and small trees which have well-marked foliage tints, such as Purple Nuts, Purple-leaved Plum, variegated Negundo and other Maples (including the cut-leaved Japanese varieties), Golden and variegated Elders, Euonymuses, Berberis, and variegated Dogwood, can be used with great advantage. Nor must we forget trees with beautiful bloom or berry such as Thorns, Mountain Ash, Crabs, Apples, species of Pyrus and Prunus, Laburnum, and Magnolias. These shrubs and trees should form "mixtures" at the back; they should not be set in stiff lines. Evergreen species should be mixed with leaf-losers. Some of the trees should be on standard stems, so that the heads are carried above the level of the shrubs and herbaceous plants. The fact that the introduction of evergreens robs the border of its strictly "herbaceous" character should not weigh with the planter for a moment; we are out for beautiful effects, not for definitions.

Somewhat in front of the shrubs, due allowances being made for the extension of the latter, will come the pillars and these must be set in a true line at a given distance from the edge of the border if the poles are to be single and connected with top pieces. If they are to be disconnected groups they need not be in strict line. It is understood that the introduction of pillars is entirely optional, and so, for the matter of that, is the use of shrubs. We must never lose sight of the consideration of economy, and the addition of trees, shrubs, poles, and climbers means a greater initial outlay.

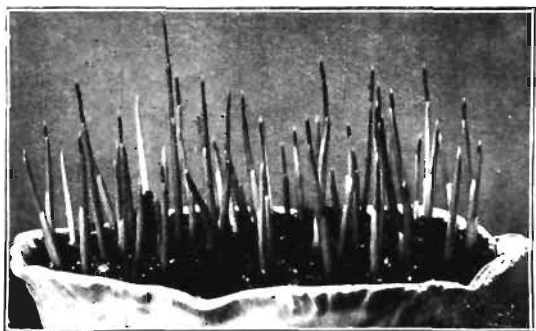
With or without these auxiliaries the grouping of the herbaceous plants must be done with equal care. I say "grouping," because experience teaches me that the group system is far better than the dotting system. If the border is too small to permit of putting the larger kinds in groups I would leave them out altogether in preference to putting them singly and make up the groups with smaller kinds. A mixture of individual plants is apt to look "spotty" and inconclusive. But the grouping system, though sound in principle, has its pitfalls. One might sin by forming large groups in small borders, because of the dullness when the plants were out of bloom. Groups of three plants

suffice in most borders and at planting the same forethought with respect to extension must be practised as with shrubs; it is rare that a yard apart for the components of the group is excessive. Criticism is sometimes directed towards the common amateur's plan of setting his plants in regular tiers from back to front according to the height of the plants, on the ground that it is monotonous and stiff. It is, however, less objectionable when grouping is practised and indeed in principle it must rule, only being departed from to the extent of setting tall things of somewhat columnar habit, such as Delphiniums, Eremurus, Hollyhocks, Sweet Pea clumps, and Verbascums, rather at the middle than at the back; but even in respect to these there should not be a continuous line along the centre.

We construct the body of our border, then, with a series of groups, the plants in the group, as well as the groups themselves, set in triangles and freely spaced. It is no bad thing to put the bigger things in first, working from one end of the border to the other with them before dealing with the smaller kinds, but that is not vital. What is essential is definite arrangement of the plants before planting is done. For my own part, I like to lay every group, and every component of every group, in position before the spade is touched. What matter that most of the plants in their dormant state are little better than clods? Imagination, guided by knowledge of the habit of each kind, clothes them with stems, leaves, and flowers. On a winter day one visualises the border six months ahead, seeing here a glowing cluster of Phloxes, there an azure pyramid of Delphiniums, yonder a mass of bronzy Paeony leafage surmounted with great perfumed globes of pink or crimson. Colour leaps into ardent life. And so one lays down group after group, considering each in relation to the other, taking care to provide differences in habit and foliage among near neighbours as well as differences in flower. A planter who was bent on naming all his plants—and for the first year or two names are very helpful—may “plant” his border up first with the labels instead of laying down the clumps if he thinks proper. And having got each group represented by its label into position, he can perhaps call in an expert

critic to amend the planting project. Be that as it may, only after the principal groups have been actually laid down ought the spade to come into use. With the spade there should be used a long rod marked in feet and yards. Do not worry about "stiffness"; we hear far too much of that in connection with herbaceous borders. With the aid of the rod, set the principal back groups a given distance from the front edge of the border and do not allow them to vary. And set them also at specified distances from each other in the line, varying only to allow for differences in habit, or if the habit is not known, not varying at all. Follow the same plan with each tier of groups from back to front and the border will develop on far more satisfactory lines than if the plants are put in higgledy-piggledy in a vain effort to secure "informality." When reading the old, old platitudes about this one might suppose that herbaceous plants in general were automatic figures, not sentient things. There will not be, there cannot be, any stiffness if there is judicious alternation of habit and if the plants, after being provided with encouragement to free growth, are staked and tied with discrimination. As to distances, it is difficult to make definite rules, but generally 12 feet apart for back-row groups, 9 feet for middle, and 6 feet for front will work out satisfactorily. The 9-feeters will not come directly in front of the 12-feeters, but will be angled between them, and similarly the 6-feet class will be angled with the 9-feet.

Three main lines of groups will suffice for all except the largest of borders; certainly a good selection of plants thus arranged and planted in fertile soil will form a splendid nucleus for the average border. There may have to be a certain amount of filling-in to be done, and for this a reserve of seedling plants, not forgetting Sweet Peas, will be prepared. The foremost component of the front line of groups must not come nearer than 4 feet to the edge of the border, otherwise when it has grown out to its full extent it will encroach on that selection of cherished smaller plants, annual, biennial, perennial, and bulbous, which every lover of hardy flowers likes to have immediately under his eye. Here in their season will be Daffodils, Christmas Roses, Crocuses, Snowdrops, Tulips, Irises, Snakeshead Lilies, American Cowslips,

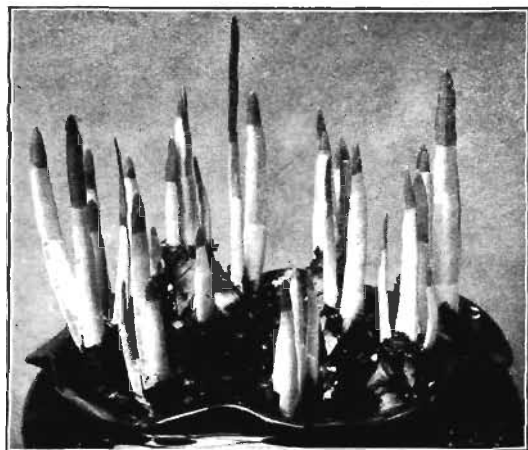


GROWING BULBS IN BOWLS OF FIBRE

All bulbs thrive in fibre if it is kept moist in a dark place for a few weeks. They should be removed to the light at the stage shown above. (See also Daffodil figure.)



BOWL OF SINGLE TULIPS GROWING IN FIBRE
AFTER BEING TREATED AS ADVISED ABOVE



DAFFODILS IN FIBRE
At the stage for removal from the dark.



BULBS IN POTS
When Bulbs are grown in pots they should be plunged in fibre for six weeks after potting.

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Day Lilies, Heucheras, Linarias, Clarkias, Godetias, Anemones, Arabises, Aubrietias, Chionodoxas, Scillas, Doronicums, Hepaticas, Primulas, Lungworts, Columbines, Snapdragons, Geums, Daisies, Polyanthuses, Tiarellas, and the thousand and one beautiful things which, while unsuitable for bold grouping, are nevertheless so exquisite in small clusters along the edge of the grass. All these gems are the "fillers-in." They are never forgotten and their turn comes when the framework of the border has been constructed with the bigger things which, when in full beauty, will form such glorious objects from points of vantage near house, entrance, and lawn. It is by proceeding on such clear, defined, intelligible, and practical lines as this that the best borders are made with the fewest mistakes.

B.—USEFUL TABLES

I.—BEAUTIFUL GROUPING PLANTS WHICH FLOWER BETWEEN JUNE AND AUGUST

Name.	Position of group in border.	Colour.	Propagation. (Also Table V.)	Soil.
<i>Aconitum Fischeri</i>	Front	Blue	Division	Ordinary
<i>Alstromerias</i>	Front	Yellow and orange	Division	Ordinary
<i>Anemone Japonica</i>	Front	Rose, white	Division	Ordinary
<i>Aster</i> (Michaelmas Daisy), early sorts	Back, middle	Mauve, blue, lavender, etc.	Division, cuttings	Ordinary
<i>Bocconia cordata</i>	Back	Buff	Division	Ordinary
<i>Bupthalmum salicifolium</i>	Front	Yellow	Division	Ordinary
<i>Bupthalmum speciosum</i> (Telekia)	Back	Yellow	Division	Ordinary
<i>Campanula pyramidalis</i>	Back, middle	Blue, white	Seeds	Deep loam
<i>Centaurea macrocephala</i>	Front	Yellow	Seeds, division	Ordinary
<i>Chrysanthemum maximum</i> (Moon Daisy)	Middle	White	Division	Ordinary
<i>Chrysanthemum leucanthemum</i> (Ox-eye)	Middle	White	Division	Ordinary
<i>Chrysanthemum uliginosum</i>	Back	White	Division	Ordinary

I.—BEAUTIFUL GROUPING PLANTS WHICH FLOWER BETWEEN
JUNE AND AUGUST (*continued*)

Name.	Position of group in border.	Colour.	Propagation. (Also Table V.)	Soil.
Delphinium	Back, middle	Blue	Division	Deep loam
Eryngium (Sea Holly)	Middle	Blue	Division	Ordinary
Galtonia candicans	Front	White	Bulbs	Deep loam
Gypsophila paniculata	Middle	White	Division	Ordinary
Helenium	Front	Yellow, striped	Division	Ordinary
Helianthus (Sunflower)	Back	Yellow	Seeds, division	Ordinary
Hollyhock	Back, middle	Rose, white, crimson	Seeds, cuttings	Deep loam
Kniphofia (Tritoma)	Middle	Orange	Division	Deep loam
Lupinus polyphyllus	Front, middle	Blue	Division	Ordinary
Lychnis chalcidonica	Front	Orange	Division	Ordinary
Meconopsis Wallichii	Front	Blue	Seeds	Deep, moist
Monarda didyma (Bergamot)	Front	Red	Division	Ordinary
Oenothera (Evening Primrose)	Front	Yellow	Division	Ordinary
Paeony	Front, middle	Pink, rose, crimson, white, etc.	Division	Deep loam
Papaver orientale	Front	Scarlet	Division	Ordinary
Phlox	Front, middle	Various	Division	Ordinary
Pyrethrum	Front	Various	Division	Ordinary
Rudbeckia	Front	Yellow	Division	Ordinary
Solidago (Golden Rod)	Back	Yellow	Division	Ordinary
Spiraea Aruncus	Back	White	Division	Ordinary
Verbascum	Back, middle	Yellow	Division	Ordinary

The most popular of these, such as Japanese Anemones, Michaelmas Daisies, Chrysanthemum maximum, Delphiniums, Kniphofias, Paeonies, Phloxes, and Pyrethrums will perhaps be specialised somewhat, named varieties being grown.

The following are a few of the best of the smaller plants flowering at the same season:

Achillea Ptarmica The Pearl	C. latifolia macrantha
Anthericum Liliastrium major	C. persicifolia alba, fl. pl.
Campanula carpatica	Centaurea montana alba
C. glomerata dahurica	Coreopsis lanceolata
C. grandis	C. grandiflora

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Erodium Manescavi	Oenothera fruticosa Youngii
Funkias	Papaver nudicaule (Iceland
Gaillardias	Poppy)
Geranium sanguineum	Pentstemons
G. pratense	Physalis Franchettii
G. ibericum	Platycodon grandiflorum
Geum Mrs. Bradshaw	Mariesii
G. montanum Heldreichii	Polygonum affine
Hemerocallis (Day Lily) auran-	Potentilla fruticosa
tiaca major	Prunella grandiflora
H. flava	Scabiosa caucasica
Inula glandulosa	Sidalcea candida
Irises in variety, Spanish,	Snapdragons
English, and German, besides	Spiraea palmata
species and hybrids	Statice latifolia
Linaria dalmatica	Thalictrum aquilegifolium
Lychnis Viscaria splendens, fl. pl.	T. minus
L. Vespertina	Veronica gentianoides variegata
Meconopsis nepalensis	V. longifolia subsessilis
Morina longifolia	V. spicata

The foregoing, with Carnations, Violas, and selected annuals, will make the extreme front of the border bright and interesting after earlier things of about the same height, such as Adonis vernalis, Alyssum saxatile compactum, Anemone coronaria, A. fulgens, A. sylvestris, Aquilegias, Arabises and Aubrietias, Arnebia echioides, Chrysogonum virginianum, Corydalis nobilis, Dielytra spectabilis, double Daisies, Dodecatheon Meadia (American Cowslip), Doronicums, Epimediums, Iberises (perennial Candytufts), early Irises, Lilies of the Valley, Lithospermum prostratum, Orobis vernus, Phlox Nelsoni, P. subulata varieties, Polyanthus and Primroses, Sanguinaria canadensis, Saponaria ocymoides, Scilla campanulata, S. nutans, Tiarella cordifolia, Trolliuses, Tulips, Daffodils and other bulbs, and Veronica prostrata have gone out of bloom.

Amongst the latest bloomers will be: Japanese Anemones, Michaelmas Daisies, Boltonia asteroides, Ox-eyes, Erigeron

glaucus, Goatsrues (*Galega*), Gladioli, Heleniums, Kniphofias, Sunflowers, *Lobelia cardinalis*, *Sedum spectabile*, *Senecio pulcher*, *Silene Schafta* and *Tricyrtis hirta*.

By "ordinary soil" in Table I. is meant both light and heavy soils provided they are well dug and manured. A certain number of the plants will only give of their best when the soil is deep, rich, and friable, and for these "deep loam" has been suggested. This does not mean that the plants will not thrive in clay provided it is well drained and is made fertile and friable to a good depth. As a matter of fact, clay suits nearly all herbaceous plants when it is free from stagnant water and in a crumbly condition. It, however, it is damp and stiff such valuable plants as Phloxes and Hollyhocks will suffer severely from disease. Plenty of mortar rubbish is beneficial. Ashes may also be used liberally.

II.—A TABLE OF HERBACEOUS PLANTS WHICH THRIVE IN SHADE

It sometimes happens that what would otherwise be an ideal site for an herbaceous border is marred by the fact that a portion of it is in shade for the greater part of the day, but the difficulty can be overcome by assembling in the shaded portions certain plants which enjoy shade. Many good plants thrive better in shade than in sun and the following table gives the salient points about them:

Kind.	Appr. height in feet.	Colour.	Propagation.	Soil.
Anemones, spring	$\frac{1}{2}$	Blue, rose, etc.	Tubers	Ordinary
" Japanese	$1\frac{1}{2}$	Rose, white, etc.	Root cuttings	Ordinary
" Hepaticas	$\frac{3}{4}$	Blue	Division	Ordinary
Aquilegias	2	Blue, white, etc.	Seeds, division	Ordinary
Asperula (Woodruff)	$\frac{3}{4}$	White	Division, seeds	Ordinary
Asphodelus ramosus	5	White	Division, seeds	Ordinary
Astilbe (<i>Spiraea</i>) <i>astilboides</i>	3	White	Division	Deep, moist

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II.—A TABLE OF HERBACEOUS PLANTS WHICH THRIVE IN SHADE (continued)

Kind.	Appr. height in feet.	Colour.	Propagation.	Soil.
Astilbe (Spiraea) Japo- nica	2	White	Division	Ordinary
„ rivularis	4	White	Division	Deep, moist
Astrantia major	2	Striped	Division	Ordinary
„ carniolica	1	White	Division	Ordinary
Auriculas, Alpine	$\frac{1}{2}$	Yellow, etc.	Seeds	Ordinary
Betonica grandiflora	1	Violet	Division	Ordinary
Bupthalmum salici- folium	2	Yellow	Division	Ordinary
Campanulas of sorts				
Cardamine (Dentaria) diphylla	1 $\frac{1}{2}$	White	Division	Peat
„ pratensis,	1 $\frac{1}{2}$	Soft purple	Division	Peat
double form (Lady's Smock)				
Clematis integrifolia	3	Blue	Seeds	Ordinary
Corydalis nobilis	1 $\frac{1}{2}$	Yellow	Seeds	Ordinary
Cyclamen Coum	$\frac{1}{2}$	Purple	Seeds	Ordinary
„ Europaeum	$\frac{1}{2}$	Red	Seeds	Ordinary
Dicentra (Dielytra) ex- imia	1	Red	Division	Ordinary
„ spectabilis	2	Rose	Division, cuttings	Ordinary
Digitalis (Foxglove)	6-10	Various	Seeds	Ordinary
Dodecatheon (American Cowslip)	1 $\frac{1}{2}$	Rose, etc.	Seeds, divi- sion	Ordinary
Doronicum (Leopard's Bane) austriacum	1	Yellow	Division	Ordinary
Doronicum Harpur Crewe	3	Yellow	Division	Ordinary
Epimedium macranthum	1	Blue, white	Division	Ordinary
„ pinnatum	1	Yellow	Division	Ordinary
Eranthis (Winter Aconite)	$\frac{1}{2}$	Yellow	Tubers	Ordinary
Eryngium alpinum	2	Blue	Seeds, divi- sion	Light
Fritillaria Meleagris (Snakeshead Lily)	1 $\frac{1}{2}$	Purple, etc.	Seeds, Bulbs	Ordinary
Funkias (Plantain Lily)	1-1 $\frac{1}{2}$	Handsome foliage	Division	Sandy
Geranium pratense	2 $\frac{1}{2}$	Purple	Division	Ordinary
Geum Heldreichii	1 $\frac{1}{2}$	Orange	Division	Ordinary
„ Mrs. Bradshaw	1 $\frac{1}{2}$	Crimson	Seeds	Ordinary

II.—A TABLE OF HERBACEOUS PLANTS WHICH THRIVE IN SHADE
(continued)

Kind.	Appr. height in feet.	Colour.	Propagation.	Soil.
Hellebores (Christmas Roses)	1	White, etc.	Division	Ordinary
Heuchera sanguinea	1	Red	Seeds, divi- sion	Light
Hypericum (St. John's Wort)		The best of these are yellow- flowered shrubs		
Liliums		Most of these fine bulbs do best in partial shade		
Lily of the Valley	$\frac{1}{2}$	White	Bulbous Crowns	Ordinary
Lychnis Vespertina flore pleno	$1\frac{1}{2}$	White	Division	Ordinary
Meconopsis Wallichii	2-3	Blue	Seeds	Deep, moist
Mimulus cardinalis	2	Scarlet	Seeds	Ordinary
„ cupreus vars.	1	Orange, spotted, etc.	Seeds	Ordinary
Monarda didyma	$1\frac{1}{2}$	Red	Division	Ordinary
Narcissi (Daffodils)				
Omphalodes verna	$\frac{1}{2}$	Blue	Seeds, divi- sion	Ordinary
Polyanthuses and other Primulas				
Sanguinaria canadensis	$\frac{1}{2}$	White	Seeds, divi- sion	Sandy peat
Saxifrages, most sorts				
Scilla festalis (nutans)	$1-1\frac{1}{2}$	Blue, rose, white	Bulbs	Ordinary
Wood Hyacinth				
Sedum spectabile	1	Flesh pink	Division	Ordinary
Solomon's Seal	2	Greenish white	Division	Ordinary
Spiraeas (see Astilbes)				
Thalictrum minus	1	Graceful leaves	Division	Ordinary
„ aquilegifolium	3	Graceful leaves	Division	Ordinary

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II.—A TABLE OF HERBACEOUS PLANTS WHICH THRIVE IN SHADE (continued)

kind.	Appr. height in feet.	Colour.	Propagation.	Soil.
Tiarella cordifolia	1	White	Division	Ordinary
Trillium grandiflorum	1	White	Bulbs	Ordinary
Trollius asiaticus	1½	Deep yellow	Division	Ordinary
„ europaeus	1½	Pale yellow	Division	Ordinary
Veratrum album	3	Greenish white	Division	Ordinary
„ nigrum	3	Purple	Division	Ordinary
Veronicas, most do well in shade				
Vinca major	Trailer	Blue	Division	Ordinary
„ minor	Trailer	Blue	Division	Ordinary

III.—A TABLE OF HERBACEOUS FLOWERS FOR CUTTING

The moderate cutting of flowers from herbaceous plants conduces to continued blooming, but where very large quantities of flowers are required it may be worth while to consider growing a selection of plants in a reservation, otherwise the borders may be denuded. In such a selection the following should be included:

Achillea Ptarmica The Pearl	Gaillardias
Alstromerias	Geum Mrs. Bradshaw and others
Anemones of many kinds	Gypsophila paniculata
Aquilegias	Heleniums of sorts
Arabis, double form	Helianthus (Sunflowers)
Asphodelus albus	Hellebores (Christmas Roses)
Asters of sorts	Hemerocallis (Day Lilies)
Astilbes of sorts	Heuchera sanguinea
Astrantias of sorts	Irises of sorts
Boltonia asteroides	Kniphofias of sorts
Chrysanthemums of sorts	Lilies of the Valley
Coreopsis of sorts	Lobelia cardinalis
Delphiniums	Lychnis Viscaria splendens
Doronicums	plena
Echinops ritro	Monarda didyma (Bergamot)
Erigeron speciosus superbus	Paeonies of sorts
Eryngiums of sorts	Phloxes of sorts
Francoa sonchifolia	Physalis Alkekengi

Physalis Franchettii
Platycodon Mariesii
Potentilla formosa
Primulas of sorts
Scabiosa caucasica

Senecio pulcher
Spiraeas and *Astilbes*
Thalictrums
Tiarella cordifolia
Veronicas of sorts

IV.—A TABLE OF BEAUTIFUL ANNUALS FOR HERBACEOUS BORDERS

There are two special and particular reasons why *annuals* should be used freely in herbaceous borders: they are beautiful in themselves and they fit in admirably with bulbs, thereby facilitating the use of such beautiful late-blooming things as Darwin Tulips, Calochorti (on warm, dry soils), Spanish Irises, and the bolder Scillas of the nutans and campanulata types. Both hardy and half-hardy kinds can be employed. Although it is common to sow the hardy sorts where they are to bloom and thin them down to the proper number, it is questionable if it is not best to sow all the kinds on prepared beds as mentioned in Chapter V. and transplant them, in order to make sure of a limited number of good plants. That each grower may consider for himself. Only the best kinds should be selected, such as the following:

Kinds.	Height in feet.	Colour.	Flowering season.
<i>Hardy.</i>			
<i>Alyssum maritimum</i>	1	White	Summer
<i>Argemone grandiflora</i>	2	White	Summer
<i>Bartonia aurea</i>	2	Yellow	Summer
<i>Calliopsis Drummondii</i>	1½	Brown and yellow	Summer
<i>Candytuft</i>	1	White spiral	Summer and autumn
<i>Chrysanthemum coronarium</i>	2½	Yellow	Summer

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IV.—A TABLE OF BEAUTIFUL ANNUALS FOR HERBACEOUS BORDERS (*continued*)

Kinds.	Height in feet.	Colour.	Flowering season.
<i>Hardy (continued):</i>			
<i>Chrysanthemum coronarium</i>	2½	White	Summer
„ <i>carinatum</i>	2½	Purple, white, and yellow	Summer
„ <i>inodorum plenissimum</i>	1½	White	Summer
<i>Clarkia elegans</i>	2	Special vars., pink, salmon, scarlet, etc.	Summer
<i>Convolvulus minor</i>	1	Blue, etc.	Summer
<i>Delphinium Blue Butterfly</i>	1	Blue	Summer
<i>Eschscholtzia crocea</i>	1	Orange	Summer
„ <i>californica</i>	1	Yellow	Summer
<i>Glaucium tricolor</i>	1	Scarlet, yellow, and black	Summer
<i>Godetia Schamini</i> (double rose)	2	Rose	Summer and autumn
„ <i>Lady Albemarle</i>	1	Carmine	Summer
<i>Ionopsidium acaule</i>	½	Violet	Summer car- pet
<i>Larkspur</i>	1-2	Blue, rose, etc.	Summer
<i>Lavatera trimestris</i>	3-4	Pink, also white var.	Summer and autumn
<i>Linum grandiflorum</i>	1½	Crimson	Summer
<i>Lupinus subcarnosus</i>	1	Blue and yellow	Summer
<i>Nemophila insignis</i>	½	Blue and white	Summer (spring if sown in late summer)
<i>Nigella Miss Jekyll</i>	1	Blue	Summer
<i>Phacelia campanularia</i>	¾	Blue	Summer
<i>Poppies, Shirley</i>	1½	Salmon, orange, etc.	Summer
„ double <i>Paeony</i>	3	Scarlet, white, etc.	Summer
<i>Saponaria calabrica</i>	½	Pink	Summer (spring if sown in late summer)
<i>Scabious, sweet</i>	1½-2½	Purple, rose, etc.	Summer
<i>Silene pendula</i>	½	Pink	Summer (spring if sown in late summer)
<i>Sweet Peas</i>	5-8	Many shades	Summer

IV.—A TABLE OF BEAUTIFUL ANNUALS FOR HERBACEOUS BORDERS (*continued*)

Kinds.	Height in feet.	Colour.	Flowering season.
<i>Hardy</i> (continued): Sweet Sultan	1½	Yellow, etc. Bridegroom, mauve; The Bride, white; and Bridesmaid, canary, are pretty varieties	Summer
Sunflowers	3-10	Yellow	Summer and autumn
<i>Half-hardy</i> : Asters, China, in variety	1-3	Various colours	Summer and autumn
Marigolds, French	1	Gold-striped	Summer
„ African	2	Orange, lemon	Summer
Nemesia strumosa	1	Orange, cream	Summer
Phlox Drummondii	1	Various colours	Summer
Salpiglossis	2	Various colours	Summer
Stocks, ten-week	1-2	Various colours	Summer
Zinnias	2	Various colours	Summer

Mignonette will doubtless be introduced for its fragrance although not brilliant in colour or in any way conspicuous. Sweet Alyssum and Virginian Stock may be considered. Arctotises, Collinsias, Erysimums, Gilias, Kaulfussia, Linarias, Malopes Nolana, Oxyura, Sanvitalia, Venus's Looking Glass, Viscarias and Whitlavias have their admirers. Nasturtiums are not ideal for herbaceous borders, because of their encroaching and seed-scattering habits. Nevertheless they have claims.

And there will be some gardeners who will want to find places for the best of the annual ornamental Grasses, such as *Agrostis elegans*, *nebulosa*, and *pulchella* (Cloud Grasses), *Briza maxima* and *minima* (Quaking Grasses), *Coix lachryma* (Job's Tears), *Eragrostis elegans* (Love Grass), *Hordeum jubatum* (Squirrel-tail Grass), and *Lagurus ovatus* (Hare's-tail Grass).

For all annuals and Grasses and for such dwarf biennials and

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perennials as can be flowered the same year from seed if sown under glass in winter (*e.g.* Verbenas, Snapdragons) thus coming into line with annuals culturally, the extreme front area of the border will be the right place. Here Snowdrops, Crocuses, Snowflakes, Scillas, and other low-growing bulbs will rise above the Aubrietia carpet in late winter to be followed by Daffodils and Tulips in April and May. The annuals, set amongst the fading bulbs, will speedily afford fresh interest and beauty.

V.—A TABLE OF GOOD HERBACEOUS PLANTS WHICH CAN BE RAISED FROM SEED

Kind.	Best Species or Varieties.	Remarks.
Achillea	Filipendulina — Clavennae —Ptarmica The Pearl	Quite hardy—any soil
Aconitum	Fischeri—Wilsoni—Nepel- lus bicolor	Monkshoods—most soils— poisonous
Adonis	Vernus and var. sibirica— pyrenaica	Brilliant yellow flowers— any soil
Alstromeria	Aurantiaca — chilensis — pelegrina	Any soil—tuberous roots —graceful
Althaea	Rosea vars. the Holly- hocks	Best from seed as there is less disease — annual vars. are good
Anchusa	Italica Dropmore and Opal	Noble Alkanets—magnifi- cent blue flowers—best treated as biennials
Anemone	Coronaria vars.—fulgens —Pulsatilla—sylvestris	The brilliant Crown Ane- mones come readily from seed
Anthericum	Liliastrium major—Liliago	Graceful Lilyworts — any soil
Antirrhinum	Majus vars. tall, medium, and dwarf	The named vars. of Snap- dragon come true from seed and may be grown as annuals or biennials
Aquilegia	Long - spurred caerulea hybrids — chrysantha— glandulosa—Skinneri	The lovely Columbines are best treated as biennials from seed
Asclepias	Tuberosa	Orange flowers — best in peat
Aster	Amellus vars. — Novae Angliae	Michaelmas Daisies—any soil

V.—A TABLE OF GOOD HERBACEOUS PLANTS WHICH CAN BE
RAISED FROM SEED (*continued*)

Kind.	Best Species or Varieties.	Remarks.
Astilbe	Arendsii vars.	Graceful—various colours —like moist soil
Aubrietia	Dr. Mules—Fire King— Graeca—Hendersoni— Leichtlini	Lovely carpeters—true from seed
Bellis	perennis vars. Longfellow, The Bride, etc.	Double Daisies
Retonica	Grandiflora	Any soil
Bocconia	Cordata (Japonica) — microcarpa	Fine plants for back of border
Calceolaria	Golden Glory	Brilliant yellow—nearly hardy
Campanula	Carpatica and vars.—glo- merata lactiflora—lati- folia and vars.—Medium and vars. (Canterbury Bells)—persicifolia and vars.—pyramidalis and var. alba	Immense variety of habit —best of border and rockery plants—any soil —Canterbury Bells should be treated as biennials
Canna	Cozy hybrids	Start in heat—not hardy— handsome foliage and brilliant flowers
Carnation	Border vars.—Margaret— Grenadin	Seedlings treated as bi- ennials bloom abun- dantly and are generally healthy—best named show vars. must be raised from layers to en- sure trueness, but seed- lings are strong and brilliant
Centaurea	Macrocephala—montana	Any soil
Cheiranthus	Allionii—Cheirii (Wall- flower)	Best treated as biennials, sowing outcours in May
Chrysanthemum	Leucanthemum vars.— maximum vars.	Moon Daisies and Ox-eyes —any soil
Cimicifuga	Cordifolia—racemosa	Any soil
Cistus	Ladaniferus—laurifolius	Good shrubs for sunny sites
Clematis	Davidiana—integrifolia— recta	All erect growers—any soil
Clianthus	Puniceus	Hardy against a wall in mild places—likes peat —very brilliant
Columbine	See Aquilegia	

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V.—A TABLE OF GOOD HERBACEOUS PLANTS WHICH CAN BE RAISED FROM SEED (*continued*)

Kind.	Best Species or Varieties.	Remarks.
Coreopsis	Grandiflora—lanceolata	Any soil—good for cutting
Corydalis	Lutea—nobilis—thalictri- folia	Light soil
Delphinium	Belladonna and vars.— cardinale—grandiflorum vars. including Blue Butterfly and Azure Fairy — nudicaule — various named hybrids	These magnificent plants are the pride of the July border—deep, rich soil
Dianthus	See Carnation—Barbatus is the Sweet William— plumarius is the garden Pink—most others are rock plants — sinensis Heddewigii and vars.	Sweet Williams are best treated as biennials; the Pinks are perennials; Heddewigii is best as an annual
Dictamnus	Fraxinella—albus. The “ Burning Bush ”	An inflammable resin on the stems may be ignited, hence the popular name —seed long in germinat- ing
Digitalis	Purpurea—gloxinoides	Purpurea is the common Foxglove; gloxinoides in mixture gives finer vars. Foxgloves may be broad- casted in the garden, preferably in shade
Dodecatheon	Meadia	American Cowslips; gener- ally bought from the bulb dealer, but may be raised from seed; like peat and loam
Doronicum	Caucasicum	Early bloomer—any soil
Dracocephalum	Ruprechtii—Ruyschiana	Dragon's heads — very pretty—any soil
Echinacea	Purpurea and vars.	Handsome Composites— like good loam
Echinops	Ritro-ruthenicus	Globe Thistles—resemble Eryngiums
Epilobium	Angustifolium, rose; luteum, yellow	Willow Herbs—like shade —do well at waterside— tall and brilliant
Eremurus	Bungei — himalaicus — robustus and rare var. Elwesianus	Magnificent for back of border—flower spikes 6 to 10 ft. high—worthy of special culture

V.—A TABLE OF GOOD HERBACEOUS PLANTS WHICH CAN BE
RAISED FROM SEED (*continued*)

Kind.	Best Species or Varieties.	Remarks.
Erigeron	Aurantiacus ("Orange Daisy") and vars. — Coulteri — speciosus (Stenactis speciosa), etc.	Free-blooming Composites, mostly dwarf, but speciosus about 3 feet—any soil
Erodium	Manescavi—macradenum, etc.	Related to the hardy Geraniums — dwarf, with purple flowers—any soil
Eryngium	Alpinum—amethystinum —Bourgati—planum	The beautiful Sea Hollies—large metallic - looking flowers—any good soil
Foxglove	See Digitalis	
Gaillardia	Grandiflora and vars.	Rich brown and yellow; Lady Rolleston is a fine true yellow, but uncertain from seed—any soil
Galega	Officinalis and vars.	The Goatsrues — any soil — last long — Hartlandi has variegated foliage in spring
Gentiana	Acaulis — asclepiadea — bavarica — Burseri — lutea, etc.	Acaulis is good for edging where it thrives; the others are tall enough for the border; most of the Gentians are rockery plants
Geranium	Argenteum — armenum — Endressi — ibericum — pratense and var. album — sanguineum and vars. album and lancastriense — Wallichianum, etc.	These are the true hardy Geraniums; very free-flowering and bright—any soil
Geum	Coccineum and var. Mrs. Bradshaw — Heldreichii and var. superbum — montanum and var. maximum	Brilliant dwarf border plants; Mrs. Bradshaw is the best; any soil
Gilia	Coronopifolia	Brilliant red spikes of bloom 3 ft. high—should be raised in frame
Gillenia	Trifoliata	Graceful plant—any soil
Glaucium	Flavum and var. tricolor	The Horn Poppy—2 ft. high—any soil

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V.—A TABLE OF GOOD HERBACEOUS PLANTS WHICH CAN BE RAISED FROM SEED (*continued*)

Kind.	Best Species or Varieties.	Remarks.
Gypsophila	Paniculata and double var.	Beautiful gauzy inflorescence—3 ft. high; the bush is attractive and the flowers mix with most bloom—any soil
Hedysarum	Coronarum	French Honeysuckle—3 ft.—any soil
Helenium	Autumnale and vars. Riverton Beauty and striatum	Brilliant late-blooming Composites; 3 ft.—any soil
Helianthemum	Vulgare and vars.	Sun Roses—thrive on dry, hot banks—like sand and chalk
Helianthus	Orgyalis—rigidus	The best of the Sunflowers are annuals, but these tall perennials are worth attention—any soil
Helleborus	Niger, the Christmas Rose, also mixed hybrids	Ripe seed essential for quick germination—do well mixed with ferns in shady places
Hemerocallis	Flava, the sweet yellow Day Lily	Graceful plant, good for cutting
Hesperis	Matronalis and var. alba—tristis	The Sweet Rockets—Tristis, a biennial, is scented at night—2 ft.
Heuchera	Brizoides and vars.—sanguinea and vars.	Brilliant and graceful for front of border—any well-drained soil
Hollyhock	See Althaea	
Honesty	Lunaria biennis and vars.	Brilliant flowers, followed by silvery pods—any soil—like shade
Hunnemannia	Fumariaefolia	Yellow Poppywort—a biennial—any soil
Incarvillea	Delavayi — grandiflora — Olgae	Distinct and beautiful—large showy flowers—loamy soil
Inula	Glandulosa and var. superba	Brilliant yellow and orange Composites—like rich, well-drained soil
Isatis	Glauca	Yellow — 3 ft. — early summer—any soil

FOOD, FRUIT, AND FLOWERS

V.—A TABLE OF GOOD HERBACEOUS PLANTS WHICH CAN BE
RAISED FROM SEED (*continued*)

Kind.	Best Species or Varieties.	Remarks.
Kniphofia	Corallina — Macowani — aloides and vars.	The " Red-hot-pokers " — fiery clubs in late sum- mer—deep, moist soil
Lathyrus	Latifolius and vars., not- ably albus and White Pearl	The Everlasting Peas— beautiful on stumps and palings
Liatris	Pycnostachya—spicata	Graceful purplish racemes of bloom—3 ft.—well- drained soil
Libertia	Formosa—grandiflora	Beautiful Irids — require light, friable, warm soil— 1½ ft. — lovely white flowers and evergreen foliage
Linaria	Dalmatica	Yellow flowers and glau- cous leaves—3 ft.—most of the perennial species are trailers suitable for rockeries
Linum (Flax)	Flavum — narbonense — perenne and var. album	Graceful and brilliant—a well-drained, light soil
Lobelia	Cardinalis—fulgens and vars.	Splendid scarlet flow- ers—Queen Victoria has purple leaves— friable soil is desirable
Lunaria Lupinus	See Honesty Arboreus and var. Snow Queen—polyphyllus and vars.—Somerset	Arboreus is a shrub pale yellow flowers deeply-cut foliage, flow- ing in June; of polyphyllus there are pink, mauve, and y vars.; Somerset hybrid with pale flowers—any good soil
Lychnis	Arkwrightii—chalcedonica — fulgens — Haageana and vars.	Brilliant perennials of medium height and habit—any soil— and Haageana the same year in early under glass
Lythrum	Salicaria and var. superbum	Loosestrifes — pur- ple spikes 3 ft. like damp places



THE DOUBLE PEACH-LEAVED BELLFLOWER—*CAMPANULA PERSICIFOLIA*
ALBA FL. PL.

The double Peach-leaved Bellflower should be in every border because it yields numbers of pure white blossoms suitable for cutting.



Economical Flowers

INULAS

The beautiful brown and yellow *Inula glandulosa* is one of the pick of the quite dwarf herbaceous perennials; it thrives in any good soil, and is easily propagated by seeds or division.

(See page 255)

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V.—A TABLE OF GOOD HERBACEOUS PLANTS WHICH CAN BE RAISED FROM SEED (*continued*)

Kind.	Best Species or Varieties.	Remarks.
Malva	Moschata and var. alba	Musk Mallows—any soil
Mathiola (Stock)	All the year round — Brompton — East Lothian	The first is white; there are several colours of the others, which are biennials; the East Lothians are generally grown in pots
Meconopsis	aculeata, blue—cambrica, yellow Welsh Poppy and vars.—integrifolia, glorious primrose Chinese species — nepalensis, claret—paniculata, yellow Himalayan species — Wallichii	Immense interest centres in the new Poppies from the East—all except the Welsh are biennials—nepalensis and Wallichii love moisture
Mertensia	Sibirica	Lovely dwarf plant with violet flowers in pendent clusters—friable, well-drained soil
Michauxia	Campanuloides	Noble plant with large white Campanula-like flowers—4 ft.—any good soil
Mimulus	Cardinalis—cupreus	Generally grown as half-hardy annuals
Morina	Longifolia	White tubular flowers—any soil
Myosotis	Alpestris and vars.—dis-sitiflora and vars. — sylvatica	The Forget-me-nots
Myrrhis	Odorata, " Sweet Cicely "	White flowers and perfumed foliage—any soil
Nepeta	Macrantha, " Catmint "	Violet flowers—any soil
Oenothera	Fraseri and var. Youngii— Fruticosa major—La-marckiana — speciosa—taraxacifolia	The Evening Primroses—yellow and white—biennials and perennials—any soil
Ononis	Rotundifolia	Rose flowers—dwarf habit—sandy loam desirable
Onosma	Albo-rosea	Charming dwarf plant with white or rose flowers—sandy loam
Orobis	Vernus, blue; and dark form purpureus	Pretty dwarf early-blooming plants—any good soil

V.—A TABLE OF GOOD HERBACEOUS PLANTS WHICH CAN BE
RAISED FROM SEED (*continued*)

Kind.	Best Species or Varieties.	Remarks.
Ostrowskia	Magnifica	Large, pale blue Campanula-like flowers — 3 ft.—fertile, friable soil
Ourisia	Coccinea	Exquisite dwarf plant—likes shade and a peaty soil—scarlet racemes
Paeonia	Lutea	Beautiful new plant—yellow flowers—2 ft.—deep clay or loam
Papaver (Poppy)	Nudicaule and vars.—orientale and vars.—pilosum	Biennial and perennial Poppies—brilliant colours—any soil
Pentstemon	Barbatus and var. Torreyi — glaber — Hartwegii (gentianoides) and white var. — Menziesii — Murrayanus—Scouleri	Charming hardy perennials—suitable for border and rockery — the florists' named vars. are also desirable—moist, rich soil
Phlox	decussata vars.	Among the best of middle-height herbaceous perennials—any soil
Phormium	Tenax	A graceful evergreen—4 ft.—deep loamy soil
Physalis	Franchetti	Large scarlet berry—any soil
Physostegia	Speciosa	Purplish spikes—any soil
Phyteuma	Campanuloides	Violet spikes—3 ft.—any good soil
Phytolacca	Decandra	Tall spikes of purple berries—damp site
Platycodon	Grandiflorum and vars., of which Mariesii is a good dwarf form	Blue flowers, resembling Campanulas — any good soil
Polemonium	Caeruleum, blue—confer-tum mellitum, bluish, sweet — reptans, blue, dwarf — Richardsonii, blue	Beautiful plants for the front of the border—any good soil
Polyanthuses and Primroses	Good mixed strains should be procured	Lovely dwarf plants for the front of the border in spring
Poppy	See Papaver	
Potentilla	Fremontii, yellow—nepalensis (formosa) and var. Willmottiana — mixed species	Excellent for front of border—free, bright, and lasting—any soil

HERBACEOUS BORDERS AND PLANTS 259

V.—A TABLE OF GOOD HERBACEOUS PLANTS WHICH CAN BE RAISED FROM SEED (*continued*)

Kind.	Best Species or Varieties.	Remarks.
Primula	Bessiana, purple whorls— Bulleyana, apricot whorls—capitata, purple —Cockburniana, orange umbels—denticulata and vars.—Forrestii, yellow —Lissadell Hybrid, ver- milion—Japonica and vars. — Littoniana, mauve—Poissoni, purple —pulverulenta, crimson and orange—Sikkimensis yellow drooping, etc.	Many of the Primulas are better suited to the rockery than the border, but those named may be grown in selected spots. They are worthy of special study as to soil and site
Prunella	Grandiflora	Violet—dwarf—any soil
Pulmonaria	Rubra	Pretty dwarf plant—red flowers—any soil
Pyrethrum	Parthenium—roseum	Parthenium is the double white Feverfew, of which the well-known Golden Feather is a var. —any soil—the florists' named vars. are forms of roseum
Ranunculus	Aconitifolius — amplexi- caulis	Suitable for damp spots with peaty soil
Rehmannia	Angulata	Distinct and beautiful new plant needing warm site and friable, loamy soil— 2 ft.—purple flowers
Romneya	Coulteri	Magnificent Poppywort—3 ft.—large white flowers— friable, well-drained soil —litter should be thrown over rootstock in winter
Rudbeckia	Laciniata—speciosa	Good Composites—yellow or orange—middle bor- der—any soil
Salvia	Azurea grandiflora (Pit- cheri) and var. alba	Blue flowers—height 3 ft. —not perfectly hardy— patens and splendens and its varieties are beautiful but not hardy—splen- dens Pride of Zurich is a brilliant bedding and border plant for summer

V.—A TABLE OF GOOD HERBACEOUS PLANTS WHICH CAN BE
RAISED FROM SEED (*continued*)

Kind.	Best Species or Varieties.	Remarks.
Saponaria	Ocymoides and vars.— officinalis and vars.	Ocymoides is best suited for trailing on the rockery—the double white form of officinalis is a good border plant, height 3 ft.—any soil
Saxifraga	Cotyledon — longifolia — Megasea and vars. — peltata—umbrosa	Most of the Saxifrages are best suited to the rockery, but those named are adapted to the border. Umbrosa is the well-known London Pride, so popular for edging—any soil
Scabiosa	Atropurpurea and vars.— caucasica and vars.	Atropurpurea is a hardy biennial—height 3 ft.—several beautiful named vars.—caucasica is a fine blue perennial—height 1½ ft.—any soil
Sedum	Spectabile	Pink flowers—height 1 ft.—flowers in Sept.—any soil—most other Sedums are best on the rockery
Senecio	Clivorum, orange, 3 ft.— Doronicum, yellow, 1 ft.— —Wilsonianus, yellow, 6 ft.	Very showy plants, most with handsome foliage—like peat and loam—Clivorum is a grand plant on a moist site
Sidalcea	Candida—Malvaeflora and vars.	Pretty Mallows—height 3 ft.—Candida is a good plant in rich loam
Solidago	Canadensis — Shortii — Virgaurea	The Golden Rods—tall, graceful plants with yellow flowers in late summer—any soil
Spiraea	Aruncus — Filipendula — Ulmaria	Any soil that is not very dry—good for middle positions in border
Stachys	Coccinea	Scarlet—1 ft.—any soil
Statice	Gmelini, violet panicles, 2 ft.—incana nana, 1 ft.— pink—latifolia, lavender panicles, 2 ft.—sinensis, yellow and white, 1½ ft.	The Sea Lavenders—graceful and distinct plants—useful for cutting—any good soil

HERBACEOUS BORDERS AND PLANTS 261

V.—A TABLE OF GOOD HERBACEOUS PLANTS WHICH CAN BE RAISED FROM SEED (*continued*)

Kind.	Best Species or Varieties.	Remarks.
Stock Stokesia	See <i>Mathiola</i> <i>Cyanea</i> and vars.	Beautiful blue flowers—height 1 ft.—good for rockery or border where the soil is light and warm
Sunflower Sweet William	See <i>Helianthus</i> <i>Dianthus barbatus</i>	Pink Beauty, Scarlet Beauty, etc., are pretty vars. which come true from seed—hardy biennials, best sown outdoors in May or June
<i>Thalictrum</i>	<i>Adiantifolium</i> , 1 ft.— <i>aquilegifolium</i> , 3 ft.	Grown for the pretty Adiantum-like foliage—any soil
<i>Thermopsis</i>	<i>Caroliniana</i>	Long yellow spikes—4 ft.—any soil
<i>Trollius</i>	<i>Caucasicus</i> — <i>europaeus</i>	Yellow—1 ft.—sow as soon as ripe
<i>Veratrum</i>	<i>Album-nigrum</i>	The False Hellebores—flowers in long panicles—any soil
<i>Verbascum</i> (Mulleins)	<i>Chaixii</i> , yellow and white var.—3 ft.— <i>hybridum</i> yellow and white vars., 6 ft. biennials— <i>olympicum</i> , yellow, 6 ft. biennial — <i>phoeniceum</i> , yellow, 3 ft.	The flowers are in tall spikes and the plants are suitable for back or middle of border—any soil
<i>Verbena</i>	Hybrids in various colours	Although perennials, the Verbenas are often treated as half-hardy annuals, being raised from seed in late winter—good for bedding
<i>Veronica</i>	<i>Gentianoides</i> — <i>longifolia</i> — <i>spicata</i> and white var.	Good plants for the front of the border—blue flowers—any soil—many species are shrubs and others best on rockery
<i>Viola</i>		Clumps of <i>Violas</i> may be put in borders, but they are mostly used for bedding and the rockery

V.—A TABLE OF GOOD HERBACEOUS PLANTS WHICH CAN BE
RAISED FROM SEED (*continued*)

Kind.	Best Species or Varieties.	Remarks.
Wallflower		The Wallflowers are biennials and are best sown outdoors in May or June; like chalk or lime; Golden Tom Thumb, Cloth of Gold, Blood Red, Fire King, Primrose Dame, Ruby Gem, and Vulcan are popular varieties
Yucca	Angustifolia — filamentosa —gloriosa	Mostly grown for their foliage—3 to 4 ft.—friable, loamy soil is suitable
Zauschneria	Californica	A very pretty and distinct plant with orange spikes about 1 ft. long—likes friable, loamy soil

It may be assumed that there are few private growers of hardy herbaceous plants who will sow even the half of the hundreds of species here enumerated, but the selection caters for all and the reader may pick and choose at will. At least the list shows that there are hardy perennials and biennials in great variety of which large stocks of plants can be raised from seed at very moderate cost (see Chapter V.). And so greatly has the love of hardy plants developed during recent years that there are now many seedsmen who are as ready to supply the majority of those here named as the rank and file are to supply the common annuals which almost every cottager and amateur buys. But it cannot be pretended that the stocks of seed are so abundant, and consequently it is an advantage to the buyer to establish a connection with two or three selected firms, with whom he can become a regular customer, then he will receive special consideration.

Ostensibly prepared in order to convince lovers of old-fashioned plants that there are hundreds of good old plants available in

HERBACEOUS BORDERS AND PLANTS 263

seeds, it will nevertheless be observed that the list contains a sprinkling of selected newer plants. These have been chosen because they possess special merit and interest. Flower-lovers who are familiar with the older kinds always like to freshen up their collections with beautiful newcomers, such as those which in recent years have come to us from the far East. Thus the interest is maintained from year to year, and the plants being raised from seed a stock is acquired very cheaply.

ALPINE FLOWERS

A.—PLANNING

B.—USEFUL TABLES

A.—PLANNING

THE modern garden is sometimes overdone with rock gardens but never with Alpine flowers. Too often, indeed, people make rockeries which they are unable to furnish adequately—which cannot be furnished adequately. It is sad waste of energy to erect a rockery the construction of which excludes plants. Such a result is a *reductio ad absurdum* indeed, yet it is far from being unknown. All gardens may have their collections of Alpines with but a small expenditure on stones if slopes and mounds and hillocks are taken full advantage of. True, a start can be made from the level, but in such a case considerable movements of soil are called for in order to secure the necessary elevation.

When the question of economical gardening is under consideration, it should always be remembered that in rock gardening it is the stones which cost, especially in respect to labour. The plants can be raised, in the cases of many at least, from seed, so that the first cost is small; while as to weight, the most delicate woman can handle them with ease. Stones, however, are not only expensive but heavy. Even small stones involve a certain amount of muscular exertion in the moving and the fixing. Large ones demand strong men. The moral is obvious—we must consider the plants as the essential thing, not the stones.

There are and always have been two classes of growers of Alpines: the one interested in rock gardens as gardens and aiming at imitating natural rockwork, the other caring chiefly for the plants as plants. The latter at least will listen sympathetically to suggestions of economising in stones. They will not mind how few they use so long as the plants thrive among them. Instead of going to the expense of building up a rock garden from

the level, with all its obligations of earth moving and hoisting of large stones, they will very gladly utilise banks and slopes, placing medium-sized stones in tiers. The writer has made very satisfying rock gardens by taking advantage of slopes, some under grass that were difficult to mow. The *modus operandi* are in the main as follows: (1) strip off and remove the turf—perhaps to fill up tortuous lawn beds! (2) dig over the soil and shape it into flattish stages, like wide steps; (3) set the principal stones in position, taking care to give them a bed on which they can lie firmly; between the larger flat stones set smaller stones on end; (4) pack in the loose soil so that both flat and upright stones are held perfectly firm. In brief, the arrangement is that of a series



A SMALL ROCK BED

Where there is no space for a rockery a rock bed is very charming. The stones round the edge must be covered with creeping plants.

of terraces, with the stones fixed alternately flat and vertical to prevent stiffness and provide pockets. This plan has several advantages: it economises stones, it reduces labour, it obviates much shifting of soil, it has a simple and natural effect, it provides suitable homes for the plants. The aspect should be south or west. Whether looking down from the top of the bank or up from the bottom the flower-lover has a pleasing view. Always provided that the main stones are set quite firmly, he can walk up and down and laterally along the rockery with safety and ease. As a rule there should be little peppering in of small stones, although limestone and granite chippings may be freely used for surfacing among plants which benefit by them. There is not likely to be any stiffness, because, apart from the graduated outline of the slope, and the varied arrangement of the stones,

plants of different habit can be associated on the terraces. In the case of a precipitous slope, stones may be embedded in order to provide a congenial foundation for such things as Arabises, Aubrietias, and Iberises, which will spread into broad masses and depend in showers of vivid blossom. Many a steep bank which is now ugly could be made beautiful in this inexpensive way.

Natural mounds exist in many gardens and with a little management they could be made into pretty rock beds without much labour or expense. The turf would be stripped off, the soil well cultivated and stones laid to form either terraces or pockets or both. It is not necessary, as some suppose, to scheme the whole area of a rock garden into small pockets, although pockets are desirable for certain choice plants. As a matter of fact, charming rockeries can be made without any pockets at all. Without pockets pretty groups can be formed, clumps of a dozen or more plants being put together. It is especially when the flower lover wants to group favourite plants that the terrace system comes into its own. One might almost say that he makes a bed on a sloping surface, but it is not a bed with an even outline, and it is broken into a pleasing irregularity with the stones.

Alpine plants could be grown on these lines in many suburban gardens provided the sites of the slopes and mounds were open and sunny. Unfortunately, many suburban gardens are very damp in winter, owing to the play of the wind being checked by masses of surrounding buildings. This presents a condition inimical to the plants, which die off at an alarming rate, even in mild winters. In a sense mildness is bad, because increasing the already excessive damp. The difficulty cannot be overcome and other plants should be grown, particularly bulbs, which generally thrive in damp places. But there are certainly suburban gardens which are open enough to be free from excessive damp in winter and in these Alpines could be grown. And there are gardens one portion of which would be unsuitable, because much shut in by large objects, while another would be suitable, because open alike to sun and wind. The effects of damp and stagnant air are indeed remarkable, even such a plant as the Mouse-ear Chickweed (*Cerastium*), which has such a power of root-extension and pene-

tration as to make it in some places an unmitigated nuisance, dying out ignominiously in others. People who argue that Alpines ought to be able to endure damp because they are often covered with snow for long spells in their native habitat forget that the snow is dry and that the atmosphere is also keen and dry.

There may come a time when people who can afford to build glasshouses will take care to provide structures in which they can pass pleasant hours unsuffocated instead of places so full of heat and so saturated with moisture that it is painful to spend five minutes in them. It is one of the unsolved mysteries of gardening that people will spend large sums of money on erections that they dare not enter on a summer day. True, a few plants from these houses find their way on to the dinner table as a decoration, but it could be made just as attractive without them and there is nothing to justify the expenditure and the penance involved. Why not a smaller, lower, unheated, and better-ventilated type of house in which Alpine flowers would flourish; and in which, because it was cool and dry and airy, human beings could also exist? There would be saving on construction, saving on fuel, saving on water, saving all round. And consider the beauty of Alpines grown in pots and pans. They are truly, enchantingly beautiful. Being mostly small growers, quite a large collection can be grown in a small and inexpensive house. Here can be grown new acquisitions, the outdoor requirements of which, notably in respect to soil, have to be learned. Large quantities of seedlings can be raised, some perhaps for permanent cultivation in the house, others for the slopes and mounds in the open. If nine-tenths of the large hot-houses which exist were swept away they would never be missed, and if a small Alpine house were substituted the change would actually be one of relief. But many large houses could be turned into food-growing structures.

It is not easy to pick and choose among the many beautiful Alpine plants which are available, but the following have particular claims:

B.—USEFUL TABLES

I.—BEAUTIFUL ALPINES WHICH MAY BE RAISED FROM SEED

Kind.	Inches high.	Colour.	Soil.
<i>Acaena microphylla</i>	Trailer	Rose	Sandy
<i>Achillea Clavennae</i>	6	White	Ordinary
" <i>tomentosa</i>	6	Sulphur	" "
<i>Aethionema grandiflorum</i>	18	Rose	Any if light
<i>Alyssum saxatile citrinum</i>	6	Pale yellow	" "
" " <i>compactum</i>	9	Yellow	" "
<i>Androsace carnea</i>	4	Rose	Sandy loam
" <i>Laggeri</i>	3	"	" "
" <i>lanuginosa</i>	3	"	" "
" <i>sarmentosa</i>	6	Rose and white	" "
<i>Anemone alpina</i>	6	White, tinted	Peat
" <i>Pulsatilla</i>	12	Violet	Limestone
" <i>rivularis</i>	12	White	Peaty
" <i>sulphurea</i>	9	Pale yellow	Peat
<i>Anthemis cinerea</i>	12	White	Dry, sandy
" <i>montana</i>	12	"	"
<i>Antirrhinum asarina</i>	Trailer	Yellow	Ordinary
" <i>glutinosum</i>	6	White and yellow	"
" <i>sempervirens</i>	Trailer	White and purple	"
<i>Aquilegia alpina</i>	9	Blue	Friable
" <i>glandulosa</i>	12	Blue and white	"
<i>Arabis alpina</i>	12	White	Any if friable
" <i>aubrietoides</i>	4	Pale purple	" "
<i>Arenaria balearica</i>	3	White	Any
<i>Armeria alpina</i>	6	Purple	Friable loam
" <i>Laucheana</i>	6	Crimson	" "
<i>Arnebia cornuta</i>	12	Yellow, black spots	" "
" <i>echioides</i>	12	Yellow, black spots	" "
<i>Arnica montana</i>	12	Yellow	" "
<i>Aubrietias</i> in variety	6	Various	Any
<i>Campanula Allionii</i>	3	Pale violet	"
" <i>carpatica</i>	12	Violet	"
" " <i>Isabel</i>	12	Deep blue	"
" " <i>Riverslea</i>	12	" "	"
" <i>cenisia</i>	6	Blue	"
" <i>muralis</i>	6	Purple	"
" <i>pulla</i>	3	Blue	"

I.—BEAUTIFUL ALPINES WHICH MAY BE RAISED FROM SEED
(continued)

Kind.	Inches high.	Colour.	Soil.
<i>Campanula pusilla</i>	3	Pale blue	Any
„ <i>Raineri</i>	3	Lavender	„
„ <i>turbinata</i>	6	Violet	„
„ <i>Waldsteiniana</i>	3	Pale blue	„
<i>Cheiranthus Allionii</i>	18	Orange	„ (likes lime- stone)
<i>Convolvulus mauritanicus</i>	Trailer	Violet	„
<i>Corydalis lutea</i>	9	Yellow	Sandy or chalky
„ <i>nobilis</i>	9	„	„ „
„ <i>thalictrifolia</i>	12	„	„ „
<i>Cyananthus lobatus</i>	Trailer	Blue	Peat or leaf- mould
<i>Cyclamen Europaeum</i>	3	Purple and white	Peat and loam
„ <i>Neapolitanum</i>	3	Purple and white	„ „
<i>Dianthus alpinus</i>	3	Rosy purple	Any, the Pinks like chalk
„ <i>arenarius</i>	6	Pale purple	Any, but not damp soil
„ <i>caesius</i>	6	Pink	Any
„ <i>deltoides</i>	6	Rosy purple	„
„ „ <i>Brilliant</i>	6	Bright red	„
„ <i>glacialis</i>	3	Rosy purple	„
„ <i>graniticus</i>	6	Bright red	„
„ <i>neglectus</i>	3	„	„
„ <i>superbus</i>	12	Pale purple	„
<i>Draba aizoides</i>	6	Yellow	Sandy loam
<i>Dryas octopetala</i>	6	White	Peat
<i>Erinus alpinus</i>	6	Bright red	Sandy or chalky
<i>Gentiana acaulis</i>	4	Rich blue	Friable loam
„ <i>Bavarica</i>	4	Deep blue	„
„ <i>brachyphylla</i>	3	Bright blue	„
„ <i>Clusii</i>	4	„	„ with lime
„ <i>Freyniana</i>	4	„	Friable loam
„ <i>Przewalskii</i>	12	„	„
„ <i>verna</i>	3	„	„
<i>Geranium argenteum</i>	6	Pale purple	Any
„ <i>sanguineum</i>	6	Purplish red	„
„ „ <i>album</i>	6	White	„
<i>Gnaphalium leontopodium</i> (Edelweiss)	6	Woolly foliage	Any good, likes chalk
<i>Gypsophila repens</i>	Trailer	White	Any good

I.—BEAUTIFUL ALPINES WHICH MAY BE RAISED FROM SEED

(continued)

Kind.	Inches high.	Colour.	Soil.
<i>Helianthemum vulgare</i> in var. (Sun Roses)	Trailer	Many brilliant colours	Any dry, likes chalk
<i>Heuchera sanguinea</i>	18	Coral red	Any
<i>Hieracium villosum</i>	12	Yellow	"
<i>Houstonia caerulea</i>	2	Pale blue	Moist peat or loam
<i>Hutchinsia alpina</i>	2	White	Sandy orchalky
<i>Iberis Gibraltarica</i>	9	White and purple	Any
" <i>jucunda</i>	4	Crimson	"
" <i>Pruti</i>	6	White	"
" <i>sempervirens</i>	6	"	"
<i>Incarvillea grandiflora</i>	9	Bright rose	Friable loam
<i>Ionopsidium acaule</i>	2	Violet	Any
<i>Iris pumila</i> in mixture	6	Various	"
<i>Lewisia Howellii</i>	6	Rose striped crimson	Sandy loam
<i>Linaria alpina</i>	Trailer	Violet and orange	" "
" <i>cymbalaria</i>	"	Purple	" "
" " <i>alba</i>	"	White	" "
<i>Linum alpinum</i>	"	Pale blue	" "
<i>Lithospermum prostratum</i>	"	Rich blue	" " or chalk
<i>Lychnis alpina</i>	3	Purplish red	Any
" <i>Lagascae</i>	3	"	"
<i>Mesembryanthemum tricolor</i>	3	Rose and white	Sandy loam, hot site
<i>Myosotis Azorica</i>	6	Azure	Any
" <i>rupicola</i>	6	Deep blue	"
<i>Onosma albo-roseum</i>	12	White or rose	Sandy loam
" <i>Bourgaei</i>	12	Yellow	"
<i>Oxalis Valdiviana</i>	6	"	Dry and friable
<i>Papaver alpinum</i> in var.	6	Various	Any
" <i>nudicaule</i> in var.	9	"	"
<i>Pentstemon glaber</i>	12	Purple	Any good
" <i>heterophyllus</i>	12	Blue	" "
" <i>Menziesii</i>	9	Purple	" "
" <i>roseus</i>	12	Rose	" "
" <i>Scouleri</i>	12	Purplish rose	" "
<i>Polemonium humile</i>	6	Pale blue	" "
" <i>reptans</i>	6	" "	" "
<i>Pratia angulata</i>	2	" "	" "if friable

ALPINE FLOWERS

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I.—BEAUTIFUL ALPINES WHICH MAY BE RAISED FROM SEED
(continued)

Kind.	Inches high.	Colour.	Soil.
Primula Bulleyana	18	Apricot	Moist, friable loam
„ capitata	12	Rich purple	„ „
„ Cockburniana	6	Orange	„ „
„ denticulata	9	Lavender	„ „
„ „ alba	12	White	„ „
„ farinosa	6	Purple	„ „
„ Forrestii	12	Yellow	„ „
„ Japonica	24	Crimson	Moist peat bed
„ Lissadell Hybrid	18	Vermilion	Moist, friable loam
„ Littoniana	12	Lilac	„ „
„ Poissonii	12	Deep purple	„ „
„ Pubescens	3	Rosy purple	„ „
„ pulverulenta	24	Crimson	Moist, peat bed
„ rosea	6	Rose	„ „
„ Sikkimensis	18	Yellow	Moist, friable loam
„ villosa	3	Red	„ „
„ viscosa	3	Rose	„ „
Ramondia Pyrenaica	6	Violet	Loam and peat
Sapoharia ocymoides	9	Rose	Any
Saxifraga Aizoon	6	Cream	„
„ Burseriana	3	White	„
„ cochlearis	3	„	„
„ Cotyledon	12	„	„
„ decipiens in var.	12	Various	„
„ „ Bathoniensis	12	Rose	„
„ Hostii	6	White	„
„ lantoscana superba	9	„	„
„ longifolia	18	„	„
„ muscoides	12	Red	„
„ oppositifolia	9	Purplish red	„
„ Rhei	6	Rose	„
„ Rocheliana	6	White	„
„ umbrosa (London Pride)	12	Rose	„
Sedum acre	3	Yellow	Sandy or chalky
„ album	6	White	„ „
„ Ewersii	9	Rose	„ „
„ Kamtschaticum	9	Yellow	„ „
„ pilosum	3	Pink	„ „
Silene acaulis	3	Rose	Any friable

I.—BEAUTIFUL ALPINES WHICH MAY BE RAISED FROM SEED
(continued)

Kind.	Inches high.	Colour.	Soil.
<i>Silene alpestris</i>	6	White	Any friable
" <i>Correvoniana</i>	6	Cream	" "
" <i>Pumilio</i>	3	Rose	" "
" <i>Schafta</i>	3	Deep rose	" "
<i>Sisyrinchium bellum</i>	6	Blue	" "
" <i>Bermudiana</i>	9	Violet	" "
<i>Soldanella alpina</i>	3	Pale blue	" "
" <i>pusilla</i>	3	Lavender	" "
<i>Stokesia cyanea</i>	12	Blue	Sandy or chalky
" " <i>praecox</i> (early)	12	"	" "
" " <i>alba</i>	12	White	" "
<i>Thymus Serpyllum</i>	Trailer	Purple	Any
" <i>albus</i>	"	White	"
<i>Tunica Saxifraga</i>	"	Pale purple	Any friable
" <i>rosea</i>	"	Rose	" "
<i>Veronica alpina</i>	3	Blue	Any
" <i>Cataractae</i>	6	White	"
" <i>Guthriana</i>	9	Blue	"
" <i>repens</i>	Trailer	"	"
" <i>rupestris</i>	"	"	"
" <i>saxatilis</i>	6	"	"
<i>Viola calcarata</i>	6	"	Any friable
" <i>cornuta</i>	6	Blue and other varieties	" "
" <i>gracilis</i>	6	Violet	" "
<i>Wahlenbergia Dalmatica</i>	6	"	" "
" <i>Kitaibeli</i>	3	Lilac	" "
<i>Wulfenia Carinthiaca</i>	6	Blue	" "

It will be seen that the list embraces all the principal genera except *Phlox*, of which a few of the best kinds, such as *divaricata* and its varieties, *reptans*, *subulata* (*setacea*) and its varieties, *frondosa*, and *verna* should be added. But besides the popular things, the list includes many choicer plants of great beauty. A start will doubtless be made with a selection of plants of the best kinds, and seeds of many others will be sown in order to provide a stock of material for extensions.

II.—PLANTS SUITABLE FOR ROCKERIES WHICH WILL THRIVE IN PARTIAL SHADE

Ajugas,
Anemones
Aquilegias
Armerias
Arnebias
Campanulas
Gentianas
Hepaticas

Linarias
Myosotis
Primulas
Saxifragas
Sedums
Silenes
Soldanellas
Wulfenias

III.—PLANTS WHICH WILL THRIVE IN FULL SHADE

Anemone Apennina and nemorosa
vars.
Chrysosplenium Virginianum
Corydalises
Cardamines
Doodia
Epimediums
Eomecons
Funkias
Gaultheria Shallon

Hellebores
Hepaticas
Orobis vernus
Saxifraga Geum
Sisyrinchiums
Sedums
Thalictrums (dwarf species)
Tiarellas
Waldsteinias

Seeds of many of the plants in Tables II. and III. can be procured, and it need scarcely be said that against the slowness of obtaining a stock of plants by means of seeds as compared with buying them from the nurseryman may be set economy.

It is a worry to many would-be growers of Alpines that different kinds of soil are so often recommended for different plants. To a certain extent this is unavoidable, but in practice the provision of peat and loam for those requiring these soils is not serious, because the body of the soil can be built up with whatever is available and pockets provided for those which need special fare. When the reader looks through the column devoted to soil he sees that a great many will thrive on the bulk soil provided and that it is only the few which need special provision; in fact, if the bulk is an ordinary loam with plenty of grit, such as sand, to make it friable, very few will need special pockets. It is of the

first importance to provide adequate drainage; very few plants will thrive if there is stagnant moisture in the soil.

Loss of plants in winter could be reduced considerably if the grower would scratch over the surface in autumn and give a top-dressing of fresh, gritty soil or chips of stone, as this tends to reduce damp at the collar of the plant. Small squares of glass should be fixed over woolly-leaved kinds.

Slugs will be troublesome if there is much "cover" in the form of far-spreading or trailing things and the smaller, choicer kinds must be protected. Dustings of lime and Sanitas powder and handpicking will keep the pest in subjection.

BULBS AND OTHER BEDDING PLANTS

A.—PLANNING

B.—USEFUL TABLES

A.—PLANNING

THERE is possibly no branch of gardening in which there has been so painful a want of restraint, good taste, and regard for reasonable economy as in what is generally called "bedding." In planning bedding, therefore, for the future it behoves public and private gardener alike to break resolutely with the past and adopt more artistic and more economical methods. In particular, elaborate lawn beds—forced, fantastic, foreign—crammed with plants of every conceivable size, shape, and colour, hardy and tender jumbled together, must be discarded. "Star" bed, "ribbon" bed, "scroll" bed, grouping of "Cucumber-seed" beds, of "bunches of Grapes" beds, of "diamond-and-circle" beds—what do they all amount to? An unnatural aggregation, insulting to honest grass and involving an enormous amount of petty labour, not alone in planting but in edge-dressing after mowing.

Why do people who have spacious lawns crying aloud for beautiful borders of perennials and shrubs, plant in the front of them extraordinary concoctions of beds, which no planting device can make really satisfying? It is inexplicable, except on the hypothesis that as somebody made the beds years ago somebody else feels compelled to keep on filling them, whether he wants to do so or not.

But if lawn beds are done away with, where are we going to grow our Wallflowers? a plaintive professional may demand. Group them in borders, friend, where, blended with Tulips, they

will give a contentment of colour which they have never displayed in the beds. Wallflowers and Tulips were made for each other; they are perfect complements. But Tulips, no more than Wallflowers, are capable of doing the best that is in them when turned into great blocks of colour in geometrical beds on the lawn. Whoso wants to realise the best that marvellous yellow Tulips like *Mrs. Moon* and *Gesneriana lutea* can give should group them in borders in dozens near six-plant groups of *Cloth of Gold* Wallflower, the latter set in half soil, half lumps of chalk. And they should put a flame Tulip like *Thomas Moore* with Wallflower *Fire King*; the stately *Pride of Haarlem*, or *Caledonia*, or a maroon like *Leonardo da Vinci*, with Wallflower *Blood Red*. But that is not all. They can provide quaint and fascinating harmonies by associating such a Tulip as *Erguste* or *Revd. H. Ewbank* with Wallflower *Ruby Gem*; *White Swan* with Wallflower *Ivory White*; *Walter T. Ware* with Wallflower *Primrose Dame*; *Loveliness* with Wallflower *Eastern Queen*. Granted that bed after bed of the most popular Wallflowers make a brilliant display for a May day, do they not tend to pall? One may suggest with all deference that not one half the interest will be found in them that lies in groups artistically blended for colour.

This grouping system with Tulips and Wallflowers is heightened in effect if a carpeting of Arabises and Aubrietias is employed. Where the area is restricted, semi-late, semi-tall Tulips like *Le Rêve*, *Loveliness*, *Thomas Moore*, *La Merveille*, and the exquisite *Clara Butt* may be used more freely than giants like *Pride of Haarlem*, *Gesneriana lutea*, and *G. major*; and they may be nested in broad cushions of Aubrietia. Behind, alternate groups of Wallflowers and the larger Tulips, harmonised or contrasted as to colour, will complete the picture. On sunny days in early May, when the ruddy stems of Paeonies and the ferny green of *Pyrethrums* are upspringing between the Tulips and Wallflowers, the border will have a charm and beauty that the most precious gift of summer can hardly match.

And let Daisies, Forget-me-nots, *Alyssum saxatile compactum*, *Alpine Auriculas*, Primroses in colour, *Polyanthuses*, the invaluable double white *Arabis*, and other dwarf spring bloomers, which



Inexpensive Garden Features

A rough bank made beautiful with a few stones, herbaceous plants, Sweet Peas, and a garden seat.
(See page 265)



A SIMPLE ROCK BED—*CAMPANULA CARPATICA* IN FULL BLOOM
(See page 266)



A BEAUTIFUL SPRING BED OF TULIPS AND POLYANTHUSES
(See page 276)

can be easily and cheaply raised from seeds or cuttings, also be used for carpeting clusters of Tulips, which of all spring flowers are the most beautiful when they are given suitable associates and yet are so vulgar when misused by convention-ridden and flare-loving gardeners.

The same principle of adopting soft-toned groundwork plants ought to be carried out in summer in those cases, limited in number, where groups of beds have to be used. Here London Pride, the smaller fibrous-rooted Begonias, Thrift, *Koniga maritima*, and lightsome Grasses such as *Eulalia Japonica*, *Panicum virgatum*, striped Zeas (for large beds), and *Dactylis elegantissima* may be used with advantage to soften the often too garish bedders.

One or two forceful subjects may stand alone in order to throw into relief the more subdued themes: for example, the marvellous *Salvia* Pride of Zurich and the king of Zonal Geraniums, Paul Crampel. There is an elemental power and vigour about these plants that, like the lightnings of Jove, cannot be curbed.

Tuberous Begonias, especially single varieties in mixture with pinks, whites, and yellows strongly represented among them, need no associates; unfortunately, many places are too dry for them. Verbenas, too, have the requisite softness of tone to stand alone; but in their case there is the drawback of early maturity in a hot season, and a second planting, say, of Asters, is needed. Carnations are admirable bedders, with or without a groundwork of Violas. But all these, in common with nine out of ten of the so-called bedding plants, are equally at home and equally effective in the border if they are given suitable companions.

Whatever other things may remain in doubt, there can be none about this—that the interest of a bed or group of beds should be in the contents, and consequently, that no fanciful shapes are called for. Intricacies of form in the beds are indeed a delusion and an offence, besides laying a burden on the already overweighted back of the under-gardener. Beds on the edges of the lawn, curving rhythmically to its outline, are almost invariably more effective than grouped beds on the body thereof; and when the gardener has got thus far he is safely on the road

to a border. But since elaborate groups of beds exist, it may be suggested that they should be retained, because of the labour involved in turfing them up. No, they ought to be turfed forthwith, because the work entailed is as nothing compared with the permanent labour of maintaining them year after year. To level the soil, firm it, and lay the turf is not a long process. A part of the lawn suitable for an herbaceous border or for an extension of the kitchen garden should be selected, and the first turves removed should be used for filling the beds, so that there may be as little shifting of turf as possible.

It is not suggested for a moment that every flower-bed in every garden ought to be done away with, but all elaborate groups of beds involving a good deal of annual work, and all mean and niggly little beds, whether grouped or isolated, should be filled up. Only when small dabs of beds can be adapted to the use of worthy trees or plants that can stand alone—Pampas Grass, for instance, or pillar Roses, or selected Conifers—should they be retained. Of course, no beds can be large in a small suburban garden, but there is no reason for any of them to be petty and contemptible, any more than there is for them to be stuck like lozenges on a small section of the lawn. Beds as beds are not necessarily to be condemned; what is open to criticism is their abuse in the form of intricate groups, which call for excessive labour and with the most elaborate expenditure of time and material remain inartistic. That beds can be made attractive in simple and inexpensive ways a few examples will prove.

B.—USEFUL TABLES

I.—SOME EXAMPLES OF BEAUTIFUL SPRING BEDS

First Plant.	Second plant or groundwork.	Remarks.
Brompton Stocks	Alyssum saxatile and mauve Aubrietias	The Stocks may be sown outside in June and transferred to the bed in autumn, 2 ft. apart. The other plants may be sown in spring and planted alternately a foot apart in autumn.
Auriculas	London Pride	The strong Auriculas sold by seedsmen as mixed Alpine are the best; they can be raised from seed sown as soon as ripe; plant a foot apart. Use the London Pride merely as an edging.
Funkia, variegated	Tall scarlet Tulip	The respective plants may be set in groups 3 ft. apart. The bed may be edged with the lovely little Scilla Sibirica if desired.
Rose Tulips	Yellow Wall-flowers	Clara Butt will do admirably for the Tulip and Golden Tom Thumb for the Wallflower; set in groups. Carpet and broadly edge with deep blue Forget-me-not.
Scarlet Anemones	Double white Arabis	Raise a stock of Anemone fulgens from seed in spring or buy tubers in autumn. The Arabis can be raised from side shoots in early summer. Plant alternately a foot apart.
Red Wallflowers	Narcissus Sir Watkin	Plant the Daffodils a foot apart all over the bed and set the Wallflowers $1\frac{1}{2}$ ft. apart amongst them.
Scilla campanulata	Arabis and Double Daisies	Plant the Scillas a foot apart and 6 in. deep in autumn, with the Arabis as a groundwork and pink and white Daisies as a broad band round the margin.

II.—EXAMPLES OF BEAUTIFUL SUMMER BEDS

First plant.		Second plant or Groundwork.	Remarks.
<i>Kochia trichophylla</i>		Tall scarlet Nasturtiums—Alyssum	Raise the Kochias and Nasturtiums from seed in spring. If variegated Alyssum (<i>Koniga maritima</i>) is used, raise from cuttings in winter.
Marguerite Sander	Mrs.	<i>Gladiolus Brenchleyensis</i> —Pentstemon Newbury Gem	Raise the Marguerites from cuttings in spring. Buy bulbs of the <i>Gladiolus</i> in spring. Plant all 18 in. apart in late spring. Raise the Pentstemon from cuttings in autumn, winter in a frame, and plant as a broad outer band.
<i>Nemesia strumosa</i>		Sweet Alyssum	Raise the <i>Nemesias</i> in a frame in spring and plant a foot apart in May. Sow the Alyssum outside as an edging.
Margaret Carnations		Indian Pinks	Raise both plants from seed under glass in February and plant in May.
<i>Statice Suworowi</i>		<i>Lobelia tenuior</i>	Raise both plants from seed under glass in February. Plant the <i>Statice</i> 18 in. apart on a groundwork of the <i>Lobelia</i> .
Verbenas		<i>Anthericum variegatum</i>	Raise the Verbenas from seed under glass in February and plant out 18 in. apart in June, with the <i>Anthericum</i> dotted amongst them. It is a tender evergreen propagated by division and must be wintered under glass in heat. The bed may be edged with <i>Koniga</i> or <i>Echeverias</i> at will.
Geranium Crampel	Paul	Snapdragons	White or yellow Snapdragons may be associated with the <i>Geraniums</i> at will. All raised from cuttings.
Zinnias		<i>Tagetes signata pumila</i>	Raise both plants under glass in February. Plant the <i>Zinnias</i> 18 in. apart and use the <i>Tagetes</i> as a broad outer band.

BULBS AND OTHER BEDDING PLANTS 281

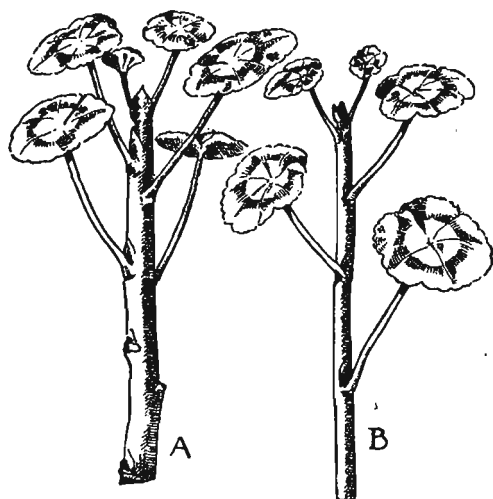
II.—EXAMPLES OF BEAUTIFUL SUMMER BEDS (*continued*)

First Plant.	Second plant or Groundwork.	Remarks.
Anchusa Dropmore variety	Godetia double rose	Raise the Anchusa from seed or from root cuttings in spring and plant out 4 ft. apart in May. Sow the Godetia outside to form a broad border.
Ostrich Plume or Comet Asters	Salpiglossis	Raise both plants in a frame in March and plant 18 in. apart in mixture in May or June. The Asters also look well with Nico-tiana Sanderae instead of Salpi-glossis.
Sweet William Pink Beauty	White Viola	Raise the Sweet William from seed in June and plant out the following spring on a ground-work of the Viola, which can be raised from cuttings in autumn.
Ivy-leaved Geranium Galilee or Madame Crousse or Scarlet Crousse	Blue Ageratum	Raise the Geraniums from cuttings in summer and plant out the following June. Raise the Ageratums from seed in a frame in February and plant as a broad edging.
Heliotrope, pale	Mauve Viola	Plant a Viola such as Maggie Mott a foot apart in spring and set the Heliotropes among them in June.

When two or more different kinds of plants are associated in the same bed there is always a risk of an incongruous effect. The examples given avoid that mistake and give the planter a guide in the thousand and one other associations which may be thought out. At the same time, he will do well to think of such plants as Carnations and tuberous Begonias, which look well by themselves. And in his permanent beds, as of Roses, he may do well to remember the charm of Violas as groundwork, especially the white and lavender varieties (see Chapter V.).

Although the Zonal Geranium is still an immensely popular plant, as the great cultures in the nurseries prove, it is not bedded in the large gardens and parks so much as it used to be.

Certainly we do not see fancy arrangements of the varieties with coloured leaves which were once so popular. But we do see varieties like Paul Crampel and Henry Jacoby, which have brilliant flowers and green leaves, in borders in suburban gardens, where Geraniums appear to be as popular as they ever were. Not infrequently, too, we see a bed of Paul Crampel in the



PROPAGATING GERANIUMS

A, sturdy shoot with short joints. Remove the lower leaves and cut squarely beneath a joint at the base as shown. B, a weak, long jointed shoot, unsuitable for a cutting. Note that the basal cut is not a joint. August is the best month for propagating.

public parks. In the large private gardens the use of the brilliant Zonals is almost entirely restricted to tubs and vases. They have a place on steps and terraces, where they give a cheerful glow of vivid colour against grey stone or time-stained masonry. For the rest, the greenhouse must be sought, where, in small gardens and in large, a collection in pots is much favoured, not the less because a set of plants raised from cuttings late in spring

can be kept in bloom for the whole of the following winter with due attention to warmth, watering, and the removal of decaying flowers. A collection of Zonals is the pride of many a humble amateur gardener, the possessor of one tiny greenhouse, heated, it may be, with an oil stove. We can do better with our beds than to fill them all with Zonals, but we cannot find a more useful plant for the cool greenhouse.

The suggestions for grouping Tulips in borders and for planting them in beds in association with ground plants makes it desirable to point out that this brilliant bulb increases freely in British gardens where the soil is not very dry. In deep, moist soils it multiplies rapidly and in borders need never be taken up and dried off. The following selections may be useful to readers:

DWARF EARLY TULIPS

Brunhilde, flamed buff	Prince de Ligny, yellow
Chrysolora, yellow	Rose Luisante, bright rose
Cottage Maid, soft pink	Thomas Moore, orange
Coeur Cardinal, cardinal	Vermilion Brilliant, scarlet
Dussart, crimson	White Pottebakker, white
Keizer's Kroon, red and yellow	White Swan, medium height
Le Rêve, lilac	and midseason bloomer
Ophir d'Or, yellow	Parrot Tulips in mixture
Pink Beauty, flamed pink	

These are all beautiful garden varieties. For pot culture the early-blooming Van Thols, Proserpine, and Van der Neer should be added, also good doubles such as Rex Rubrorum, Salvator Rosa, Tournesol, Blanche Hâtive, and Reine des Roses.

TALL MAY-BLOOMING TULIPS

Baronne de la Tonnaye, crimson	Clara Butt, rose
with pale edge	Erguste, heliotrope
Bouton d'Or, deep yellow	Fire Flame, smoky rose, early
Caledonia, cardinal	May
Calypso, soft pink	Gesneriana lutea, yellow

Gesneriana major, scarlet	Mrs. Moon, yellow
Grand Monarque, chocolate	Norma, rose
La Merveille, coppery	Pride of Haarlem, crimson
La Tulipe Noire, purple	Revd. H. Ewbank, dusky lilac
Louis XIV., dark bronze	Summer Beauty, flaked rose
Loveliness, lilac-pink	Sensation, bronze
Maiden's blush, white with rose edge	Sunset, apricot
Mrs. Krelage, mauve with white edge	The Sultan, maroon
	Walter T Ware, orange
	Velvet King, plum

These are the finest and noblest of Tulips for beds and borders. Daffodils for beds, borders, grass, pots, bowls, and other methods of culture are abundant. In almost all the soils of our land they flourish and multiply, but most of all on strong, cool, moist soils. The following are reliable selections:

BEAUTIFUL POET'S NARCISSI

Ben Jonson	Poeticus
Cassandra	„ Plenus
Herrick	Sonnet
Horace	Virgil
Ornatus	

Ben Jonson is one of the best; Ornatus is very early.

GOOD TWO-COLOUR TRUMPET DAFFODILS (BICOLORS)

Duke of Bedford	Madame Plemp
Empress	Victoria
Horsefieldii	Weardale Perfection

GOOD YELLOW TRUMPET DAFFODILS

Admira Togo	Golden Bell
Cernuus	Golden Spur ¹
Emperor	Henry Irving ¹

¹ Early bloomers.



Economical Gardening

Bulbs lifted from beds after blooming are here shown laid in for the summer in a reserve plot. Bulbs from pots and bowls could be treated in the same way.

(See pages 275-287)



Economical Gardening

A common but wasteful plan of planting clumps of Daffodils and Tulips. The seven bulbs in the middle spaced to 6 inches apart would give a good effect, thus saving a dozen bulbs.



Economical Gardening

How *Lilium Auratum* is often planted; two good clumps of five each could be made by adding two more bulbs.

(See pages 275-287)

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King Alfred
Madame de Graaff
Maximus

Princess Ida¹
Treasure Trove
W. P. Milner¹

GOOD MEDIUM TRUMPET DAFFODILS

C. J. Backhouse
Evangeline
Homespun
Lady Margaret Boscawen
Seagull

Sir Watkin
Waterwitch
White Lady
White Queen

GOOD SMALL TRUMPET DAFFODILS

Albicans
Alabaster
Albatross
Barri conspicuus

Burbidgei Rosalind
Chough
Dorothy Wemyss
Flora Wilson
Incognito

J. T. Bennett-Poë
Leedsii Gem
Odonus Rugulosus
Triandrus Calathinus

In all the foregoing selections care has been taken to include plenty of cheap varieties.

Reference was made on a previous page to the value of the cheap and brilliant *Gladiolus Brenchleyensis* for summer bedding. The hybrid *Gladioli* are noble flowers and make the most brilliant and beautiful of beds and border groups in August and September on rich but friable soils free from wireworm and leather jacket. One plants them 15 inches apart in spring and lifts them in autumn. No flowers of their season are more valuable for cutting and if gathered before the upper flowers on the spikes have opened they will remain in beauty in water for at least three weeks. The principal trade is in mixed varieties, but there is a small band of specialists who cultivate them under names. This may be avoided with advantage by the average amateur, because of the labour of labelling and storing separately at the lifting season.

¹ Small but very beautiful.

From the great mass of Irises the non-specialising amateur gardener can only pick out a few to grow under names: *Bucharica*, white with yellow lip, planted in December and blooming in April; *Sibirica* Snow Queen; *Flags* like *Princess of Wales*, *Gracchus*, *Iris King*, *Black Prince*, *Lohengrin*, *Isoline*, and *Pallida Dalmatica*; *Reticulata* for the warm rockery, violet and yellow; *Histrioides* major, blue, yellow, and white, also for the rockery; *Alata*, dwarf blue, rockery or front of border; also perhaps *Persica*, *Monnieri*, *Orchioides*, *Sindjarensis*, *Sisyrinchium*, and *Graminea*. He will hardly grow the English and Spanish under names, because the cheap mixtures of crossbred varieties are so beautiful and so convenient for grouping in the border to give bloom before the great majority of the herbaceous plants are out. Whoso essays to make a modern collection of Irises correctly classified sets himself a stupendous task, because all manner of hybrids are appearing. Before the war broke out various Dutch florists had begun to specialise, and already a formidable array of crosses challenged the attention of the Iris-lover. Their time may yet come, but if it is long deferred our gardens will not go empty of beautiful Irises, of which we have a splendid assortment available.

Liliums are at our command in the form of the noble *auratum* and its varieties; *tigrinum* and its splendid variety *Fortunei*; *Longiflorum* and its variety *Harrisi*; *speciosum* (*lancifolium*) and its varieties; *rubellum*, which thrives under trees; the stately *giganteum*, also a shade-lover; *elegans* and its varieties; *Martagon* and its varieties; *atrosanguineum* and its varieties; *croceum* and the varieties of *Chalcedonicum* and *umbellatum*. Nor should we overlook the cheap and useful old *candidum*. But justice compels the statement that a collection of *Liliums* may be both expensive and worrying, so fastidious are some of the species. The *auratums*, the *tigrinums*, the *Martagons*, and the *umbellatums* are the types for most amateurs, because they will thrive in almost all well-drained and friable soils. But they like peat and loam, *auratum* most of all.

The smaller bulbs, *Winter Aconites*, *Anemones* (see Chapter V.), *Calochorti*, *Chionodoxas* (*Glory of the snow*), *Crocuses*,

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Dog's-tooth Violets, *Leucojums* (Snowflakes), Lilies of the Valley, the lovely little deep-blue *Scilla Sibirica*, and the Snowdrops, will have due consideration. Let us say a special word for that fine bulb *Galtonia* (*Hyacinthus*) *candicans*, which grows some 4 feet high and produces splendid sprays of pure white flowers in summer. The large, cream-coloured fleshy bulbs may be planted either in autumn or spring and thrive in almost any well-drained and friable soil.

TREES AND SHRUBS

A—PLANNING

B—USEFUL TABLES

A—PLANNING

WHAT will be the position of trees and shrubs in the garden of the future? Particularly, will the collection and planting of new species continue? Will food trees largely take the place of ornamental kinds?

We have agreed that an impoverished nation will aim at an economical style of gardening, reducing skilled labour to the utmost, growing more vegetables and fruit than it has done in the past in proportion to the area cultivated, and avoiding costly novelties. And it is pertinent to inquire how far this movement will affect trees and shrubs.

When ways and means of carrying on a garden economically are discussed, the extended cultivation of trees and shrubs will certainly be considered, on the ground that after the preparation of the soil and the planting have once been done, a minimum of labour is required. And if this point of view prevails, it follows that the use of trees and shrubs is likely to increase rather than diminish. But a large proportion of the trees may be fruit trees and a moiety of the shrubs mere "cover." In a word, the principal area may be filled with food-bearing trees, and with shrubs of little ornamental value, a species of "facing" or veneering being practised in order to make the front spaces ornamental. There is much to commend this system. Under it, a comparatively large garden can be managed very economically, for the "bulk" kinds—the padding, so to term it—are not only quite cheap but grow quickly to a considerable size without calling for much time and skilled attention. The evergreens generally planted for shelter—Aucubas, Hollies, Barberries, Laurels, the commoner Rhododendrons, Veronicas, Hypericums, Viburnums,

Box, the coarser Thuyas, and so forth—will admirably fulfil this mission, together with vigorous deciduous kinds such as Azaleas, Berberises, Cornuses, Coryluses (Purple-leaved and other Nuts), Deutzias, Djervillas (Weigelas), Magnolias, Philadelphuses, Ribes, Rugosa and other Roses, Spiraeas, and Tamarisks. And in those gardens where shelter-planting is not called for, these kinds, judiciously intermixed as to evergreen and deciduous, superior and inferior, will provide ornament at a minimum of expenditure, so that little facing will be required. An intermixture of low trees, chosen variously for their fruit, their flowers, and their foliage, such as Apples, Cherries, Thorns, Laburnums, Prunuses (including Cerasus), Liquidambars, Liriodendrons (Tulip Tree), ornamental Pyruses, Arbutuses, Acers (including tinted Maples), Amelanchiers, Catalpas, Crabs, Robinias, Eucalyptuses, the smaller Oaks, and Chestnuts will do further service.

In choosing material for the best positions, not only will such beautiful deciduous shrubs as Berberises, Buddleias, Ceanothuses, Cydonias, Cytisuses (Brooms), Daphnes, Enkianthuses, Forsythias, Halesias, Hamamelises, Hibiscuses, Hydrangeas, Magnolias, Ribes, Stuartias, and Zenobias; with such evergreens as Andromedas, Cotoneasters, Daboëcias, Empetrums, Ericas, Euonymuses, Kalmias, Loniceras, Olearias, Pernettyas, Rhododendrons, and Yuccas be selected, but graceful Conifers such as the better species of Abies, Cryptomeria, Cupressus, Juniper, Larch, Libocedrus, Picea, and Thuya. A little judgment in placing, a judicious interpolation of Apples and selected ornamental Pyruses, Prunuses, Thorns, Laburnums, and Robinias, and large areas of the garden are permanently dealt with.

The tame and colourless grouping of commonplace shrubs in large, unrelieved bulks gives monotonous and tiresome effects which do not grow less irritating with time. Very little money is saved by it, and very much interest is lost. Particularly should the error of planting large groups of cheap evergreens be avoided. Only where shade imparts obligations should many Aucubas, for instance, be planted together. Even in "padding," diversity can be introduced. True, groups are generally better than single

specimens, but the groups need not be large ones. The advantage of mixing is that there are never large monotonies. Each tree or shrub may have its period of dullness, but if care is taken to associate kinds which support each other, there is always interest, always brightness.

The case for trees and shrubs is, therefore, a strong one. They may be made to serve the purpose at once of economical and beautiful gardening. As a resident in the most distinctive of all fruit-growing counties, the writer is yearly more strongly impressed with the marvellous contribution of Apples and Cherries, not to speak of Pears and Plums, to the amenities of the countryside. Throughout April and May the waysides are a supreme joy, with the fields and orchards which skirt them a spreading sea of blossom. Yet few people make the short pilgrimage from adjacent towns to drink in the delights of the unparalleled panorama. Thousands of flower-lovers should go with each succeeding spring, spending long, happy, inspiring hours in this pure world of April snow, for their eyes will be gladdened and their hearts uplifted by the spectacle. And many a home fruit plantation, many a home orchard, will spring from the memory of such visits, particularly when the passer-by repeats them in summer and again in autumn, realising in the myriads of ruddy fruits that the blossom has a double meaning.

Apples and Cherries, Pears and Plums, bloom none the less exquisitely, crop none the less heavily, for the companionship of other trees and shrubs, always providing that the soil treatment, the planting, the pruning, and the space provided for healthy growth are adequately dealt with. Where most non-fruiting trees and shrubs will thrive, fruit-bearers also will succeed.

Shrub-planting as a background for herbaceous plants has been mentioned on another page. All that has been said about selection and arrangement applies where the front area of a large border is reserved for herbaceous plants. One still avoids dull blocks of shrubs by intermingling kinds and types. And one takes care to use for an immediate backing to the herbaceous things shrubs which will form a suitable foil. See remarks under *Herbaceous Borders*.

Trees and shrubs, like every other requirement of the garden, have to be paid for, and while the ultimate effect of a proportionately large planting of shrubs makes for economy, the first cost has to be taken into account. It is not possible to raise a large stock of trees and shrubs both quickly and cheaply. Or rather, it is not possible to provide a large stock of planting size cheaply and quickly. It is true that many species can be raised from seed at comparatively small cost, but several years elapse before they are big enough to fill any appreciable amount of space. So far as fruit trees are concerned, supplies can be raised economically by planting "stocks" (Paradise, etc., Chapter XX.) and budding or grafting them; they are of planting-out size in about three years, the period depending on the age of the stock when put in; yearlings are too weak to be propagated and must be grown for a year or even two years to strengthen. Gooseberries and Currants can be raised from cuttings and be grown to planting-out size in two to three years. But in the main, the furnishing of gardens with ornamental and fruit trees and shrubs has to be done by the purchase of established plants, and the only means of making any appreciable reduction in expenditure thereon is to purchase at sales instead of at nurseries. This, however, is only likely to be economical when large quantities are being bought, because of travelling expenses and loss of time. Shrub-planters often incur needless expense by planting so thickly as to completely furnish the available space the first season, leaving no room for the things to develop and consequently having to go to further expense in thinning. They do this because they cannot bear to see daylight between the shrubs. But gappiness can in a large measure be avoided by the simple expedient of planting the various groups in the respective rows in angles with each other. Given two rows, the shrubs in the back row may be set triangularly with the groups in the front row, instead of directly behind them. Follow this rule out with three, four, or as many rows as there may be room for, and there will be little or no appearance of gappiness, however thinly the components of the different rows may be spaced. Thus is economy combined with early effect. It will further reduce the trouble

from this score if Rose pillars are used fairly freely, say, every 25 feet, because these catch the eye and carry it up, where, falling on standard trees which have also been planted at about every 20 or 25 feet, it engages fresh objects. Half the cost of planting shrubberies could be saved in a great many cases without the slightest loss of interest by resorting to simple devices such as these, which add to the ultimate beauty of the border rather than detract from it.

Vigorous spadework and liberal manuring during the preparation of the ground assist economy in purchase by providing the stimulus for rapid growth. One shrub will do the work of three, and do it better, if the one has good soil to root in and the others bad. Where, however, manure is scarce and dear the spade must do the most important work by deepening the soil.

Pruning also assists furnishing, particularly in some cases, such as purple-leaved Nuts and Weigelas. If young plants of these are cut down close to the ground in winter, they will break up very strongly in spring, and in a few weeks will fill much more ground than they would have done if they had been left unpruned. Most flowering shrubs benefit greatly from hard pruning after flowering, the branches which have borne the flowers being cut right out. There are few exceptions to this.

The practice of pruning after flowering—that is, in early summer—should begin the first season that the shrubs bloom, so that it may become a part of the garden routine; otherwise the centres of the bushes may become crowded with semi-flowerless wood before the knife gets to work, with the result that the shrub is hollowed and made unsightly. With early and regular annual pruning the shrub is always well shaped and *always well filled with the best of flowering wood*. There is sad ignorance even among pronounced shrub-lovers on this vital point of culture.

The old-time shrubbery, mainly filled with monotonous and tiresome evergreens, was stuffed as far from the house as possible, and generally the farther the better; it was a windbreak and no more. But the modern shrubbery, planted with care and judgment, lightened with Rose pillars and standard trees, and faced

with herbaceous plants, is an entirely different proposition. We cannot get it too near; we cannot give it too prominent a place. It may indeed be the principal feature of the garden, occupying most of the space available. It may curve round the lawn or follow the line of the drive. It may skirt the principal paths and lead gently and unobtrusively into woodland. It may take any form we like to give it: circular, oval, serpentine, even rectangular. It may clothe bank or fringe water. It may be our principal or our only fruit plantation as well as our chief ornament. While we shall still call it the shrubbery, it will be that and also a great deal more: Rosery, herbaceous border, orchard, combined in one beautiful and harmonious whole.

B.—USEFUL TABLES

I.—A SELECTION OF GOOD FLOWERING SHRUBS

Name.	Height in feet.	Ever- green or deci- duous.	Season of Flowering.	Soil.
<i>Amelanchier canadensis</i>	6-15	Dec.	Spring	Ordinary
<i>Andromeda floribunda</i>	3-5	Ev.	Spring	Peat
" <i>polifolia</i>	1	Ev.	Early summer	Peat
<i>Azaleas</i> in var.	3-12	Dec.	Spring	Peat
<i>Berberis Darwini</i>	3-6	Ev.	Winter and spring	Ordinary
" <i>stenophylla</i>	5-10	Ev.	Spring	Ordinary
" <i>Aquifolium</i>	3-5	Dec.	Spring	Ordinary
" <i>vulgaris</i>	5-10	Dec.	Spring	Ordinary
<i>Buddleia Colvillei</i>	6	Dec.	Early summer	Light friable loam
" <i>globosa</i>	10-15	Dec.	Spring	Light friable loam
" <i>variabilis</i>	10	Dec.	Spring	Light friable loam
<i>Ceanothus azureus</i> and vars.	10	Dec.	Early summer	Ordinary
<i>Cotoneaster frigida</i>	10	Dec.	Spring	Ordinary
" <i>microphylla</i>	4	Ev.	Spring	Ordinary
" <i>Simonsi</i>	6	Ev.	Spring	Ordinary

I.—A SELECTION OF GOOD FLOWERING SHRUBS (*continued*)

Name.	Height in feet.	Ever- green or deci- duous.	Season of Flowering.	Soil.
Cydonia (Pyrus) Japonica	6	Dec.	Spring	Ordinary
Cytisus albus	7-10	Dec.	Spring	Ordinary light
„ scoparius and var. Andreanus	3-6	Dec.	Spring	Ordinary light
Daboëcia polifolia	2	Ev.	Summer	Peat
Daphne Mezereum	2-4	Dec.	Winter	Ordinary
Deutzia crenata and vars.	4-6	Dec.	Spring	Ordinary
Empetrum nigrum	1	Ev.	Spring	Peat
Erica arborea	6-8	Ev.	Spring	Peat
„ carnea	1	Ev.	Winter	Peat
„ mediterranea	2-3	Ev.	Spring	Peat
Euonymus Japonicus and vars.	6	Ev.	Spring	Ordinary
Forsythia suspensa	12	Dec.	Spring	Ordinary
Halesia tetraptera	10-15	Dec.	Spring	Friable loam
Hamamelis Japonica and vars.	6-8	Dec.	Winter	Ordinary
„ mollis	9	Dec.	Winter	Ordinary
Hibiscus syriacus and vars.	3-5	Dec.	Summer and autumn	Ordinary
Hydrangea Hortensia	2-5	Dec.	Summer	Ordinary (not fully hardy)
„ paniculata	5-6	Dec.	Early summer	Ordinary
Kalmia angustifolia and vars.	2-3	Ev.	Early summer	Moist peat
„ latifolia	10-15	Ev.	Summer	Moist peat
Kerria Japonica double	4-10	Dec.	Spring	Ordinary
Magnolia conspicua	10-20	Dec.	Winter and spring	Good friable loam
„ grandiflora	10-20	Ev.	Summer	Good friable loam
„ Soulangiana	10-20	Dec.	Spring	Good friable loam
„ stellata	4-6	Dec.	Winter and spring	Good friable loam
Olearia Haastii	4-5	Ev.	Summer	Ordinary friable
„ stellulata	4	Ev.	Summer	Ordinary friable
Pernettya mucronata and vars.	3-6	Ev.	Spring	Peat and loam
Philadelphus in var.	6-8	Dec.	Spring	Ordinary

TREES AND SHRUBS

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I.—A SELECTION OF GOOD FLOWERING SHRUBS (*continued*)

Name.	Height in feet.	Ever- green or deci- duous.	Season of Flowering.	Soil.
Rhododendron, many vars.	3-12	Ev.	Late spring	Peat
Rhus Cotinus	6	Dec.	Early summer	Ordinary
Ribes sanguineum and vars.	6	Dec.	Spring	Ordinary
„ aureum	5	Dec.	Spring	Ordinary
Rubus deliciosus	6-8	Dec.	Spring	Ordinary
Spiraea in var.	3-6	Dec.	Spring	Ordinary
Stuartia Pseudo-camel- lia	6-10	Dec.	Summer	Moist friable loam
Syringa (Lilac) in var.	5-10	Dec.	Spring	Ordinary
Viburnum plicatum	4-8	Dec.	Spring	Ordinary, likes peat
„ Opulus(Guel- der Rose)	6-10	Dec.	Spring	Ordinary
„ Tinus(Lauru- stinus)	4-6	Ev.	Winter	Ordinary
Weigela rosea in var.	6-10	Dec.	Spring	Ordinary
Yucca aloifolia and vars.	15-20	Ev.	Late spring	Friable loam
„ gloriosa and vars.	4-6	Ev.	Summer	Friable loam
Zenobia speciosa	4	Dec.	Summer	Sandy peat

By grouping evergreen and deciduous kinds near each other, as previously suggested, the planter can avoid dull gaps in the borders. He may also with advantage note the flowering season of the different kinds, so that spring bloomers may alternate with summer bloomers and thus spread the season of flowering well over the border. The heights are given as a guide, but in one or two cases the plant has a very long flower-stem, notably in the case of the Yuccas. Moreover, the height is naturally influenced a good deal by the soil.

II.—GOOD SHRUBS FOR SHADE

Aucubas
 Berberis Aquifolium (Mahonia aquifolia)
 Cornus (Dogwood)
 Gaultheria Shallon
 Hollies
 Hypericum androsaemum (Tutsan)
 " calycinum
 Rhododendron Ponticum
 Rosa rugosa vars.
 Ruscus aculeatus (Butcher's Broom)
 Sarcococca ruscifolia
 Vincas (Periwinkles)

III.—GOOD SHRUBS FOR TOWN AND SUBURBAN GARDENS

Amelanchier canadensis	Leycesteria formosa
Arbutus Unedo	Philadelphus (Mock Orange)
Berberis Aquifolium	Pyrus Japonica (Cydonia)
Daphne Mezereum	Ribes aureum and sanguineum
Deutzia crenata	Syringas (Lilacs)
Forsythias	Viburnums
Hypericum calycinum	Yuccas
Kerria Japonica (double var.)	

IV.—GOOD SHRUBS FOR SEASIDE GARDENS

Berberis Darwinii	Leycesteria formosa
Ceanothus americanus	Olearias
Cistus (Rock Rose)	Pyrus Japonica (Cydonia)
Cotoneasters in var.	Rhododendron catawbiense
Crataegus (Thorns) in var.	Rosa rugosa
Cytisus scoparius and var. (Broom)	Syringas (Lilacs)
Escallonia	Tamarisk
Euonymus Japonicus	Ulex Europaeus
" Europaeus and vars.	Viburnum Tinus (Laurustinus)
Hippophae rhamnoides	Yuccas
Ilex Aquifolium (Holly)	

V.—A SELECTION OF BEAUTIFUL SMALL TREES, SUITABLE FOR
MIXING WITH SHRUBS

Acers (Maples)	<i>Prunus Japonica</i> , double white
Ailanthus (Tree of Heaven)	„ <i>cerasifera atropurpurea</i>
Apples in var.	(<i>Pissardii</i>), purple leaves
Buddleia globosa	„ <i>Persica</i> , double white, pink,
Catalpa bignonioides	and red var.
Cherries (<i>Prunus Cerasus</i>)	<i>Pyrus Aucuparia</i> (Mountain Ash)
Crataegus (Thorns) in var., particu-	and vars.
larly double red and double pink	„ <i>baccata</i> (Siberian Crab) and
Laburnums	vars.
Liquidambers	„ <i>floribunda</i>
Liriodendron (Tulip Tree)	„ <i>Scheideckeri</i>
Magnolia grandiflora	„ <i>spectabilis</i> and vars.
Prunus James H. Veitch	<i>Robinia hispida</i> and vars.
„ <i>Cerasus</i> , double white	„ <i>Pseudacacia</i> and vars.

There are few tree-lovers but admire the beautiful tints of the autumn woodland, and leaf-beauty is just as much to be sought in the garden. The golden and orange and brown of the ripening leaf play their parts nobly in maintaining the beauty and interest of the border throughout October, when the last flowers have probably gone and the evergreens are beginning to look dull. Berries too give a welcome glow of ruddy colour. In the foregoing selections of trees and shrubs for various purposes, care has been taken to include kinds which provide both autumn leaf-colour and the richness of brilliant fruits.

THE KITCHEN GARDEN

A.—PLANNING

B.—USEFUL TABLES

C.—HOW TO CROP A SMALL VEGETABLE PLOT

A.—PLANNING

IN years of heavy taxation and high food prices, the kitchen garden assumes increased importance. It must have as much space as can be afforded, with due regard to the labour available for working it to advantage. Mechanical methods of tillage exist which economise labour, and these "Cultivators," as they are termed, should be made ample use of. The Planet Junior, No. 16, costing about £2, performs a variety of tasks, saving much time and manual labour. But implements can only be used to advantage along straight lines, so that in planning our kitchen garden we are under compulsion to pursue the simplicity of rectangles. Straight paths and beds need not be regretted, because beside the main walks we can allow wide borders in which herbaceous plants can be tastefully grouped, thus making the kitchen garden bright and attractive.

In making preliminary provision for paths, the area of the garden may be taken into consideration. The more path, the less garden. The longer and wider the paths, the greater the cost, as a made path is much more expensive than a dug border. The fewer and smaller the paths, therefore, the lower is the ratio of expenditure and the greater the amount of space available for crops. In kitchen gardens up to, say, an acre in area it will suffice if the main paths are a yard wide. Only in large gardens need they be made wide enough to allow the passage of a cart. The transport of manure is not likely to be so considerable in smaller gardens as to call for anything larger than a wheelbarrow. The most convenient arrangement of paths is that in which a continuous path is taken all round the outside, while two central intersecting

paths divide the main area into 4 quarters. This permits of quick and easy access to every part. The outside path should not closely skirt the wall, hedge, or whatever other boundary may exist, but should be laid down 10 or even 20 feet from it, in order to provide a border, which will be useful for small crops and save cutting up the main areas into very small portions. By providing rows as long as possible for the principal crops, Cultivators can be used to the greatest advantage.

We come, then, to an intelligible scheme: border and adjoining path all round the garden, central paths running (1) east and west, (2) north and south, 4 main quarters. Such an arrangement will insure rapid construction and convenient working. If a shelter, whether of wall, hedge, or belt of trees or shrubs, can be provided along the north and east boundaries, the borders which they protect, and which of course face south and west respectively, will give early produce. The gardener's "south border" is the favoured place for early Potatoes, Peas, Lettuces, Radishes, and other garden delicacies.

The economical amateur may well shy at the cost of gravel paths, which, from the labour, drainage, and material that they demand, are very expensive. And while they are desirable they are by no means indispensable. Paths stamped out of the ordinary earth after the soil has been loosened and levelled and sprinkled with ashes will serve; a watering with weed killer twice a year will keep them clean. It is for each garden-maker to decide for himself whether they adequately provide the required amenities, or whether a properly made path is called for.

If there is a choice of sites, let that be chosen which provides a gentle southern slope, because it is likely to be well drained as well as warm. If the site is at water-level and the soil stiff, it is desirable to lay drainpipes, which may be $2\frac{1}{2}$ feet below the surface in trenches 15 feet apart, the water being taken to any existing outlet, such as a ditch or stream; and failing a vent, to a pool on the premises.

In the case of a small piece of ground, an oblong is better than a square, because it permits of longer rows; it is best if it runs as nearly as possible east and west, because then the rows,

running north and south across it, get the unobstructed light and heat of the sun.

An acre of ground, which if square would measure approximately 70 yards along each of the 4 sides, would be ample to supply a household of 10 persons with vegetables throughout the year and in addition would yield fruit and flowers. But such an area would call for an average of 5 hours' labour per day. A quarter of an acre may be considered the maximum amount of ground which can be cultivated in a workmanlike way in the ordinary leisure of an amateur gardener. It would yield enough vegetables for a household of 6 persons throughout the year. An eighth of an acre would be enough for many families. A sixteenth (see cropping plans hereafter) is very useful.

In a small garden, where the vegetable quarters must necessarily be near the house, an endeavour should be made to embellish the entrance, as, for instance, by erecting a Rose arch. In the absence of a wall or hedge, a trellis of Loganberries makes an appropriate division between kitchen garden and flower garden.

With reference to the question of labour, it should be remembered that sowing crops thickly broadcast saves hoeing and weeding, because weeds are smothered. Useful crops which may be broadcasted are Turnips and Radishes; Peas in rows are also weed-smotherers if left unstaked, and will yield welcome gatherings. Where stock is kept, Rape, Rape and Rye in mixture, and Tares may be sown for food if the kitchen garden is a large one; they will give weeds little chance.

For fuller information on vegetables, see Chapters X. to XIX. inclusive, Part II.

B.—USEFUL TABLES

The kitchen gardener is apt to forget the times of sowing his crops, the distance to which to thin the plants, and other important matters; this being the case, the following tables will perhaps be helpful:

I.—TRANSPANTED VEGETABLES

Kind.	When to sow.	When to plant out.	Distance apart in inches.		Depth to sow in inches.	Fair period for germination in days.	Time of maturing in weeks.
			rows.	plants.			
Cabbages for spring	Early August outdoors	October	18	18	$\frac{1}{2}$	7	36
" autumn	Late spring outdoors	May or June	24	24	$\frac{1}{2}$	8	18-20
Cauliflowers, summer	Winter under glass	April	24	24	$\frac{1}{2}$	7	20
" autumn	April outdoors	June or July	36	30	$\frac{1}{2}$	9	30
Celery, early	Winter in heat	May	36	9	$\frac{1}{2}$	12	28
" late	Spring under glass	June or July	48	12	$\frac{1}{2}$	14	36
Cucumbers, indoor	Winter in heat	Winter under glass	—	24	1	8	6
" outdoor	Spring under glass	June or July	48	48	1	10	20
Endive, late	August outdoors	September	15	15	$\frac{1}{2}$	8	36
" early	Spring in frame or outdoors	May or June	15	15	$\frac{1}{2}$	9	12
Leeks, early	Winter in heat	April or May	24	6	$\frac{1}{2}$	8	25
" late	Spring in frame or outdoors	June or July	24	6	$\frac{1}{2}$	9	36
Lettuces, summer	Spring in frame or outdoors	April to June	12	12	$\frac{1}{2}$	7	12
" spring	August outdoors	October or April	12	12	$\frac{1}{2}$	8	36
Onions, large bulbs	Winter under glass	April or May	18	18	$\frac{1}{2}$	7	25
Tomatoes, indoor	Winter in heat	Winter under glass	30	12	$\frac{1}{2}$	8	12-15
" outdoor	Spring under glass	June or July	30	12	$\frac{1}{2}$	9	16-18
Vegetable Marrows	Spring under glass	June or July	72	72	1	9	16-18
Winter greens	Spring outdoors	May to August	30	30	$\frac{1}{2}$	9	25-35

II.—NON-TRANSPLANTED VEGETABLES

Kind.	When to sow or plant.	Distance apart in inches.		Depth to sow in inches.	Fair period for ger- mination in days.	Time of maturing in weeks.
		rows.	plants.			
Artichokes, Jerusalem	April	72	12	6	14	30-40
Asparagus (seed)	April	12	1	1	10	Can be cut in 3rd year.
" (crowns)	April	24	18	4	—	Can be cut in 2nd year.
Beans, broad	November and March	24	8	3	8-12	Autumn-sown 28, spring 14.
" dwarf French	May	24	8	2	10	10-12
" Runner	May	72	12	3	10	10-12
Beetroot	May	12	9	2	9	20
Carrots	April to June	15	6	1	10-14	20-24
Onions	March, April, and August	9	3	1	9	20
Parsnips	March or April	12	9	1	15	30-40
Peas, early dwarf	March	18	1	3	10-12	13-16
" early tall	March	48-60	1	3	10-12	13-16
" late tall	April and May	60-72	1	3	8-10	12-15
Potatoes, early	March	24	12	4-6	18-25	12-15
" late	April	36	15	4-6	18-25	15-20
Radishes	March onwards	broad-cast	—	1	6	4-6
Rhubarb (crowns)	March or April	48	36	4	—	Can be pulled in 2nd year.
Seakale (crowns)	April	24	24	4	—	Can be forced in 2nd year.
Shallots	February or March	12	9	half bury	16	16
Spinach	Spring to late summer	12	9	1	8-10	18-30
Turnips	Spring to late summer	12	6 (or broad-cast)	1 ½	6-8	6-8

Asparagus	Conover's Colossal	—	Early Mazagan	—	—	—	Ne Plus Ultra
Beans, Broad	Bunyard's Exhibition	—	Ne Plus Ultra	—	—	—	—
" dwarf	Canadian Wonder	—	Painted Lady	—	—	—	—
" Scarlet Runner	Scarlet Emperor	—	Crimson Globe	—	—	—	—
Beetroot	Cheltenham Green-top	—	—	—	—	—	—
Borecole	Dwarf Green Curled	—	—	—	—	—	—
Broccoli	Knights's Protecting	—	—	—	—	—	—
Brussels Sprouts	Exhibition	—	Dwarf Gem	—	—	—	—
Cabbage	Wheeler's Imperial	—	—	—	—	—	—
Carrot	James's Intermediate	—	Early Gem	—	—	—	—
Cauliflower	Autumn Giant	—	Early London	—	—	—	—
Celery	Standard Bearer	—	White Gem	—	—	—	—
Cucumber	Improved Telegraph	—	—	—	—	—	—
Endive	Round-leaved Batavian	—	Green Curled	—	—	—	—
Leek	Muskelburgh	—	—	—	—	—	—
Lettuce	Mammoth White Cos, Favourite	—	Little Gem Cos	—	—	—	—
Onion	James's Keeping	—	White Lisbon	—	—	—	—
Parsnip	Hollow Crown	—	—	—	—	—	—
Pea	Pilot, Gladstone	—	Little Marvel, Pilot	—	—	—	—
Potato	Up-to-date	—	Epicure, Express	—	—	—	—
Radish	Turnip	—	French Breakfast	—	—	—	—
Rhubarb	Victoria	—	Champagne	—	—	—	—
Savoy	Dwarf Green Curled	—	Early Uim	—	—	—	—
Spinach	Round-seeded, perpetual	—	Prickly-seeded	—	—	—	—
Tomato	Sunrise	—	Winter Beauty	—	—	—	—
Turnip	Green-top Stone	—	Early Milan	—	—	—	—
Vegetable Marrow	Long White	—	Tender and True Bush	—	—	—	—

C.—HOW TO CROP A SMALL VEGETABLE PLOT

OBJECTIVES

To provide a family of six with the following:—

- (1) 3 lbs. Potatoes, or $\frac{1}{2}$ lb. per head, for every day in the year.
- (2) A dish of Green Vegetables every day in the year.
- (3) A supply of Beetroot, Carrots, Celery, Leeks, Onions, Parsnips, and Turnips for at least six months.
- (4) A good supply of Beans, Peas, Rhubarb, Salads, Tomatoes, and Vegetable Marrows in their seasons.
- (5) Useful pickings of culinary Herbs.

LIST OF CROPS

The complete list of crops, with the periods of sowing and planting, is as follows:—

Crop.	When to sow or plant.
Beans, Broad	Sow November or early March
Beans, Dwarf French	Sow mid-May
Beans, Scarlet Runner	Sow mid-May
Beetroot	Sow May
Borecole	Sow April, plant June or July
Broccoli	Sow April, plant June or July
Brussels Sprouts	Sow April, plant June or July
Cabbages for Spring	Sow early August, plant October
Carrots	Sow April or May
Cauliflowers	Sow April, plant June or July
Celery	Sow February, plant June or July
Coleworts	Sow May, plant July or August
Leeks	Sow March, plant June or July

Crop.	When to sow or plant.
Lettuces	Sow March, plant April
Lettuces (spring)	Sow August, plant October or March
Mint	Plant April
Mustard and Cress	Sow at short intervals in Spring
Onions	Sow March
Parsley	Sow March or April
Parsnips	Sow March
Peas	Sow March or April (October if the conditions are favourable)
Potatoes	Plant March or April
Radishes	Sow March and later for successions
Rhubarb	Plant between November and March
Sage	Plant in spring
Savoy	Sow April or May, plant June or July
Shallots	Plant January or February
Spinach, Perpetual	Sow end of April
Thyme	Plant in spring
Tomatoes	Sow February, plant June
Turnips	Sow March, April, July, August, and September
Vegetable Marrows	Sow March, plant June

For distances of sowing and planting, and many other details, see preceding Tables. Other cultural notes follow the plans.

The question may be asked, Can such a supply as that stated, such a list as that given above, be grown on quite a small plot? The reply is that they can be grown with good management on a plot as small as Ten Square Rods.

A plot of 10 square rods is equal to $\frac{1}{16}$ th of an acre.

It is half the size of the average cottager's allotment.

It may be $27\frac{1}{2}$ yards long by 11 yards wide.

A more convenient size for cropping is $33\frac{1}{2}$ yards by 9 yards.

A plot so small is not necessarily at a great disadvantage in respect to productiveness, because labour and skill can be con-

centrated on it. Larger plots may yield proportionately much less if the labour is inadequate and skill is wanting.

PLANNING

To secure so large a quantity of food from so small an area of ground admittedly calls for careful planning. Several crops will have to occupy the same section of ground within the year, some simultaneously, others successionaly. In fact, **INTENSIVE CULTURE** will be necessary.

In order to show with the utmost clearness how this can be pursued to the greatest advantage, a series of six plans has been prepared. The first three show the plot in the first year at the following periods:

Plan I.—March to July inclusive.

Plan II.—August to October inclusive.

Plan III.—November to February inclusive.

The remaining three Plans show the plot at the same periods in the second year.

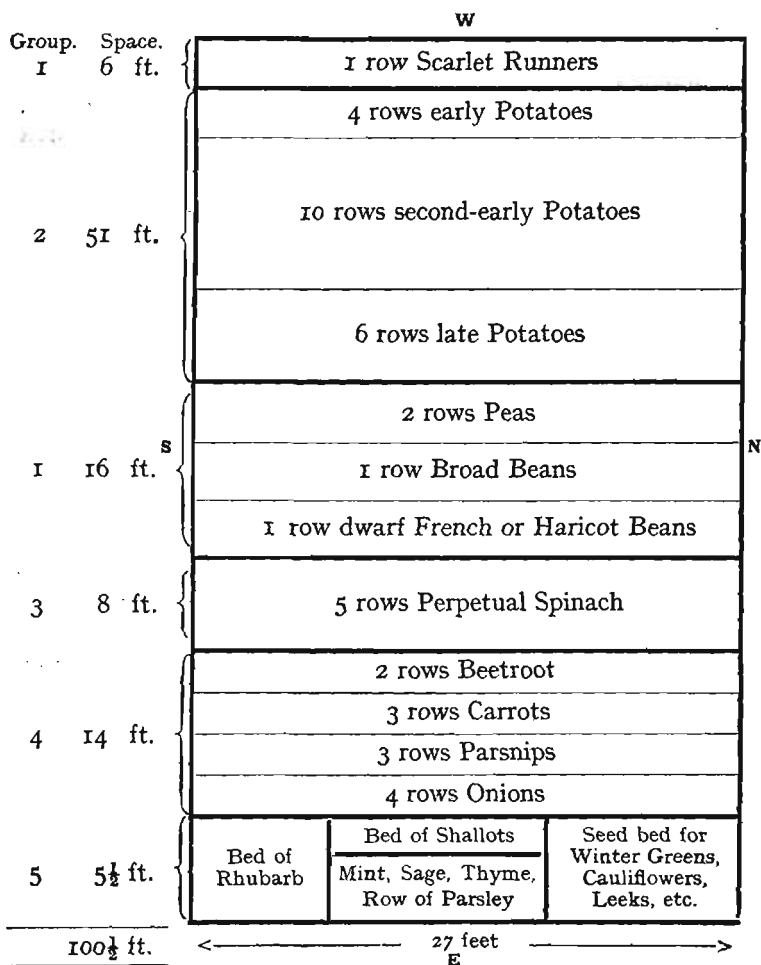
This arrangement allows (1) a period of five months, during which most of the principal crops are sown or planted, some are cleared and some successional crops are planted; (2) a period of three months, which completes the maturing of the principal crops and sees winter crops established; (3) a period of four months, during which the winter crops are in use and preparations are made for the second year's cropping.

The references to the Plans and the accompanying notes on the principal crops will make the system clear to the veriest tyro, who, by studying them in the light of the chapters in Part II., the notes which follow herewith, and the Tables, will be able to secure abundant crops of valuable and delicious food forthwith.

PLAN I.—A 10-ROD PLOT WITH ITS CROPS FROM MARCH TO JULY
INCLUSIVE—FIRST SEASON

Length of plot, $100\frac{1}{2}$ feet. Width, 27 feet.

For full references see opposite page.



REFERENCES TO PLAN I.

Five groups are arranged, bringing in every important crop.

GROUP 1.—*Peas and Beans*.—The Scarlet Runners—allowed 6 feet—are separated from the other Peas and Beans in order to give them an end position, which may be kept for them every year. Lettuces may be planted in front, and Radishes sown broadcast in March to get crops before the Runners need the ground at mid-May. Turnips may be sown and Lettuces planted between the Peas. After Broad Beans and early Peas have been cleared off in July, Celery (and Leeks also if desired) may be planted in their places. Coleworts may be planted after French Beans. The Pea rows are allowed 4 feet each, and the Broad Beans and French Beans 2 feet each. See also Plans II. and III.

GROUP 2.—*Potatoes*.—Four rows of early Potatoes are planted 2 feet apart, 10 rows of second-early Potatoes $2\frac{1}{2}$ feet apart, and 6 rows of late Potatoes 3 feet apart. Cauliflowers and Winter Greens may be planted $2\frac{1}{2}$ feet apart between the earlies and second earlies in June or July. Winter Turnips may be sown broadcast after late Potatoes are cleared in August or September. See also Plans II. and III.

GROUP 3.—*Perpetual Spinach*.—Five rows of this invaluable vegetable may be sown 18 inches apart; the bed will stand for a full year.

GROUP 4.—*Roots and Bulbs*.—A portion of the ground cleared of Beetroot, Carrots, and Parsnips (the rows of which are 15 inches apart) in October may be prepared and sown with Peas and Broad Beans for the second year. The rest may be left fallow. The ground cleared of Onions (rows 1 foot apart) may be planted with Cabbages 2 feet apart in October for the second year. See also Plans II. and III.

GROUP 5.—*Rhubarb, Shallots, Herbs, and Seeds*.—The Rhubarb and Herbs will become permanent crops. After the Shallots (rows 1 foot apart) are cleared in July, autumn Turnips may be sown broadcast. Bush Vegetable Marrows 2 feet apart may follow the seedling Greens. If Tomatoes are wanted, plant a row between groups 4 and 5 in June. See also Plans II. and III.

PLAN II.—THE 10-ROD PLOT WITH ITS CROPS FROM AUGUST
TO OCTOBER INCLUSIVE—FIRST SEASON

For references see opposite page.

Scarlet Runners as in Plan I.		
Cauliflowers and Winter Greens succeeding early and second-early Potatoes		
Late Potatoes as in Plan I. until August or September, when they are cleared and winter Turnips are sown		
Celery (and perhaps Leeks) following Peas and Broad Beans		
French Beans cleared in August and Coleworts planted		
Perpetual Spinach as in Plan I.		
Beetroot as in Plan I.		
Carrots as in Plan I.		
Parsnips as in Plan I.		
Onions till August, Cabbages for spring planted in October		
Rhubarb as in Plan I.	Autumn Turnips following Shallots	Bush Vegetable Marrows following seedlings
	Herbs and Parsley as in Plan I.	

REFERENCES TO PLAN II.

GROUP I.—The Scarlet Runners and dwarf French Beans still stand, but the latter will make way for COLEWORTS in August, unless Haricots are standing to ripen their seeds. The Peas and Broad Beans have given place to CELERY.

GROUP 2.—The early and second-early Potatoes have given place to AUTUMN CAULIFLOWERS and WINTER GREENS. The late Potatoes stand till August or September, when they give place to WINTER TURNIPS.

GROUP 3.—*Perpetual Spinach*.—No change.

GROUP 4.—No change, except that Onions are pulled in August and Cabbages for spring are planted in their place in October.

GROUP 5.—Autumn Turnips and Vegetable Marrows have taken the places of SHALLOTS and SEEDLINGS respectively. (N.B.—A Bush form of Marrow is suggested because it comes into bearing earlier than the running form, but the latter may be chosen if preferred.)

PLAN III.—THE 10-ROD PLOT WITH ITS CROPS FROM NOVEMBER
TO FEBRUARY INCLUSIVE—FIRST SEASON

For references see opposite page.

Scarlet Runners dying; prepare ground for second year		
Autumn Cauliflowers and Brussels Sprouts in use; other Winter Greens coming on for winter and spring		
Winter Turnips following late Potatoes		
Celery as in Plan II.		
Coleworts as in Plan II.		
Perpetual Spinach as in Plans I. and II.		
Part of ground cleared of Roots sown with Peas and Broad Beans for second year		
Spring Cabbages as in Plan II.		
Rhubarb as in Plans I. and II.	Autumn Turnips as in Plan II.	Spring Lettuces after Vegetable Marrows
	Herbs and Parsley as in Plans I. and II.	

REFERENCES TO PLAN III.

GROUP I.—Scarlet Runners thrive on the same ground in successive years if the soil is deeply dug or trenched and well manured. If desired, the old roots can be left in the ground till March with leaves over them, then lifted and put in deep boxes with soil among the roots and set in a frame to start growth. Meanwhile, the soil is prepared for them and planted with Lettuces and sown with Radishes till mid-May. When thus treated, Runners do well from old roots. Celery occupies the old site of the Peas and Broad Beans, of which fresh sowings are made on the site cleared of Roots in October and November.

GROUP 2.—Potatoes have all been cleared and their places are occupied by Autumn and Winter Greens and Winter Turnips, most of which will occupy the ground till spring. In spring the tops of the Turnips will be very useful.

GROUP 3.—*Perpetual Spinach*.—No change. This admirable vegetable will give pickings throughout the winter unless the weather is very severe.

GROUP 4.—*Roots*.—All are in store and part of the ground sown with Peas and Broad Beans for the second year. Peas should only be sown in autumn if the district is mild and the soil friable and well drained. Broad Beans should always be sown in autumn.

GROUP 5.—No change, except that Spring Lettuces have taken the places of Vegetable Marrows. Autumn Turnips are in use part of the time.

PLAN IV.—THE 10-ROD PLOT WITH ITS CROPS FROM MARCH TO JULY INCLUSIVE—SECOND YEAR

For references see opposite page.

Scarlet Runners after early Salads as in first year		
2 rows of Beetroot		
3 rows of Carrots		
3 rows of Parsnips		
4 rows of Onions		
New bed of Perpetual Spinach		
4 rows of early Potatoes		
8 rows of second-early Potatoes		
6 rows of late Potatoes		
Old bed of Perpetual Spinach, to be cleared when the new one comes into bearing and followed by Leeks		
1 row of Peas		
1 row of Broad Beans		
Bed of Spring Cabbages		
Rhubarb as first year	Shallots following autumn Turnips	Seed bed for Greens, Leeks, etc., after Spring Lettuces
	Herbs and Parsley as first year	

REFERENCES TO PLAN IV.

Slightly smaller quantities of Potatoes, Peas, and Beans are grown the second year than the first, because allowance has to be made for the bed of spring Cabbages and for a fresh bed of Perpetual Spinach.

Peas, Beans, Beetroot, Carrots, Parsnips, and Onions.—These crops get a change of ground. Otherwise the rules for the first year apply. The same crops may be grown between and after them as before.

Potatoes.—A part of this crop gets a change of ground, but a portion of the crop comes on to the Potato ground of the previous year. This will not matter if the soil is well prepared and the seed good.

Perpetual Spinach.—A new bed is made and as soon as it comes into bearing the old bed is cleared off, the ground well dug and manured, and a crop of LEEKS planted.

Spring Cabbages.—This bed will be in bearing till June or perhaps July, when it may be cleared and the ground sown with a crop of AUTUMN TURNIPS.

Rhubarb, Shallots, Herbs, and Seed-bed.—Same as in first year, with similar crops succeeding the SHALLOTS and SEEDLINGS.

PLAN V.—THE 10-ROD PLOT WITH ITS CROPS FROM AUGUST
TO OCTOBER INCLUSIVE—SECOND YEAR

References as for Plan II.

Scarlet Runners		
2 rows of Beetroot		
3 rows of Carrots		
3 rows of Parsnips		
Spring Cabbages succeeding Onions		
5 rows of Perpetual Spinach		
Autumn Cauliflowers and Winter Greens following early and second-early Potatoes		
6 rows late Potatoes till August or September, then Winter Turnips		
Leeks following original bed of Perpetual Spinach		
Celery following Peas and Broad Beans		
Autumn Turnips following Spring Cabbages		
Rhubarb	Winter Turnips following Shallots	Vegetable Marrows following seedlings
	Herbs	

PLAN VI.—THE 10-ROD PLOT WITH ITS CROPS FROM NOVEMBER
TO FEBRUARY INCLUSIVE—SECOND YEAR

References as for Plan III.

Scarlet Runners cleared or covered with leaves as in Plan III.		
Roots cleared and part of ground sown with Peas and Broad Beans for third year		
Spring Cabbages in place of Onions		
5 rows of Perpetual Spinach		
Autumn Cauliflowers and Winter Greens		
Winter Turnips in place of late Potatoes		
Leeks		
Celery succeeding Peas and Broad Beans		
Autumn Turnips after Spring Cabbages		
Rhubarb	Autumn Turnips or Prickly Spinach after Shallots	Spring Lettuces or Prickly Spinach after Marrows
	Herbs	

BRIEF NOTES ON THE PRINCIPAL CROPS INCLUDED
IN THE PLANS

POTATOES

The calculation of the Potato crop in the first year is as follows:

Section.	No. of rows.	Inches apart in rows.	Total number of plants.	Crop per plant.	Total
First early . . .	4	12	108	1½ lb.	162 lbs.
Second early . . .	10	12	270	2	540 lbs.
Late	6	15	126	3	378 lbs.
					1080 lbs.

The yield is good, but not exceptionally heavy. It cannot be secured without care and attention, but given proper management it is quite feasible, except on naturally poor soils, which may require three or four years' cultivation to bring them up to the desired standard. It should also be remembered that some varieties crop more heavily than others.

The following cultural rules should be observed:

Procure fresh, clean, sound seed averaging 2 to 3 oz. in weight—respectively of the sizes of small and large hens' eggs. Plant the sets uncut.

In the case of the earlies, set the seed in a shallow box in February and March to start a strong sprout on each tuber. Keep it in a cool but frost-proof place. Take care not to break off the sprout; the first sprout which pushes is generally the best.

Prepare a deep, friable root-run by thorough digging. Manure as advised in Chapter XVIII., Part II.

Have the rows of first earlies 2 feet apart, the second earlies 2½ feet apart, and the lates 3 feet apart. Set the seed tubers 12, 12, and 15 inches apart in the rows respectively. Plant in wide drills 3 inches deep and draw another 3 inches of soil over the

tubers in a ridge. Plant the lates at the same time as the earlies and as soon after the end of March as possible.

Choose heavy-cropping varieties, such as Sharpe's Express, King George V., and Up-to-date. For further selection of varieties see preceding Table.

Quantity of seed required per square rod: early, 14 lbs.; second-early, 12½ lbs.; lates, 11 lbs.

AUTUMN, WINTER, AND SPRING GREENS

Autumn and Winter Greens consist of Borecole, Broccoli, Brussels Sprouts, Cauliflowers, Coleworts, and Savoy. All of these may be sown in lines a foot apart in the seedling plot in April and May and planted 2½ feet apart between early and second-early Potatoes in June or July. They will give Greens from October to April inclusive. With the Cabbages planted to follow Onions (these Cabbages being sown early in August and planted in October) and the Perpetual Spinach, which is sown in April and stands for a full year, they will maintain a supply of green vegetables every day throughout the year. Late sown Coleworts may follow French Beans. A change "Green" of enjoyable flavour is provided by Turnip tops. Cabbages could be had in summer and autumn by sowing in April and May, but they can be dispensed with and are best left out of consideration in a small plot, because they do not fit in with the cropping schemes. Half an ounce of seed will produce several hundreds of plants.

PEAS AND BEANS

These crops should always have deeply-dug or trenched and well-manured ground. Two Peas, Gladstone (5 feet) and Pilot (4 feet), generally do well if sown in October. Mazagan Broad Beans are good for November sowing. The rows should run North and South, so that sunlight may get between the rows to every plant. Peas should be sown in wide drills 2 to 3 inches deep, not more than a pint to 24 yards. Allow the same distance between the rows as the stated height of the plant. Autumn

Beans should be set 6 inches and spring Beans 8 inches apart, the rows 2 feet apart. Scarlet Runners should be grown on poles, preferably at one end of the plot, and with good tillage they may be grown successfully on the same ground year after year. The seeds should be set a foot apart 3 inches deep in May and a separate pole, at least 7 feet above the surface, provided for each plant. The plants twine in spirals in a direction opposite to the course of the sun, and at first need tying. Dwarf Beans may be sown 8 inches apart in rows 2 feet apart in May.

Quantities of seed to allow: Peas and Broad Beans, 1 pint to 70 feet; Dwarf Beans, 1 pint to 120 feet; Runners, 1 pint to 270 feet.

CELERY AND LEEKS

These useful crops conveniently follow early Peas and Broad Beans in July. The seed should be sown in boxes of fine soil in February, and put, if possible, in a greenhouse or frame. But Leeks may be sown with the Greens on the seed plot and transplanted thence when required. Both crops are grown in trenches, but Leeks do well dropped into holes made with the dibber. Both are benefited by earthing, Celery needing more than Leeks. Leeks may also follow Turnips. Ground that is to carry good crops of Peas, Beans, Celery, and Leeks in the same season needs thorough preparation. A fresh site should be chosen every year and bastard-trenched if possible, but at the least should be deeply dug and liberally manured. Half an ounce of seed will produce several hundreds of plants in each case.

ONIONS AND SHALLOTS

In cropping a small plot, what are called "autumn" Onions, that is Tripoli and Rocca Onions sown in August and transplanted in autumn or spring, are best ignored, as they are not good keepers and do not fit well into the schemes of cropping. Shallots may be grown instead. As a matter of fact, the Shallots generally sold by seedsmen are not true Shallots but clove-producing Onions. The bulbs give an excellent crop of early summer Onions if planted shallow (not buried) 12 inches apart all ways in rich

soil in winter or early spring. Underground or Potato Onions may be treated in the same way. Both crops are ready in July and will keep several weeks. Seedling Onions are best sown in rich but firm ground in March, the rows a foot apart, the plants very slightly thinned. James's Keeping, Beds. Champion, Brown Globe, Giant Zittau, White Spanish, and Improved Reading are all suitable. But a large variety like Ailsa Craig may be sown in boxes in a greenhouse or frame in winter and the plants put out in rows 15 inches by 9 inches at the end of April. One ounce of Onion seed will sow 150 feet of drill.

ROOT VEGETABLES

Beetroot, Carrots, and Parsnips keep, like Potatoes, for several months, but it is wise to leave Parsnips in the ground all the winter. They are best sown an inch deep in rows 18 inches apart in March or early April, and thinned to 9 inches apart. Carrots may be sown an inch deep in April and May, rows 18 inches apart, plants thinned only sufficiently to develop to their full size, *i.e.* 4 to 6 inches apart. Beetroot is best sown 2 inches deep in rows a foot apart in May and thinned to 9 inches apart. On larger plots Salsify and Scorzonera may also be grown with advantage, but they hardly justify space on 10-rod plots. Turnips are exceedingly useful, because they can be matured in a few weeks, consequently, several crops can be grown in a year. And the tops as well as the roots are good. Perhaps the best variety to sow for spring use, as, for example, on ground to be cropped in summer with Scarlet Runners, is Early Purple-top Milan. A good variety to sow in late summer after late Potatoes is Chirk Castle, but Golden Ball (Orange Jelly) is also good. A useful Turnip to sow for summer use is Red Globe. One ounce of Beetroot sows 70 feet; 1 ounce Carrot, 180 feet; 1 ounce Parsnip, 180 feet; 1 ounce Turnip, 200 feet.

SPINACH, TOMATOES, AND VEGETABLE MARROWS

Perpetual Spinach (Spinach Beet) is far more reliable and productive than either round or prickly Spinach. Sow an inch

deep in rows 18 inches apart at the end of April and thin to 9 inches apart. The bed will crop for at least a year. Tomatoes and Vegetable Marrows are best sown under glass and planted in June or July. Tomatoes do well on a warm wall or fence, with all side shoots picked out.

SECOND YEAR—INTENSIVE CULTURE

In the cultivation of vegetables under the intensive system, the years merge into each other—that is to say, the grower does not clear the whole of his ground at the end of the first year. Certain crops sown or planted during the first year occupy the ground for a part of the second. But some portions of the ground may be uncropped during autumn or winter, and these should be thoroughly prepared for the following season. There is no ultimate loss in having a given piece of ground bare for a few weeks if the opportunity is taken to put it into first-class condition, by deep cultivation and manuring (see the whole of Part II. and particularly Chapters XII., XIII., and XVIII.) for the second season. If gardeners are employed, this soil preparation is part of the work which keeps them going between autumn and spring. If all the work is done by the occupier, hours of leisure may be taken advantage of as they occur.

It is not absolutely necessary to change the ground for each crop every season. Potatoes, Scarlet Runners, and most roots, including Onions, thrive on the same ground for many years if it is well prepared for them; nevertheless, certain changes are desirable, hence the second set of plans, IV., V., and VI.

THIRD YEAR'S CROPPING

It is not necessary to give sections of the third year's cropping, which may be on the same principles—that is, making changes of ground between (a) Peas and Beans (which carry with them Celery and perhaps also Leeks) and (b) roots; changing the ground for Greens; and making fresh beds of Perpetual Spinach and Spring Cabbages. The inter-cropping can be as before.

CROPPING LARGER PLOTS

On larger plots special plans of Intensive Culture such as those suggested in Chapter XIV., Part II., may be adopted.

The general principles apply, but on larger plots other crops may be introduced, *e.g.*

Early Onions	sown in	August
Endive	„	April to August
Summer Cabbages	„	April
Autumn Cabbages	„	May
Waxpod Beans	„	May
Globe Beetroot	„	April
Summer Cauliflowers	„	March
Autumn Peas	„	May
Round Spinach	„	March
Prickly Spinach	„	September
Asparagus	planted in	April
Seakale	„	March

If the shape is not a parallelogram, the necessary area for important crops, *e.g.* Potatoes, can be calculated from the number of sets, the distances apart, and the estimated yields already stated.

For methods of eradicating insect and fungoid pests, see Chapter XIX., Part II.

USE OF GLASS STRUCTURES FOR VEGETABLES

Elsewhere in this volume surprise is expressed that so many people maintain glass structures at enormous expense which are kept so hot and moist that it is rarely possible for any one except a half-naked gardener to spend a quarter of an hour in them. Certainly there are thousands of such houses which the owners do not spend an hour in during the course of a year and

which grow only exotic plants for decorating tables. Neither dining-rooms nor conservatories need suffer in the least if these costly luxuries were converted into food structures. With a little management they could be made to grow valuable crops, notably dwarf and climbing French Beans, Tomatoes, and Peas. Little heat is required, so that there is a considerable saving in fuel.

And there are other types of glasshouse, not to speak of pits and frames, which could be made to do good service in raising if not maturing vegetables.

It will be worth while to devote a few pages to the crops which in one way or another can be made to benefit by glass.

Asparagus.—In this case the principal advantage lies in ability to force produce, for the raising and the general culture can be done out of doors. One of our illustrations (see index for page) shows how outdoor planting can be done in spring, either of 2-year-old or 3-year-old crowns bought for the purpose, or raised at home from seed sown in drills a foot apart in spring and planted out a year later. Three-year-old crowns are strong enough to force, and if they are laid in a little soil which is kept warm and moist in a temperature of 60 to 65 degrees, early produce will be gathered. Or the roots may be laid on a shallow bed of soil over a hotbed in a frame and covered with 6 inches of soil.

Beans.—In spring any light house with or without heat will be serviceable for starting Scarlet Runners. The seeds may be put 6 inches apart in boxes of soil early in May, and if plenty of air is given and the plants are kept near the glass, a fine sturdy batch will be available for planting any time after the middle of May. They will take no harm if kept in the boxes until June, thus perhaps facilitating taking an early crop, such as Turnips and Lettuces, from the ground which they are to occupy. Dwarf French Beans may be grown from seedling stage to maturity in any light, warm, airy house. Large pots or boxes may be used and a few forked sticks employed to support the stems. A crop of a climbing French Bean, such as Tender and True or Princess of Wales, can be grown in a large airy house by sowing to succeed Tomatoes in late summer. The varieties named bear prodigiously.

Beetroot.—Early crops of Beetroot can be got in a frame by sowing seed in drills a foot apart and taking a crop of Radishes between them. The Radishes will be gathered before the Beetroot requires all the room. The best results are secured if the bed is made on a heap of manure and leaves, which gives a mild, steady heat. Dell's Crimson is a good variety of Beetroot. This variety has brilliant leaves and is worth growing in the garden for the combined purposes of ornament and use. The Chilian and Dracaena-leaved Beets are also very ornamental but less valuable as food.

Cabbages.—It is rarely of much advantage to use glass for Cabbages, but it sometimes happens that the spring crop is thin and late in consequence of a very severe winter, in which case a batch of fresh plants may be raised in a frame in spring. Heat is not required; if made use of, care must be taken to harden the plants in an unheated frame before they are planted out or, hardy as they are naturally, they might suffer.

Carrots.—The remarks made under Beetroot apply. Sometimes rows of Carrots and Beetroot are sown alternately in the same frame and Radishes sown between them (see illustration). Any early short variety of Carrot will do.

Cauliflowers.—Summer Cauliflowers may be started with advantage in frames, because they grow much faster than when sown out of doors in February or March. Only shallow boxes are required. Care must be taken not to water excessively and to give abundance of air. The plants may be put out any time after they are 4 inches high. They transplant well up to 6 or 8 inches if the weather is showery.

Celery.—It is customary to sow this crop under glass, even for the winter supply, but the plants are transplanted to trenches in June or July. But a batch of plants may be planted out in a frame and the frame lifted bodily away from them in May or early June, leaving the plants to mature where they stand. They can be blanched either with soil or brown paper. See one of the illustrations for Celery culture in frames.

Cucumbers.—It is the custom to grow this crop either on a frame, hotbed, or in a pit heated with hot-water pipes. They

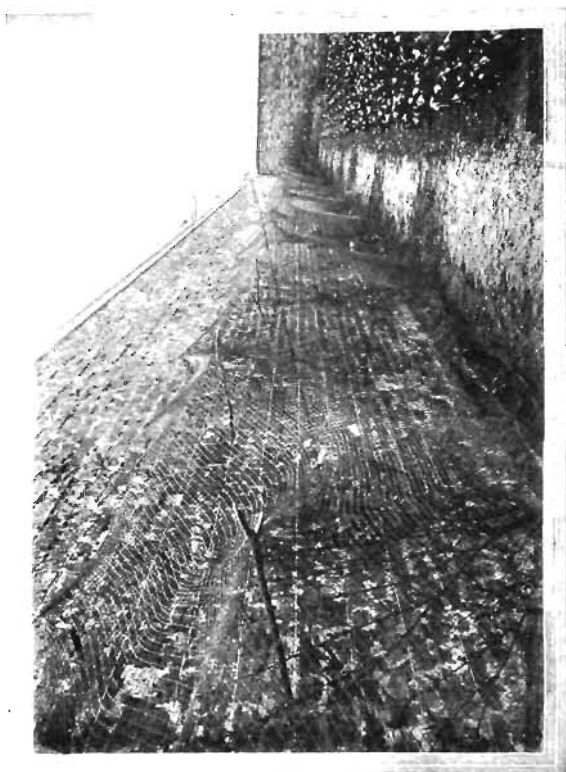
never do better than when planted on mounds of lumpy soil on a raised bed in a pit, with the shoots trained to wires or laths under the roof lights and with a close, hot, damp atmosphere. Improved Telegraph, Lockie's Perfection, Sensation, and Progress are all good varieties. They will bear freely if the shoots are not crowded. Top dressings of fresh soil should be given when roots appear at the surface. The house should be well damped down at least once a day to maintain the necessary humidity.

Leeks.—This invaluable vegetable is so hardy that it need never see glass, but it is handy to have a box of seedlings ready for planting out at any time in spring or summer, and we therefore generally raise a batch in an unheated frame, putting the box outside before April is out and giving the plants a watering now and then.

Lettuces.—Early sowings may be made in boxes in an unheated frame, or over slight bottom heat, to give material for planting out in April. Some gardeners who want young Lettuces for mixed salads sow them on a bed in the frame and pull from there for use.

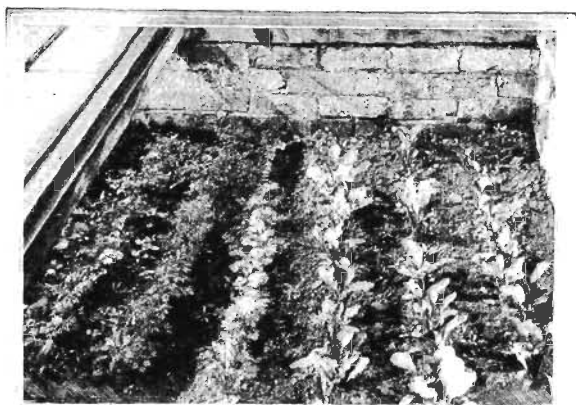
Onions.—Broadly, the remarks under Leeks apply, but it is a real advantage to have boxes of sturdy plants of such fine varieties as Premier, Ailsa Craig, and Ayr ready for planting in special beds in April—beds, that is, which have been deeply trenched and heavily manured. The bulbs generally grow to at least double the size of those sown out of doors, and what is even more important, they generally escape bad attacks of the destructive maggot. With heat, the seeds may be sown in January or February, and the plants hardened in an unheated frame in March. If there is only an unheated frame or greenhouse, the seed may be sown in February. In this case the plants will not be so large as in the other, but they will give an appreciably heavier crop than those sown outdoors.

Peas.—Perhaps this is somewhat of a luxury crop as grown throughout under glass, but there is another aspect to the use of glass, and that is to raise plants early for planting out on a warm, sheltered spot in April. They may be raised with advantage in frames in long narrow boxes, the bottoms of which are



NETTING WALL FRUIT TO PROTECT THE BLOSSOM FROM FROST OR THE FRUIT
FROM BIRDS

Make use of high walls for fruit, including Gooseberries (see page 211), and low walls for Tomatoes. (See pages 144-45 and "VEGETABLES UNDER GLASS," p.



CARROTS AND BEETROOT IN A FRAME READY FOR THINNING
Radishes have already been gathered.



EARLY CELERY IN FRAMES
White Gem is a good variety for frame culture.

The above illustrations show how early crops of vegetables may be obtained by using frames which might otherwise be devoted to flowers.

(See "VEGETABLES UNDER GLASS")

attached with string or wire, so that when planting time comes the plants need not be drawn from the boxes, but can be allowed to drop through into the trench prepared for them by the simple expedient of severing the string or unlooping the wire so as to release the bottom of the box. The seed may be sown in February. No heat is required.

Potatoes.—We deal elsewhere with pot culture, and give an illustration; see index. But Potatoes are often planted out in frames, making a bed of soil about 8 inches deep on a mild hotbed of manure and leaves. Radishes or Carrots may be taken between them if the rows of Potatoes are put about 15 inches apart. The sets may be 9 inches apart in the rows. Sir John Llewellyn, Sharpe's Eclipse, and Sharpe's Victor are suitable varieties.

Radishes.—These may be sown between Beetroot, Carrots, and Potatoes as we have seen under those heads. Early Forcing Turnip, French Breakfast, and Wood's Frame are suitable sorts.

Rhubarb.—Forcing may be done in pits or frames, either with a mild hotbed or with gentle heat from hot-water pipes. The roots may be set in a bed of good soil and covered a few inches deep. A temperature of 50 to 60 degrees and a supply of tepid water as needed will bring the produce on well in advance of that outdoors. But as we see elsewhere, Rhubarb is readily forced in the open.

Seakale.—Strong roots may be set in boxes of soil on a hotbed or in a bed of soil over hot-water pipes and covered with about 8 inches of friable soil. A steady warmth of about 60 degrees and tepid water as needed will give early produce. But as in the case of Rhubarb, outdoor forcing can be done. In many gardens where Seakale is grown the forcing is done by the simple method of heaping ashes over the crowns where they stand. This generally yields nice Seakale in April.

Tomatoes.—This is the great indoor vegetable crop. The Tomato is actually a fruit, and is of course largely used raw, but for the sake of gardening convenience it is classed with the vegetables, because it is generally raised from seed and is largely used as a vegetable. There are thousands of glasshouses of all sizes which could be devoted to Tomato-growing with satisfactory

results. Even those lofty, spacious structures which were erected at great cost for the accommodation of large ornamental plants could be adapted to Tomatoes. If there is a central stage, boxes capable of holding about a foot depth of soil can be set on it. If there is no stage, a bed can be formed and the plants taken up on tall stakes. Plants may also be planted in borders along both sides of a span-roof house and taken up the roof. The Tomato is a free-growing and very accommodating plant, always provided that a fresh, airy atmosphere is maintained, with a temperature of 60 to 70 degrees, the latter for preference. There is no difficulty in maintaining this in summer, when artificial heat will only be needed in exceptionally cold spells. It is advisable then to put a little heat into the pipes in order to prevent disease from spreading. The seeds should be sown in February, and the seedlings transferred to small pots in March. In April they can be put into the boxes or planted out as the case may be. While young they should be kept as near the glass as possible in order to keep them sturdy and short-jointed. The soil may consist of loam with a little leaf mould. Rich composts are best avoided, but when the plants have set their third cluster of fruits it will pay to give them support in the form of a top dressing of a selected artificial fertiliser, which may be sprinkled over the surface of the soil previous to watering. The following will be found excellent for the purpose, *increasing the size of the fruits and helping the plants to produce fresh bunches*: 1 part sulphate of ammonia, $\frac{1}{2}$ part muriate of potash, 2 parts superphosphate. Mix well before application. It is common to restrict the plants to one stem, picking out all side shoots with finger and thumb as fast as they show themselves, and in this case they may be planted about 15 inches apart. But some successful growers prefer to set them 2 feet apart and to take up 2 main stems, the side shoots of which are pinched out as before. It is not very material which plan is chosen. Again, some very successful growers prefer to grow the plants in boxes or in 10-inch pots than to plant them out, because of having the roots under control. If the bed of soil is deep and rich the plants might become too strong and gross to produce heavy crops of fruit. The boxes or pots are not at

first filled up with soil, but additions are made in the form of top dressings as the plants make progress. The best varieties for profitable culture under glass are those which produce large bunches of medium-sized smooth fruit of a bright red colour. Such are Moneymaker, Ideal, Kondine Red, Tuckswood Favourite, Ailsa Craig, Emperor, Abundance, and Best of All.

Vegetable Marrows.—It is advisable in any case to raise the plants under glass and plant them out in May or June, because they are not hardy; but apart from that, earliness can be gained by planting the Marrows out in a frame over a mild hotbed and lifting the lights and frames off them in June, leaving them to fruit where they stand. This is not the course for the one-frame gardener, who will have more important uses for his frame, but is applicable to cases of large places where there are plenty of frames.

THE FRUIT GARDEN

A.—PLANNING

B.—A USEFUL TABLE

A.—PLANNING

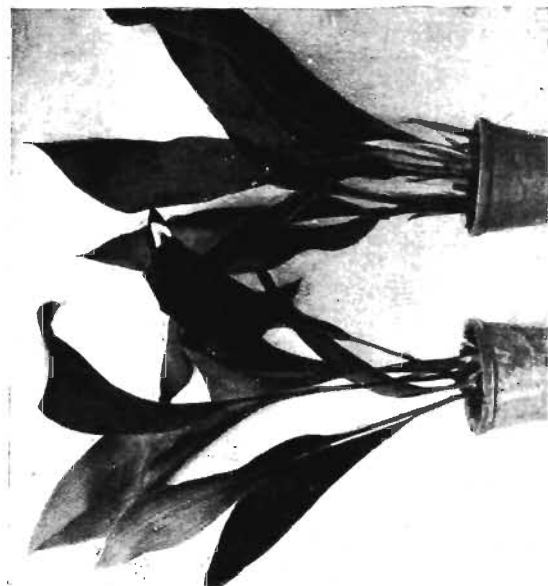
IT is not common to find an elaborately planned fruit garden in a private place, for the reason that most of the trees are accommodated on walls and in borders. If there is a special fruit area, it is generally an orchard of standard trees on grass. But wherever there is a fairly large and open piece of ground for which there is so special want, an assortment of fruits might be planted with advantage. For example, standard Apples of selected varieties (see Chapter XX.) could be planted 30 feet apart and half-standard or bush Apples, Pears, Plums, and Cherries planted 15 feet apart between them. It would be several years before these trees required all the space, and meanwhile Currants and Gooseberries could be planted $7\frac{1}{2}$ feet apart between. Half an acre or even less planted with fruit trees on this principle would yield an appreciable quantity of different kinds of fruits. But the grower should resist the temptation to which nearly all owners of fruit plantations succumb—crowding vegetables between the trees so thickly that the whole ground up to the stems is covered. It pays better in the end to keep the ground clear, because the trees bear sooner and better. Especially is this the case where the soil is not of the best. To make matters worse, it is generally coarse, strong-growing greens, such as Brussels Sprouts, which are associated with the trees. It would be less objectionable to broadcast Turnips, which do not spread so much, make lighter demands on the food in the soil, and smother weeds. Or Strawberries might be grown for the first three years.



Productive Fruits

MELONS

Melons are amongst the most delicious of fruits and they can be grown successfully by sowing seed in heat in spring and putting the young plants on inverted turfs in a warm pit or greenhouse and covering lightly with soil.



Economical Gardening

HOME PROPAGATION OF PARLOUR PALMS (ASPIDISTRAS)

The *Aspidistra* is one of the best of the room plants, and it will even endure a draught, so that it can be grown in a hall. But when an old plant gets worn, it should be divided into portions such as those shown and put into separate pots.

Those shown on the left are here shown potted. Plain soil consisting of loam with a little leaf mould and plenty of sand will suit. Very firm potting should be practised.

Another plan with much to recommend it is to plant half-standard trees 24 feet apart and fill the space between them for a few years with small bushes, keeping the ground clean with a Cultivator.

The simplest plan of all is to plant standards 24 to 30 feet apart in grass and put sheep in. The principal drawback is that except in the best of soils the trees grow much more slowly than in cultivated soil; moreover, the stems must be protected from the sheep. Alternatively to sheep, crops of hay may be taken, in which case the turf should be manured well every 3 years.

The site of the fruit orchard or plantation is not very material if the garden is open and level, but if it contains slopes, one with a southern or western aspect should be chosen in preference to a northern or an eastern; a southern slope with a little easting in it is suitable. A low, damp site on heavy soil is unfavourable, because roots do not spread freely and moss and lichen are encouraged.

Where the conditions are wholly favourable—warm aspect, well-drained, fertile soil—it may pay the grower to put down an acre or two of a special fruit, such as Cox's Orange Pippin Apple; for in such circumstances a very profitable return may be secured. A few rows of Worcester Pearmain should be planted among the Cox's for the sake of the pollen, as suggested in Chapter XX.

The plantation or orchard is the exception rather than the rule in small gardens, where the fruit trees are generally associated with the vegetables in the kitchen garden. Here they are accommodated as bushes or pyramids beside the paths, as cordons and as fans on walls, as espaliers on wires skirting the walks, as ramblers—particularly in the case of Loganberries and Blackberries—on arches and trellises, and as canes—*e.g.* Raspberries and hybrid berries—on stakes. Just as on the outside of the circumferential path the gardener has his borders for small vegetable crops, so on the inside he can have borders for fruit if he thinks proper, the vegetables occupying the main central spaces of each section. Strawberries may be worked in with the vegetable rotations if desired, making a new bed every two years; many successful gardeners only fruit a bed once.

B.—A FRUIT-PLANTER'S TABLE

Type of tree.	Situation suitable.	Distance apart in feet.	Number per acre.	When to Prune.
Standard Apple, Pear, Plum, or Cherry	Open plantation or orchard on grass	30	48	November to March
Half Standards of above kinds	Ditto	15	193	Ditto
Bushes or pyramids of above—vigorous varieties	Plantations or large garden borders	15	193	Ditto
Bushes or pyramids of above—small varieties	Garden borders	10	436	Ditto
Fan Peaches, Nectarines, and Cherries	Walls	15	—	Spring and summer
Espalier Apples, etc.	Wires beside walks	15	—	August, winter
Cordon Apples, etc.	Walls and wires	1½	—	August, winter
Bush Currants and Gooseberries	Plantations and borders	7-8	about 700	Late winter
Cordon ditto	Walls and wires	1	—	August and late winter
Raspberries	Borders on stakes	rows 4 ft., stools 2 ft.	680	August
Strawberries	Beds	3 ft. by 2 ft.	7260	Clean beds in late summer, dressing off old leaves

The principal points about the various fruits are so fully dealt with in Chapter XX. that it is unnecessary to devote further space to the present section. Readers are referred to the chapter quoted for fuller information.

The scope of the work precludes the cultivation of forced fruits, such as Grapes, under glass.^a This system, as conducted in large private places, can only be considered a luxury and as

such cannot be supported in the present book, the object of which is to further garden economy in every direction. Directions for culture will be found in my *Everyman's Encyclopædia of Gardening* (Dent).

FRUIT BOTTLING—VEGETABLE PRESERVING—VEGETABLE
COOKERY—CULTURE OF MEDICINAL PLANTS

Although these subjects are important, they hardly fall within the scheme of the present work and after careful consideration it has been decided to exclude them, more particularly as adequate treatment would mean doubling the size of the book. The special pamphlets of the Royal Horticultural Society, Vincent Square, Westminster, may be recommended. The first three subjects are dealt with in useful pamphlets published at 3*d.* each, and Medicinal Plants in a pamphlet published at 6*d.*

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