

# SWEET PEAS AND HOW TO GROW THEM

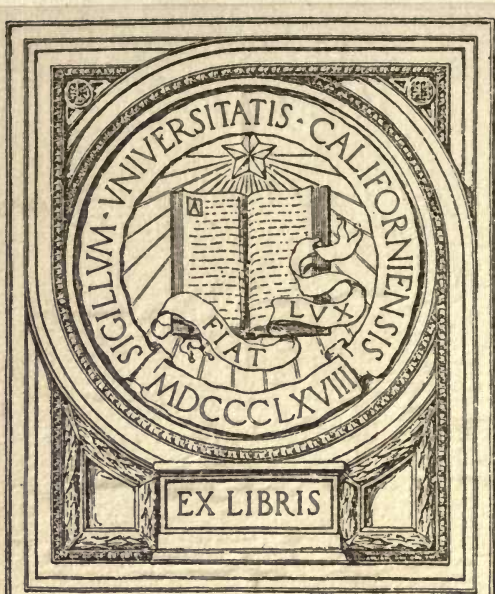
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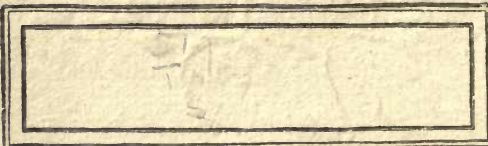
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H. H. THOMAS



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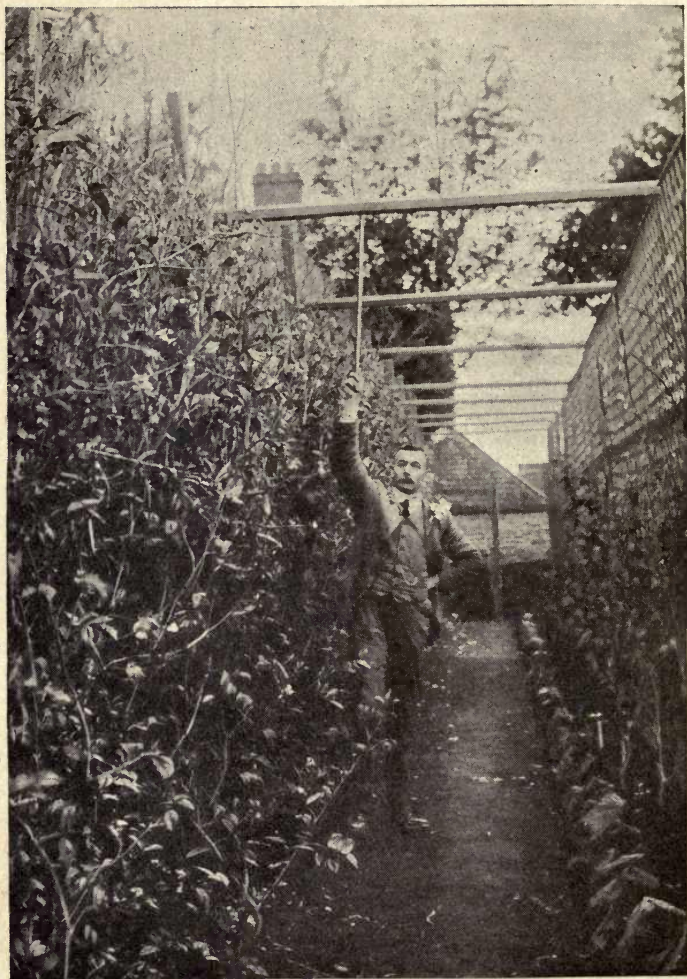
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A MAGNIFICENT ROW OF SWEET PEAS, 12 FEET HIGH, IN  
MR. MALCOLM'S GARDEN AT DUNS, N.B.

# SWEET PEAS

AND

HOW TO GROW THEM

BY

H. H. THOMAS

*Editor of "The Gardener," Author of "Little Gardens,"  
"Gardening in Town and Suburb," etc.*

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## PREFACE

IF the rose is queen of summer flowers, then surely the Sweet Pea is a high princess; second only to the rose in popular estimation, she possesses advantages to which the other is a stranger. Sweet Peas are among the easiest of all flowers to grow, yet how few grow them well! They are absurdly cheap, and one makes a fresh start with them every year. And how quickly they come to fullest beauty! A few short months and lo! the insignificant seed becomes a lissom plant, varying in height and vigour according to its treatment, and soon is smothered in blossom.

To become a successful grower of Sweet Peas one has first to appreciate the fact that they are *bons vivants*; to put it more plainly, they need a soil deeply dug and well manured. Give them a rich feeding ground and they seem never to tire of pleasing you; stint them in this particular, and how sulky they are, how offended!

In the selection of varieties the grower has a bewildering choice, and where so many are beautiful it is almost as difficult to discard the worst as to choose the best. Thus the way to successful Sweet Pea growing is not without its baffling cross-roads and seductive by-lanes, and it is hard to retrace a step taken in the wrong direction. It is important, then, to start well and to take no short cuts, for, tempting as these may seem, they are but lures to failure. "Sweet Peas and How to Grow Them," contains the maxims (without the moralisings) of famous Sweet Pea growers and full directions for the Sweet Pea lover's journey. In short, it endeavours to act as guide to the inexperienced,—indicating the pitfalls that beset the unwary,—to while away the tediousness of the going, and to point the way to a successful issue.

H. H. T.

January, 1909.

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See the Article on SWEET PEAS

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# SWEET PEAS AND HOW TO GROW THEM

## CHAPTER I

### The Story of the Sweet Pea

THE opening scene in the story of the Sweet Pea is laid in the island of Sicily some two hundred years ago. Our authentic records of this lovely flower date from that period, and we are indebted for its discovery to the zeal of Father Francis Cupani, an Italian monk, who, in common with many others of his calling, was an eager botanist. But the Sweet Pea as Father Cupani found it was scarcely a flower to send its discoverer into ecstasies so far as its intrinsic beauty was concerned, for we may, if we wish, still grow the same species (*Lathyrus odoratus*) that Cupani found two centuries ago. Nowadays, when the most exquisite Sweet Peas are to be had in countless variety, we are scarcely in a position to form an unbiassed opinion of the merits of the wild Sweet Pea as it met the eye of its happy finder. For who can doubt that he, an ardent botanist, one who was always on the look out for fresh plants, took delight in the discovery of this new treasure? How little he knew the tremendous part which his poor, small-blossomed, purple-petalled flower was to play in the world of gardening!—that in the twentieth century it should be grown in every garden in the United Kingdom, become a favourite flower in the distant states of America, found an industry, and have a society devoted solely to its interests—a society, wonderful to relate, whose chief work lies now in attempting to reduce the overwhelming number of varieties and to restore order where there is something like chaos, an immense number of sorts with a still greater number of names—surely this progressive record of marvellous activity speaks for itself and is one of which any flower may be proud.

Perhaps no flower has a more fascinating story than the Sweet Pea; and the last chapter is not yet in sight. Exactly how, when,

and where the worthy monk discovered the wild Sweet Pea we shall never know. It may be that he had read of it in John Bauhin's "Historia," which was already published, for there is mention of it there; or it may be that he did not know of its existence until he found it. But it does not matter. The thing that is of consequence is that Cupani found this wilding whose descendants bid fair to rival the Rose in popularity, and all Sweet Pea lovers must be eternally indebted to him. No mundane pedestal marks the inestimable benefit which Father Cupani conferred upon the world of flowers, but all devotees of the Sweet Pea have raised a monument to his memory, a monument of silent admiration that but strengthens and consolidates as time flies by.

**First Cultivation in England.**—It is believed that the Sweet Pea first found its way to Britain in the year 1700. In 1713 Dr. Petiver, in a paper read before the Royal Society, said that the seed was sent to Dr. Uvedale who, in his garden at Enfield, had a number of rare and curious plants from foreign parts. It was in Dr. Uvedale's garden that Dr. Plunkenet, author of one of the herbals of the day saw the famous *Lathyrus odoratus*, forerunner of the twentieth century Sweet Peas. Events marched slowly in the eighteenth century and it was not until 1730 that Philip Miller (then gardener to the Worshipful Company of Gardeners at Chelsea) was led to make an announcement about the Sicilian Sweet Pea. But even what Miller had to say concerning it seems now of little interest. Apparently the gardeners of the eighteenth century saw no possibilities in the flower, for there is no recorded advance either in its development or popularity. We wait until the dawn of the nineteenth century before we find that increased attention was directed towards the Sweet Pea. It was about this time that John Mason, seedsman, of 152, Fleet Street, London, issued a catalogue in which the Sweet Pea is mentioned. Mawe's "Gardener," also published in the year 1800 or 1801, throws a little more light on the subject. Annual flowers are there grouped in three sections, and the Sweet Pea finds a place in the third section, which contained the commonest and hardiest flowers. In Page's "Prudomus," published in 1817, six varieties of the Sweet Pea were mentioned—white, scarlet, purple, black, striped and "Painted Lady." The latter is described as having a scarlet standard with white wings and keel. In 1842 James Carter, seedsman, also enumerated six varieties. It was not until 1860 that Carter offered nine varieties, among them being a blue edged one.

**Eckford's Great Work.**—Twelve years later twelve varieties were on the market and several had distinguishing names:—*e.g.* Crown Princess of Prussia, blush; Invincible Black; Invincible White; Invincible Scarlet, and Invincible Striped. There was little further progress until Mr. Henry Eckford, whose name will ever be one to conjure with in the world of flowers, began his great work of cross-breeding the Sweet Pea, and laid the foundation of the wonderful developments which have since taken place in the flower. He it was who made it possible for succeeding hybridists to pursue the work of improvement and development that is still going on. Although the year 1700 marked the introduction of *Lathyrus odoratus* to this country, it may be said with truth that not until 1877 did the Sweet Pea hold out much promise of becoming a power among garden flowers. Mr. Henry Eckford was then gardener to Dr. Sankey at Boreatton Park, and he worked at the improvement of the Sweet Pea persistently, skilfully and methodically. In 1885 Mr. Eckford brought out Princess of Wales and Indigo King, and in the following year Orange Prince. Others followed in quick succession. In 1887 came Boreatton and Apple Blossom; in 1893 Firefly, Gaiety, Duke of Clarence, Blushing Beauty and several others. In 1894 appeared Lady Beaconsfield, Lady Penzance, Lottie Eckford, Ovid, Royal Robe, and in 1895 the greatest triumph of all, the famous white Blanche Burpee, a variety that was largely grown only a year or two ago, and is still. Captivation, Countess of Aberdeen, Crown Jewel and Little Dorrit were sent out in 1896. In 1897 came Coquette, Lovely, Countess of Shrewsbury, Mars, Prima Donna and Royal Rose. Prince of Wales, Lady Currie, Black Knight, Chancellor, Lady Grisel Hamilton, Mrs. Dugdale, Duke of Westminster, Othello and others soon followed, but so rapidly do varieties now become out of date in the Sweet Pea world that almost all these have been superseded.

Mention should also be made of the work accomplished by Mr. W. Atlee Burpee, the American florist, among whose triumphs towards the latter end of the nineteenth century are counted Aurora, Maid of Honour, Golden Gate and others famous ten years ago.

**The Waved Sweet Pea.**—The dawn of the twentieth century witnessed another remarkable development in the Sweet Pea—the introduction by Mr. Silas Cole of the beautiful Countess Spencer variety, the first Sweet Pea having a standard with waved outline.

The coming of this form has almost revolutionised the Sweet

Pea world, for it has proved to be but one of very many "waved" varieties. Sweet Peas with waved standards appear to be those of the future, and it is possibly only a matter of time before the plain standard forms will be lost to cultivation. At present, however, they comprise some of the most useful of all Sweet Peas, and those who grow these flowers for home and garden decoration will not be content to let them go until the waved forms have provided reliable substitutes.



## CHAPTER II

### Sweet Peas for Home and Garden

MOST people who grow Sweet Peas do so for the sake of a beautiful display in the garden, and to have flowers for home decoration. Those who grow for exhibition are in the minority. Nevertheless, we owe a deep debt of gratitude to the exhibitors, for not only do they provide us with flower shows which are, perhaps, unsurpassed for charm and brilliance, but they teach us how to grow Sweet Peas to perfection, and show how wonderfully this flower responds to correct and systematic treatment. While we need not follow their methods blindly when our object is to grow Sweet Peas for home and garden, there are still many lessons we may learn from them.

**Deep Cultivation.**—First, and most important of all, perhaps, is deep cultivation. Anyone wishing to have a presentable row of Sweet Peas must be prepared to dig the border two feet deep, and to incorporate some well-decayed manure towards the bottom of the cultivated ground. This is work that is preferably undertaken in the autumn. Then, too, we have the value of early sowing; the middle of February is the best time to sow the seeds out of doors in the border if the flowers are not for exhibition. Yet how few amateurs will do this! Only those who are very keen, I am afraid. Nevertheless there is no doubt as to its beneficial effect. Early sowing means deep and well-rooted plants, and such as these are alone well able to withstand the summer drought and the strain imposed by a long season of flowering.

**On Sowing Seeds.**—The question as to the proper distance apart to sow is a thorny one, and not many years ago one would have thought a distance of six inches between each plant in the row to be more than enough; but then we never expected to see Sweet Peas eight and ten feet high; now these are common. Whether the seeds are sown six or twelve inches apart depends upon the way in which you propose to grow them and the results you wish to obtain. If you want to produce really creditable specimens, I should advise having the plants twelve inches apart. If you are not

so particular put the seeds six inches apart, and if you are rather keen without being really enthusiastic, put them any distance from six to twelve inches apart. I would name six inches as a minimum, and in proportion as your enthusiasm is deep, I would advise you to increase that distance to twelve inches apart. This is, I think, quite far enough, when the blooms are wanted only for home and garden. A plan that can be recommended is to sow the seeds six inches apart; then as the plants progress and according to your inclination, you may either thin out every other plant, thus having them twelve inches apart finally, or leave them as they are. Prepare the border in the autumn, as I have advised, leaving the soil roughly dug throughout the winter, level it in time for sowing on or about February 15th, and unless other details of cultivation are grossly neglected I can assure you that the Sweet Peas will blossom from early July until October.

**Protection from Birds.**—As soon as the seedlings begin to peep through the soil, which they should do in about a month, there is usually the question of protection from birds to be considered, and, especially in the neighbourhood of towns, the ubiquitous sparrow has to be reckoned with. This is an all-important matter. When the plot devoted to Sweet Peas is comparatively small I know of nothing that will keep these mischievous pests at bay more effectively than strands of black cotton stretched zigzag fashion, so as to cover the sown ground satisfactorily. I am afraid I can call the sparrow (for he is the chief offender) nothing but a pest, for whatever excuse may be made in his favour later on in the season (he has been credited with searching for black fly) I am afraid there is no shadow of doubt that it is the sprouting peas, and the peas only, that he comes after in March. Sprinkling the little plants with soot is supposed to be distasteful to him. But if all the methods which are *supposed* to keep the sparrows away were really to do so how delighted we should all be! I am afraid that a great deal more soot falls on the ground, than rests on the plants, and after a little rain even this disappears. One cannot keep on dusting the little plants with soot, otherwise it is probable that yellow leaves and sickly seedlings would soon begin to tell a woeful tale, and the last state of the Sweet Peas would be worse than the first.

As I wrote in the *Sweet Pea Annual*, "it is no use attempting to scare the birds away with flags of rag and ribbon, you must net them out." This is a drastic measure to take, but I might add that its recommendation had reference to Sweet Peas grown in suburban



CLUMPS OF SWEET PEAS IN A NORTHERN GARDEN.

gardens. In a large garden, of course, netting-out is impossible, on account of the labour and care involved, unless the anticipated results are such as to make it worth while, as, for instance, in the case of growing new varieties. When neither black cotton nor netting-out is to be thought of on account of the large area to be covered, the best thing to do is to engage a boy to frighten away the birds for a week or two. When the seedlings are staked and are growing more vigorously they seem less toothsome to the birds and the latter do little damage. At least, a year or so ago I might have written this with conviction, but now I am sceptical, for only last summer I had to protect my Sweet Peas until they were practically in bloom. Perhaps I was exceptionally unfortunate. It was, at any rate, a new experience for one who has grown Sweet Peas for years.

**Staking the Plants.**—When the seedlings are an inch or so high they need some support, and the best kind to give them is that of the tops of hazel sticks, those twiggy pieces that are so excellent for the tiny tendrils. When they have got well hold of these twigs, and are, say, about six inches high, the final staking takes place, and for this purpose I know nothing more satisfactory than hazel sticks. Alternative methods are described later on, but personally I prefer the old-fashioned one so generally practised. Attention to such practices as those of watering, occasional applications of manure, picking off dead and faded flowers, is necessary during the season.

**Sweet Peas for Garden Decoration.**—The following notes by Mr. T. Stevenson, a grower of renown, will be read with interest.

Many dull and bare spots may be brightened by a clump or two of Sweet Peas of a suitable colour, and the flower border is one

#### FIG. 1.—SOWING SWEET PEAS OUTDOORS

W, thick sowing (inadvisable). X, thin sowing in single wide drill, but seeds placed in alternate fashion 3 inches apart. Y, sowing in double-row drill drawn on both sides of line, and seeds placed in each drill 6 inches apart: *i*, drills; *j*, soil drawn out. Z, double row after covering seed: *k*, section showing depth of covering; *l*, short branches of hawthorn placed on row where cats are troublesome; *m*, stakes laid over row to protect early sowings from sharp winds and frosts.

A, clump sowing on borders: *n*, opening made with hoe about 3 inches deep and 6 inches or more wide at bottom—six or more seeds are placed in; *o*, sowing in circles, drill about 1 foot across to contain 12 seeds; *p*, clump covered over.

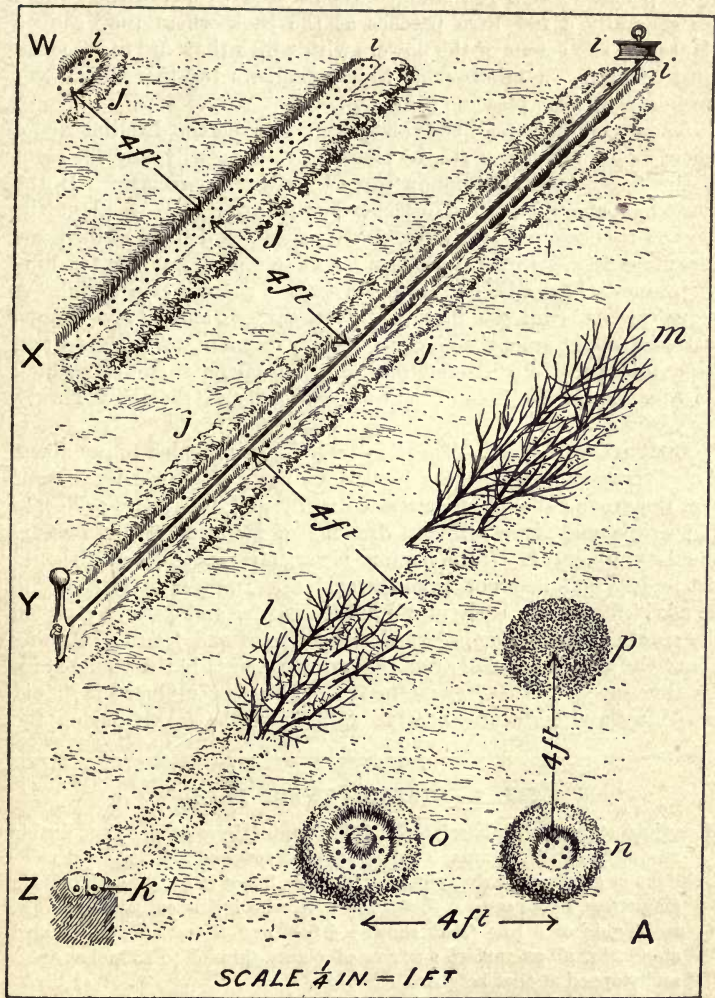


FIG. 1.—SOWING SWEET PEAS OUTDOORS.

of the places where a few clumps may be seen to advantage ; there are generally a few bare patches at the back where they can be planted. The colour of the flowers with which they are to associate must be borne in mind, so as to have colours together which will harmonise or form pleasing contrasts.

There are often small beds and borders round the dwelling house where a few clumps can also be placed advantageously, and the scent of the flowers would, in many cases be much appreciated. If the house happens to be of red brick, it would scarcely do to plant the red and rose coloured varieties, as they would not show to the same advantage as the whites and blues. As a temporary screen for hiding frames, old sheds, etc., rows of Sweet Peas are also useful. A short row or two, say in the kitchen garden, and a few clumps scattered about among the mixed flower borders, all tend to add fresh interest. In sheltered positions on lawns there is nothing brighter than a few isolated clumps, especially if they have shrubs for a background.

**Cultural Details.**—There is really nothing much to say about the cultivation of Sweet Peas in various parts of the garden, except that the ground should be cultivated really well, broken up as deeply as possible, and given a liberal dressing of manure. Spent manure should not be used. If the manure is very strong and fresh it should not be less than one foot from the surface. In most cases it would be advisable to sow early in February in pots, and plant out when the seedlings are strong in April. Both time and trouble in going about the garden looking after the various plants in the young stage are thus saved. Whatever method of staking is employed it should be done thoroughly and neatly. Care must be taken during the

#### FIG. 2.—STAKING SWEET PEAS

- H, upright staking with hazel sticks, 4 feet high (above ground) : *u*, double row of Sweet Pea plants, 6 inches apart in row and alternate order.
- I, oblique or slanting staking with hazel sticks, 3 feet in height : *v*, plants in single row, 1 foot apart. J, staking with wire trellis, called Pea trellis, in heights of 3 feet (that shown) 4 feet and 5 feet, double framed standards, all galvanised : *w*, row of plants thinned to 12 inches apart and stopped at that height.
- Clump of Sweet Peas staked : K, with hazel sticks 3 feet high ; L, with hazel sticks 4 feet high ; M, showing use of cylinder trellis 10 inches diameter at bottom and 3 feet high, galvanised.

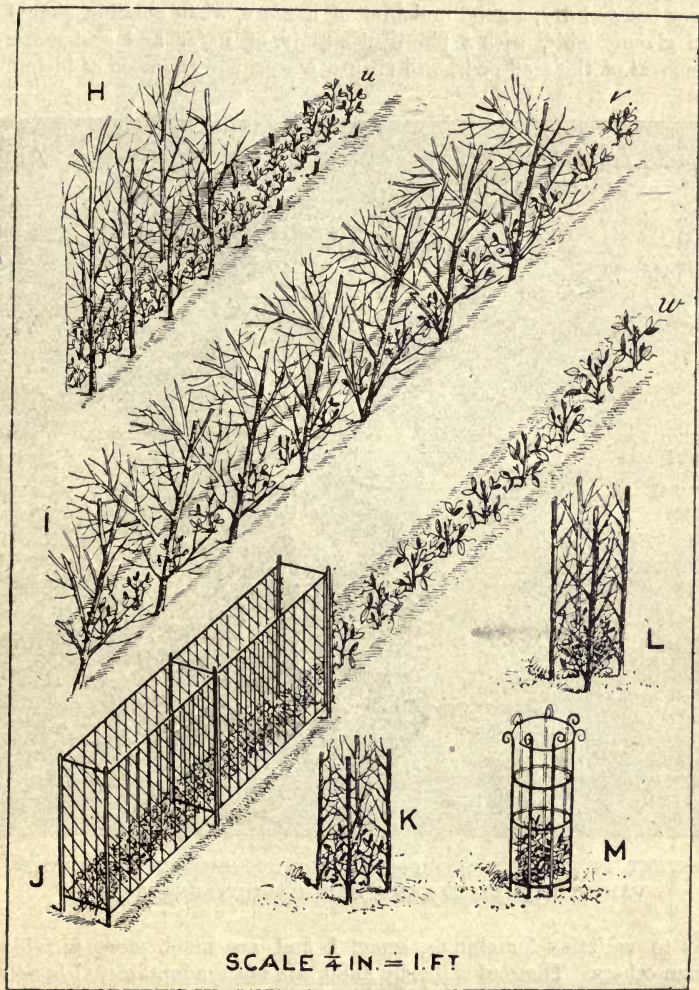


FIG. 2.—STAKING SWEET PEAS.

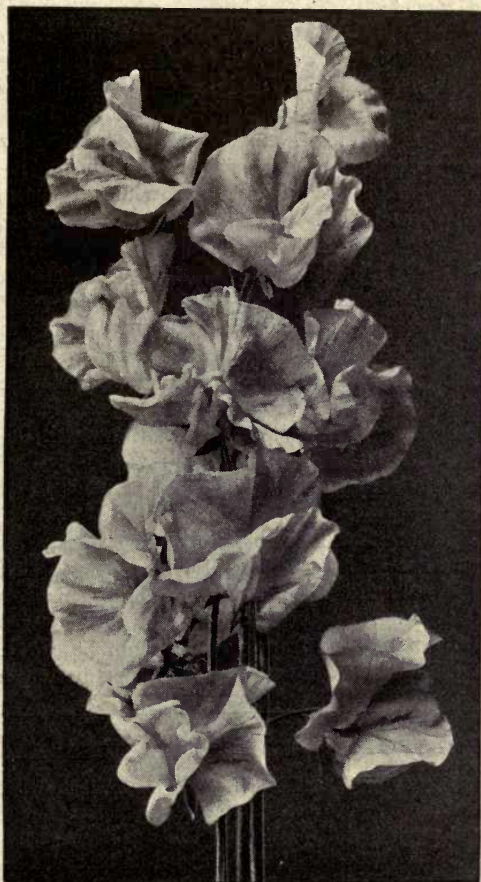
growing season to keep the shoots well tied in. If the weather gets very hot and dry, a good mulching of manure, when possible, should be given. This, with a plentiful supply of water and systematic removal of the seed pods, will ensure a continuous season of bloom.



SWEET PEA, JANET SCOTT (DEEP PINK), ONE OF THE OLDER VARIETIES: EXCELLENT FOR GARDEN DECORATION.

As to varieties for clumps, some, I find, are much more suitable than others. Those of a bushy habit are most adaptable, although where a screen is wanted the stronger and taller growers would be best. Good varieties for the garden are King Edward VII., Dorothy Eckford, Helen Pierce, Unique, Lady Cooper, Black





NEW SWEET PEA THE MARQUIS (BRIGHT MAUVE): GOOD  
BOTH FOR GARDEN AND EXHIBITION.

Knight, John Ingman, Janet Scott, Mrs. Walter Wright, Romolo Piazzani, Mrs. G. Higginson, Paradise, Gladys Unwin, Sybil Eckford, and Mrs. Collier.

**Sweet Peas in Borders.**—When arranging the colours of Sweet Peas in beds or borders the gardener really needs to be a colour artist as well as a floricultural one ; of course this necessity exists in reference to many other flowers, but the Sweet Pea has such a sad way of killing members of its family—by contrast. A clump of magenta George Gordon, beautiful though it is, against one of Scarlet Gem looks very unhappy, while groups of Dorothy Tennant, mauve, and Lady Grisel Hamilton, lavender, seem to be ever quarrelling. Borders in the open are excellent, because light and heat are obtained from all sides, yet perhaps the loveliest arrangements can be made in borders against old grey fences or white walls, and if these face south or south-west they are delightfully snug homes for the plants, and cause them to begin early and to blossom late. A border facing west full of well grown Sweet Peas proves its value during a hot July and August, for when other borders are showing signs of fatigue this one will be fresh and sprightly. Good rich soil is so necessary that I will say nothing about it here ; no gardener, surely, would attempt to grow Sweet Peas in any other !

**A Simple, Graceful Arrangement** is suggested on page 16. At the back is a row of Sweet Peas, of true red tone, such as Mars, Firefly, or the splendid King Edward VII. This row, A, will require rich feeding, to induce the Peas to grow as tall as possible, and their training from youth should be conducted so as to secure height. The spaces at B and C look best filled up with

### FIG. 3.—THINNING AND STOPPING SWEET PEAS

Thinning : B, part of row of seedlings from thick sowing of seed, showing necessity of thinning to secure sturdy plants and fine blooms. C, plants from seed placed in wide drill in double rows, 1 inch apart : *q*, thinned to  $1\frac{1}{2}$  inches distance apart ; *r*, unthinned, 1 inch apart in double row. D, row with plants thinned to 3 inches apart. E, double-drill plants thinned to 6 inches asunder : *s*, extra thinning to 12 inches apart, stopping them at 6 to 12 inches high to make them branch freely if necessary.

Stopping : F, plant stopped when 6 inches high : *t*, growing point nipped off. G, plant stopped when 12 inches high.

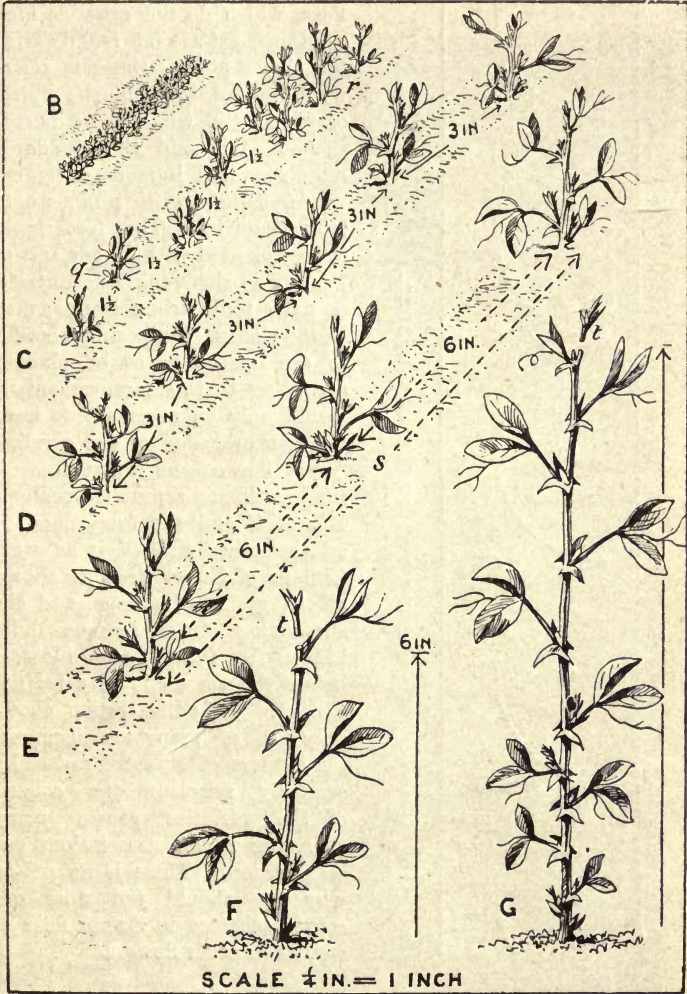
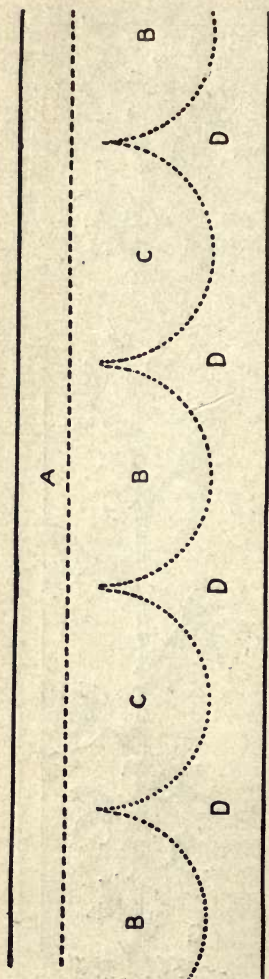
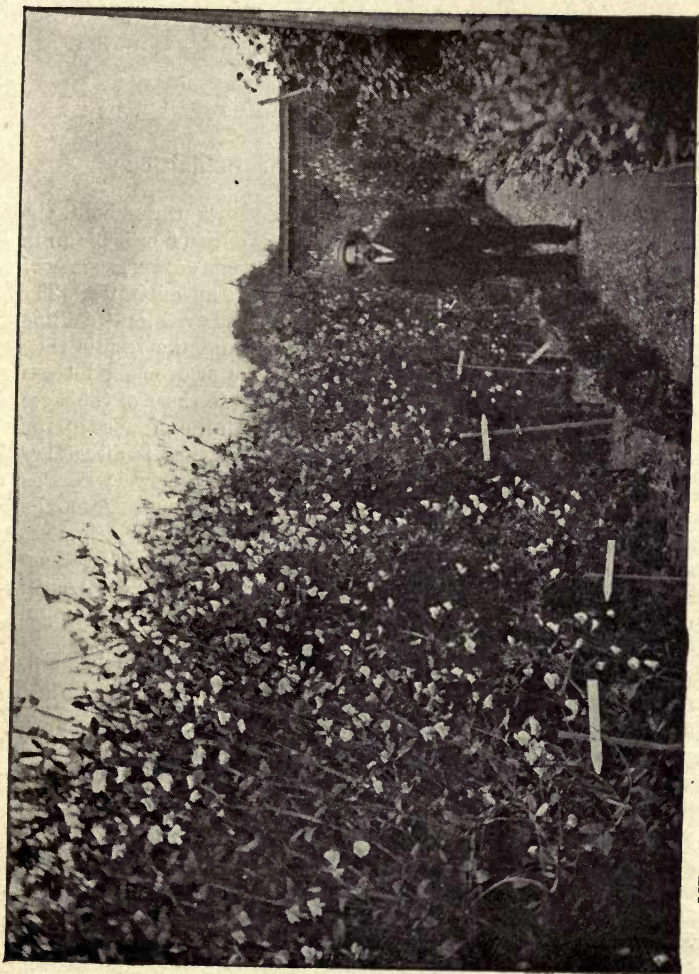


FIG. 3.—THINNING AND STOPPING SWEET PEAS.



DESIGN FOR SWEET PEA BORDER.

two varieties of the bush Sweet Peas, which do not grow as high as others, yet are not real dwarfs; the choice among these is somewhat limited, but *Blanche Ferry*, of which the wings are a purple shaded pink, and the standards light rose, and *Ramona*, a creamy white, flaked with pink, would look beautiful. The foreground is best planted with all one sort of Pea. The rich pink *Enchantress*, or paler pink *Prima Donna*, may be the choice. Supposing a border in the open were to be planted according to this arrangement, it would only be necessary to have the row or hedge of the carmine Sweet Pea as the centrepiece all the length, and repeat the scallops B and C and the foreground D on the other side of it as well. Clumps of Sweet Peas are shown off to great advantage, and the supporting sticks become quite hidden by foliage and blossom before the season is very far advanced. This illustration shows only one of many arrangements for borders of Sweet Peas. By carefully selecting the colours of the varieties grown many charming flower associations can be produced. There is no reason why one should not work out colour schemes in Sweet Peas as well as in other flowers.



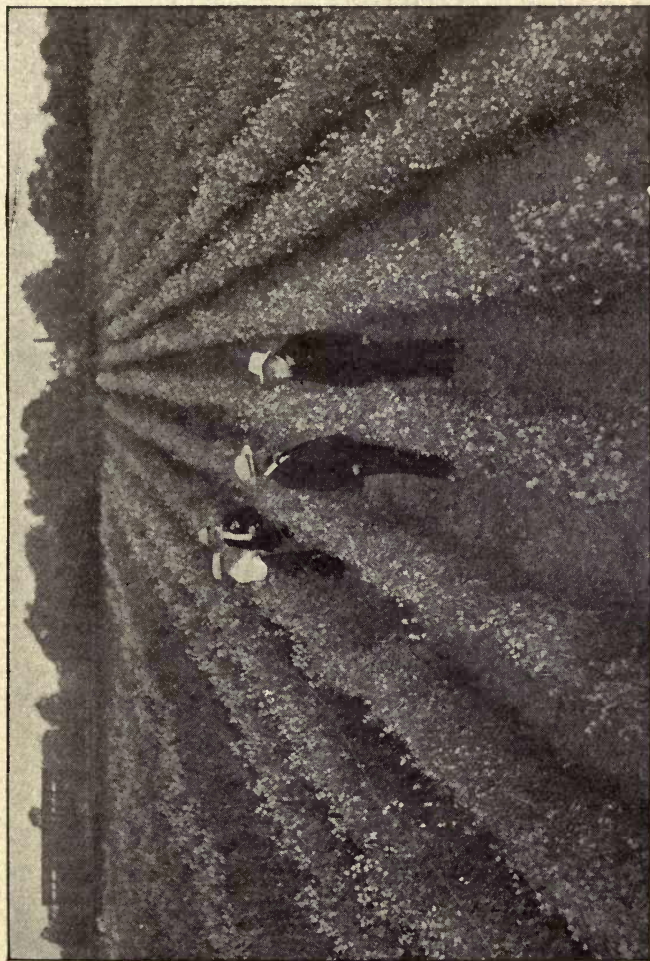
MR. T. JONES, THE FAMOUS GROWER AND EXHIBITOR, IN HIS GARDEN,  
NEAR RUABON.

## CHAPTER III

### How to Grow Sweet Peas for Exhibition

So rapid has been the rise of Sweet Pea shows throughout the country since the amazing progress of this favourite flower began in real earnest that it seems as though almost every grower, sooner or later, in greater or lesser degree, would become an exhibitor. The cultivation of Sweet Peas for exhibition has been reduced to a fine art by some of the most successful growers, and the results they obtain are nothing short of phenomenal. Five or even six blooms on a stem, leaves bearing a greater resemblance to those of cabbages than of Sweet Peas, to judge by comparison with the produce of the ordinary Sweet Pea grower, shoots of a vigour that is altogether astonishing, and flower stems 18 inches long, such are Sweet Peas as grown by the more skilful of present day exhibitors. And the means by which such results are obtained? Well, briefly they are these. In the autumn the ground is well dug at least 2 feet deep and another foot of soil below that is broken up; sometimes the soil is trenched to the depth of 3 feet, plenty of well decayed manure being incorporated. In January or February seeds are sown in pots in a greenhouse or frame. The seedlings are planted out in April and receive scrupulous attention in the way of watering, manuring, training, and all other necessary operations. Now judge if you will become an exhibitor of Sweet Peas! Moreover, you must grow the finest varieties obtainable, otherwise the success which might have been yours may be lost to you owing to a bad selection of sorts. But hear what Mr. A. Malcolm, one of the most famous of growers and exhibitors of Sweet Peas, has to say on the subject. His advice is practical and to the point, and invaluable to all who contemplate entering the ranks of Sweet Pea exhibitors:—

**Preparing the Ground.**—The preparation of the ground is the first step towards the production of exhibition spikes. Deep culture is essential. The trenches must be 2 feet deep and the soil below that forked over. If the latter spit is of a porous nature you may make the 2 feet above it as rich as you please, but if not it



THE LATE MR. HENRY ECKFORD, MR. W. ATLEE BURPEE AND MR. JOHN ECKFORD  
AMONG THE SWEET PEAS.

must be worked into that condition by the incorporation of some old lime rubble, ashes, or similar substance. This operation should be done in good weather, when the soil works easily and the rows can be made firm (which is very important). A common error is to take out a trench in a piece of undug ground. When this is done and dry weather comes, huge cracks are likely to make their appearance, then, of course, evaporation from the soil is increased. The whole border should be trenched and the special part, which ought to be as broad as possible, taken out afterwards. The manure used must be old and sweet, and thoroughly incorporated with the soil.

**Planting and Manuring.**—I find this gives better results than placing the manure in layers, although a layer of fresh cow manure over the drainage is good, and tends to retain moisture. A sprinkling of soot and lime reduced to powder, with a dusting of bone meal as the work goes on, makes an ideal foundation. If the ground is prepared as advised, the beds, if of a circular form, are about 6 inches lower in the centre than the ground level, like a saucer; and the centre of the rows the same if grown in that way. I grow half my

**FIG. 4 —RAISING SWEET PEAS FROM SEED IN POTS FOR  
TRANSPLANTING OUTDOORS**

- A, the seed, bold, dark-coloured, sound. B, section of seed A, showing: *a*, *testa* (outer leathery coat); *b*, *endopleura* (inner coat); *c*, *cotyledon* (seed-leaves); *d*, *radicle* (young root); *e*, *plumule* (young stem). (Magnified).
- C, light-coloured seed, perfect. D, the seed C, magnified.
- E, unsound seed; *f*, diseased spot. F, the seed E, magnified.
- G, section of 5-inch pot in which two seeds are sown, the plants to be turned out of pot entire when planting: *g*, drainage; *h*, rougher parts of compost; *i*, soil; *j*, seed; *k*, fine soil; *l*, watering space.
- H, position in greenhouse for placing seed pots: *m*, shelf 1 foot from glass. I, plants in pot H at stage for removing to cold frame for hardening. J, the plants sturdy and healthy.
- K, subsection of 6-inch pot with seed placed about  $\frac{1}{2}$  inch from side, say, ten seeds in each pot, the plants to be divided at planting time; references as for G. L, plants at stage for removing from shelf in greenhouse as H, I, and placing in cold frame to harden off. M, section of cold frame: *n*, pots stood on ashes; *o*, line to height of ashes if used to keep plants near the glass and sturdy; *p*, pots stood on inverted pots, placed in saucers in which a little sulphur is sprinkled.



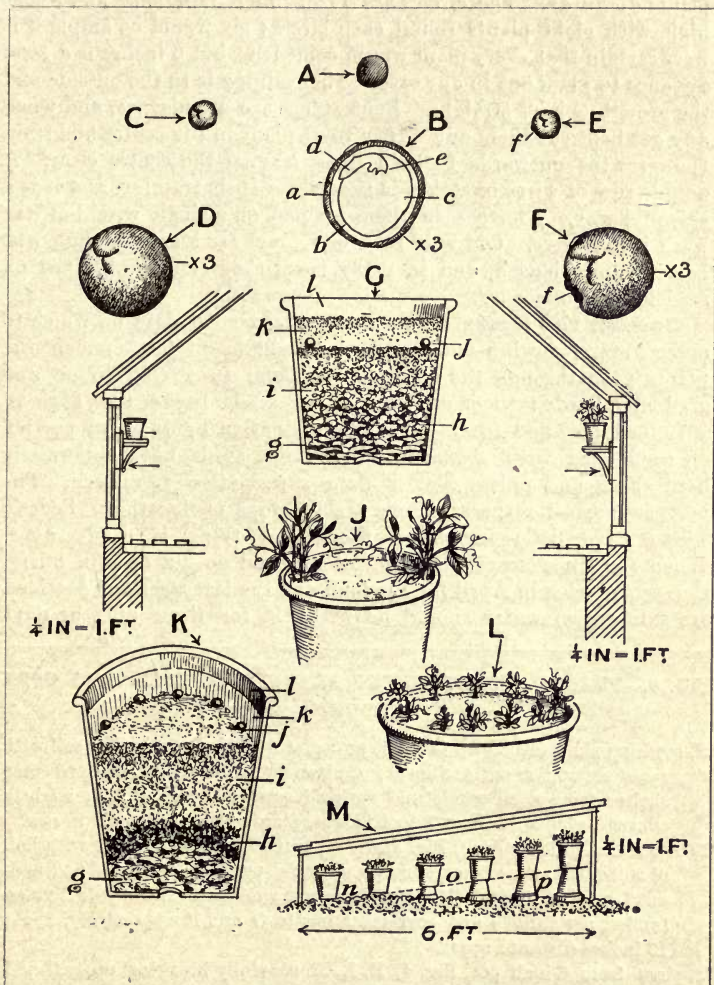


FIG. 4.—RAISING SWEET PEAS, FROM SEED IN POTS FOR TRANSPLANTING OUTDOORS.

plants each way. The circles are 6 feet in circumference and 8 feet high, with eight plants round each circle ; six would be ample if it were certain that every plant would come true, but 9 inches is a good distance to plant out in any case. The training is to the outside and the growth is kept straight. Bent stems are a nuisance, and when any get bent cut them out. If in rows, plant in the centre and train the growths outwards to both sides, leaving the centre clear. A double row of wires or stakes is needed for such training, and it is a splendid way. I have seen them trained on a single wire, but the work is excessive. Old wild raspberry canes are ideal first supports, being a nice length, and in many parts they can be obtained on roadsides or in woods.

**Sowing the Seeds.**—February 1st is a good date on which to make a start—sowing under glass in slight heat. The moment the plants peep through the soil remove them to a cold frame and gradually harden them off. I sow ten seeds round the edge of a 10-inch pot, and to ensure even germination I snip a tiny portion off each seed with a sharp knife. Some seeds have abnormally hard skins, and unless that is done germination is uneven. The best supports for the seedlings are the tops of hawthorn hedges. These have little knobs on them, and tying is easily done. When the time comes for planting out (and do not be in a hurry, the second week in April for England and the last week for Scotland are safe dates) water should be withheld for three or four days

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**FIG. 5.—TRANSPLANTING SWEET PEAS FROM POTS INTO OPEN GROUND**

- N, seedling plant from deep (4-inch) pot: *q*, sturdy plant ; *r*, ball of soil with roots entire ; *s*, surface level ; *t*, birch or hazel twigs to afford some shelter from keen winds and spring frosts, the twigs arching slightly over the plants at about 1 foot height, plants 12 inches apart in row.
- Plants raised in 5-inch pot, Fig. 4, G. O, turned out and planted with ball of soil entire, thus about 4 inches apart ; *u*, position for second “turned-out” pair of plants. P, plant from pot similar to O, the pair divided (called a “split”) and corresponding to O and P respectively, about 12 inches distance apart.
- Q, plant from 6-inch pot, Fig. 4, K, L, M, carefully breaking up ball and separating plants : *v*, roots with some soil ; *w*, depth of planting. R, plants raised in 6-inch pot planted 6 inches apart : *x*, spruce or other evergreen twigs placed at sides of row of Sweet Peas to protect from cold winds and spring frosts.

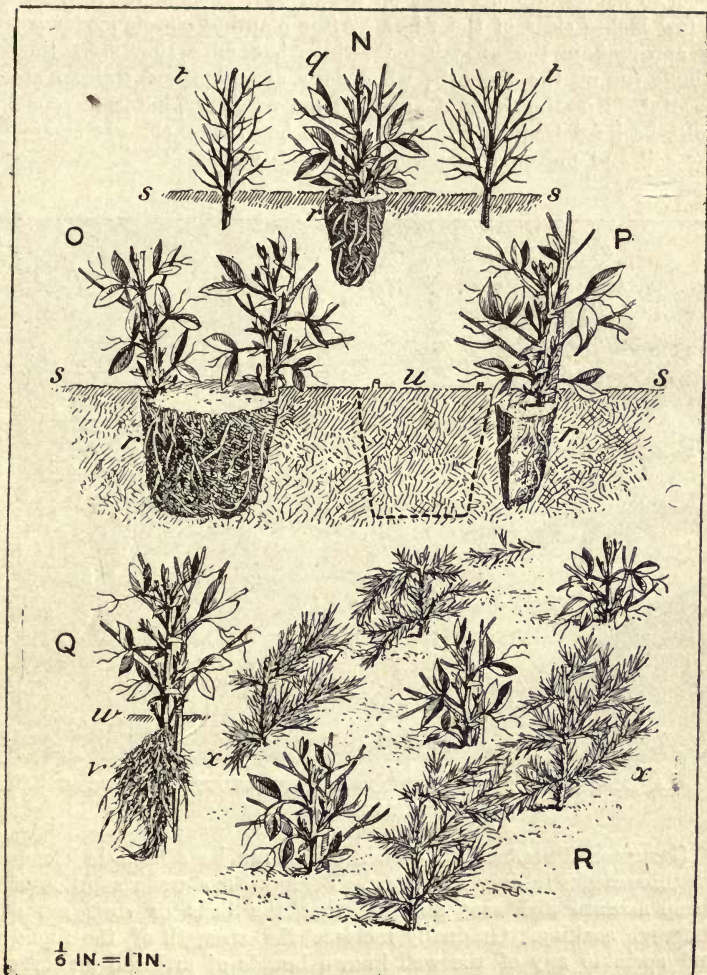
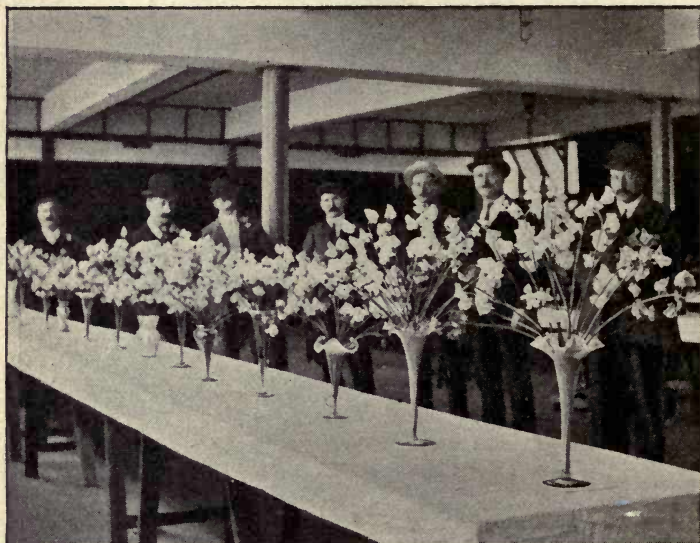


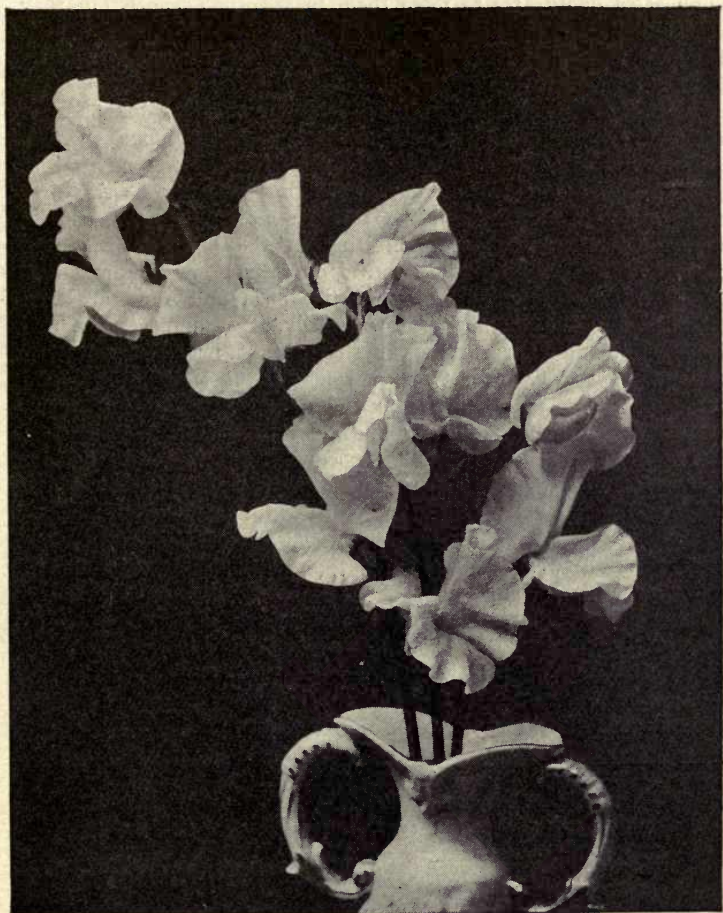
FIG. 5.—TRANSPLANTING SWEET PEAS FROM POTS INTO OPEN GROUND.

prior to the operation. Plant on a dull day, keeping the seedlings a few inches clear of the wires. After planting out no movement is apparent in the growth for awhile, but once they start they simply run up the supports, when daily attention and training are needful. No stimulants of any kind are necessary, but the ground must be hoed frequently. One cannot hoe too much. It aerates the soil and prevents evaporation of moisture.



A DISPLAY BY THE SUGAR WAFER SWEET PEA CLUB  
(READING).

**Summer Treatment.**—When the plants have been in bloom for three weeks feeding may start. Begin with a weak solution of sheep manure and soot, and see that the beds or rows get a thorough soaking. Gradually increase the strength of the liquid and sprinkle any of the well known brands of artificial manures on the surface and work them in. Be careful not to overdo the feeding—err on the safe side. When over-manured the flowers look well enough on the bush, but they carry badly, and will not stand up firm and sure on the exhibition table. If one gets stems



ONE OF THE MOST BEAUTIFUL OF THE MANY PINK SWEET  
PEAS : PRINCESS VICTORIA.

15 to 18 inches long that is all one needs. It is easy by the application of nitrates to force them to abnormal length, but they are of little or no use for exhibition. One must have a well balanced stem, and there is a risk of want of balance when the stem is over 18 inches in length.

**Hints on Exhibiting.**—There is a tremendous lot of work and worry in connection with showing Sweet Peas; but, whether growers intend to send to shows or not, the methods advised to procure flowers of choice quality are worth following out. Arrangement, and that alone, when the exhibits are fairly even, usually wins the prizes, and before exhibiting in the big shows practise the art of setting up. The removal of lateral growths and dis-budding is not adopted here. If the beds and rows are well prepared and the blooms removed daily, it is unnecessary. To those who cannot procure suitable manure, it may be interesting to know that last year I tested a row without it—25 yards long and twenty-two plants. The ground was trenched 3 feet deep, well broken up the whole depth, and by the end of the season I had a dense hedge 13 feet high covered from top to bottom with splendid blooms. The main stems of these plants were as thick as the little finger.

**Cutting and Packing.**—When cutting blooms for an exhibition select the best twenty-five sprays on the spot and place the stems in water for three or four hours. After that take them out, wipe the surplus moisture off the stems, wrap in tissue paper; pack in single rows in boxes so that they are fairly steady when the box is shaken. They carry a long distance after such treatment. Should the weather be very warm the stems may be soft when unpacked; place them at once in cold water, when they will get firm.

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**FIG. 6.—TRANSPLANTING SWEET PEAS BY TROWEL AND DIBBER AT PROPER DISTANCE IN ROWS AND BETWEEN ROWS**

S, plant injured in being turned out of pot: *y*, root sound; *z*, stem broken—no use.

T, planting by trowel: *a*, hole made; *b*, plant inserted and soil taken out replaced with trowel; *c*, plant properly planted. U, planting by dibber *d*, hole made; *e*, plant placed in hole and dibber inserted for closing hole; *f*, plants after planting. V, plants placed in rows 4 feet apart and 6 inches distant in the row: *g*, plant row: *h*, twiggy sticks to protect the young plants.

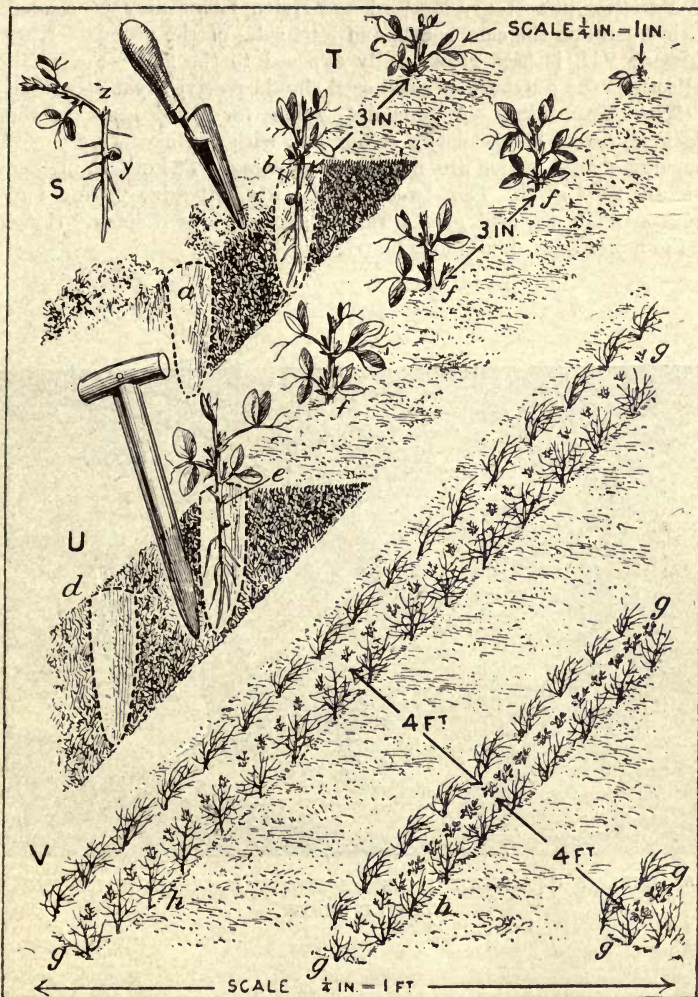


FIG. 6.—TRANSPLANTING SWEET PEAS.

Varieties like Henry Eckford and Helen Lewis may be shaded with muslin on the east, south, and west sides of the groups. King Edward VII. is best grown fully exposed to the sun. For small collections the purchase of good seed should receive great attention.

**The Varieties.**—A splendid guide for fixed sorts is the National Sweet Pea Society's colour list, with the exception of the magenta shades, which are not worth growing. The other nineteen are all very good. The twenty-four sorts left (five having two recommendations) will give a varied and glorious display. Some of the newer ones should also be tried.



A DISPLAY OF SWEET PEAS AT THE FAMOUS SHREWSBURY FLOWER SHOW.



## CHAPTER IV

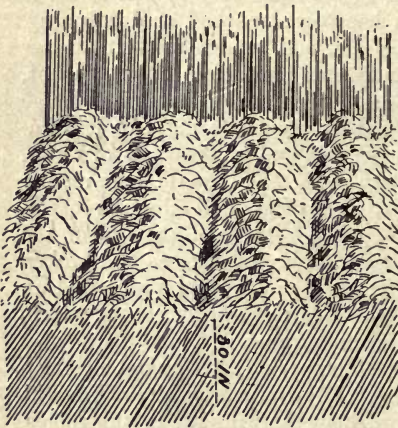
### The Beginner's Guide to Sweet Pea Growing—The Chief Points Concisely Explained and Illustrated

**Preparing the Ground.**—The Sweet Pea is naturally a deep-rooting plant, and can be grown successfully only in soil which is well broken up. Ground which has been trenched or deeply dug, and consists largely of fine particles of soil, retains moisture better than lumpy ground that has been dug on the surface only. In hot, dry weather plants growing in the former have a great advantage over those in the latter, for the hard ground is more or less impervious to moisture in the shape of rain and applications of water, and owing to the force of capillary attraction, it parts more readily with what moisture it may retain. Thus the small fibrous roots of the plant, which are its chief "feeders," die, and the life of the Sweet Pea is shortened. In soil that has been disturbed and broken up to the depth of two or three feet rain and applied water find an easy passage, thus reaching and benefiting those fibrous roots, which, though so small, are of the greatest importance.

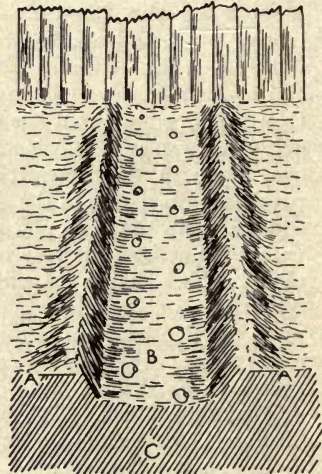
**Autumn Work.**—The work of preparing the ground by deep digging is best done in the autumn. The illustration shows how the ground surface should be left throughout the winter. It is in ridges, and the soil composing those ridges is not broken up at the time the trenching and ridging are done; this work is left to natural elements—to rain and frost—for these will pulverise and sweeten the rough ground far more satisfactorily than the gardener with his spade and fork. To break up the ground really well one must open a wide, deep trench at one end of the plot and wheel the soil to the opposite end. The subsoil is thoroughly broken up, but left below. To be able to grow the finest Sweet Peas one must dig two or three feet deep; if only two feet, then the subsoil below this needs to be loosened with the fork. It is best to carry out the digging so that the ridges of soil lie from north to south, then both sides will come under the drying influence of the sun in spring, when it is necessary to do the levelling and the sowing or planting. The ridges of soil are

made about two feet wide at the base, and at least one foot high. If they are much wider or deeper the frosts will not have such a beneficial effect on the whole as one could wish. It does not matter how rough and lumpy the ridges may appear; the more lumpy the soil is the better will it be pulverised in the end, and also, the deeper will the frosts penetrate.

**The Use of Manures.**—This is a subject often imperfectly understood by beginners and inexperienced amateurs, and this being the case far more harm than good is likely to follow an application,



THE SOIL IS LEFT IN RIDGES  
THROUGHOUT THE WINTER.



SHOWING HOW THE SEEDS  
ARE SOWN IN SPRING.

since too much may cause an irretrievable loss of plants. Safest of all, perhaps, is farmyard manure, and since, so far as Sweet Peas are concerned, this should be dug some eighteen or twenty inches beneath the soil in the autumn when the ground is dug or trenched, any danger that may attach to its too liberal use is discounted by the fact that the seeds or plants are not put into the soil for some months afterwards. One thing the amateur would do well to remember is never to place manure in direct contact with the roots. The latter derive the greatest benefit when the manure is well mixed with the soil. Then the haulm of the plants is strengthened

while they are quite young, and applications of superphosphate, and other artificial manures, will have greater effect upon both growth and blooms.

**Sowing Seeds Out of Doors.**—The soil is thoroughly prepared and broken up, as advised, before the drills are made. These should be drawn out from north to south; especially is this advisable where many rows of Sweet Peas are grown side by side.

In clayey soils the seeds are covered only about  $1\frac{1}{2}$  inches deep, but in light, sandy soil an extra inch of covering soil may be put on. In the sketch on p. 30 A A shows the normal level of the border soil, B the shallow trench, and C the soil which has been manured and broken up to a depth of nearly three feet. As shown in the sketch, the seeds are sown in zigzag manner on the flat bottom of the drill about nine inches apart each way. Now, this would be impossible if the drill were not flat and wide. Very often the drill has a narrow base, with the result that the young seedlings are overcrowded and become weakly. Let every young plant have ample room in which to grow. Sweet Peas that are overcrowded throughout their existence, only actually occupy a space a few inches across; but those with unlimited space in which to grow produce many sturdy side shoots from the base upwards, and each side growth is stronger than the main stem of the overcrowded plant.

**Some Sweet Pea Pests.**—If mice or rats are troublesome roll the seeds in red lead while they are wet, then sow them as advised. To prevent slugs eating the young shoots as they push through the soil a layer of sifted ashes from a coal fire may be put on. "Vaporite," or "Alphol," or "Kilogrub," used according to instructions are also most useful. The sowing may be done any time from February to April, but the middle of February is the best time.

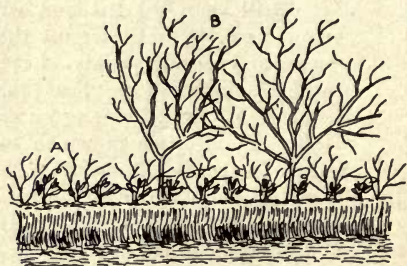
**Planting and Earthing Up.**—When Sweet Peas are raised in pots in the autumn, or early in the year and planted out in the spring, there is always a tendency on the part of the inexperienced to crowd them. For instance, there are probably at least three young roots in each pot, and when they are turned out each clump is generally planted about the same distance apart as is advised in the case of single seeds when sowing these in rows or to form clumps. The plants from pots should be put out quite fifteen inches apart and in a zigzag manner in the shallow drill. But deep planting is advisable; that is to say the lower part of the stems of the plants ought to be covered. After having been put out in this manner, as

illustrated, a little soil should be drawn up to both sides of the row, or to the plants in the clump, as the case may be. This is commonly known as "earthing up," and is an invaluable bit of work. In the sketch A A shows the soil drawn up from B B. Some of this will fall amongst the young plants, and will do good rather than harm. C C shows where the sticks must be driven in, and indicates also that part of the ground which is well manured and broken up to a depth of about three feet.

**Staking the Plants.**—Coarse meshed wire netting is now largely used for supporting Sweet Peas, and most serviceable it is too. But the majority of growers use sticks. These should be put in in good time. When the young plants are only an inch or two high



EARTHING UP THE  
SEEDLINGS.



STAKING, FIRST WITH SMALL  
TWIGS, AFTERWARDS WITH  
TALL HAZEL STICKS.

small twiggy sticks are placed to them, and in the case of seedlings planted out from pots, the necessary sticks are put in directly the planting and earthing-up are completed. The accompanying sketch shows how to put in the sticks. The small branching pieces are first placed to the rows as shown at A, and in a few weeks' time the tall ones B, must be driven in quite eight or ten inches deep. It is a wise plan to fix a few stronger sticks, or rather stakes, in at every nine feet of row; then one can fasten all securely by strands of string or wire on each side. The tops of the tall sticks ought to be about one foot apart, and not meet closely together. Hazel sticks are the best.

**Pinching or Stopping Young Plants.**—Autumn-raised

plants often produce a somewhat weakly main stem; they are especially liable to do so if they have insufficient fresh air while in the greenhouse or frame. But near the base of the stem strong side shoots commence to grow as shown at A A in the sketch below. I have often noticed that these side shoots grow rapidly and soon reach the same height as the central haulm B, but possess greater strength than the latter. Now, if the plant is pinched off immediately above the side shoots as shown at A, the lateral growths B B will make still more satisfactory progress, and branch out freely also. Of course it is not absolutely necessary to pinch off the main or original stem, but I prefer to do so.

**Growing Sweet Peas in Pots.**—The young plants are grown



PINCHING OR STOPPING THE YOUNG PLANTS.

in small pots—those  $3\frac{1}{2}$  inches in diameter—in cool frames until about the middle of January from seeds sown in September. Then they are repotted, in pots ten inches across, and after the roots have taken full possession of the soil it is advisable to feed liberally with diluted manures. Use clean pots, and thoroughly drain them, but place the crocks in carefully so as not to take up too much space and thus unduly limit that required for soil. The soil mixture should consist chiefly of good fibrous loam, to which leaf soil and some well rotted manure are added in the proportion of one-third. Near the bottom of each pot mix a little old mortar rubbish with the soil as the latter is being put in, and three ounces of superphosphate of lime with every bushel of the soil.

The accompanying drawing shows how potting should be done. A, ball of soil and roots of young plants ; B, the new soil mixture ; C, a whole turf placed under the pot when the Sweet Pea plants are well rooted, so that the roots may enter the turf. Space also should be left for watering and top-dressing material. Make the soil moderately firm when the potting is done, and use the mixture when



GROWING SWEET PEAS IN POTS.

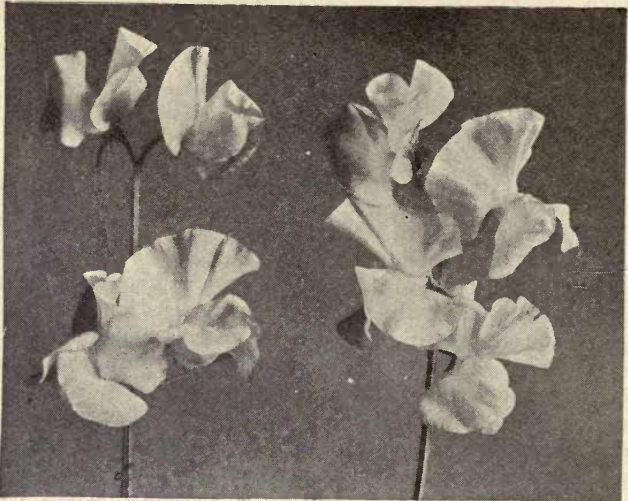
moderately moist. It must not be at all wet. The plants are kept close to the glass, and are given all the fresh air possible. They will not thrive in a warm temperature. A light and airy greenhouse with a maximum night temperature of 50° is suitable. They may be grown on a central stage or even on the floor of the house. But after the turves are placed under the pots the latter should not be removed. Train the haulm to strands of string, and feed liberally in due course ; but always give weak doses and only after a watering with clear water.

## CHAPTER V

### Sweet Peas for House and Table Decoration

PERHAPS the secret of the wonderful popularity of the Sweet Pea lies in its value as a flower for the decoration of the home. Certainly it is unsurpassed in many respects. I know of none more graceful and more easily disposed; and how varied and very charming are the shades of colour among the now innumerable varieties. There are few really strong colours among Sweet Peas, the majority are in soft shades that seem to be most admirably adapted for home decoration. The Sweet Pea is only unsatisfactory from a decorative point of view when, owing to bad cultivation, the stalks are short. Then it loses most of its grace and charm, and, so far as its effect when arranged in vases is concerned, is quite a different flower. But as short stems come only on poorly grown plants the home grower surely should find an incentive in this to grow his Sweet Peas well, for the finer they are, the greater pleasure and satisfaction will they give when cut.

**Gathering the Blooms.**—One apparently trivial matter, yet quite well deserving of consideration in connection with the arrangement of Sweet Peas in the home is the time and manner of gathering the blooms. Now the wrong time to gather them is when the sun is shining brightly, say, any time between ten and four; thus it is obvious that the time between four p.m. and ten a.m. is the best. The earlier in the day Sweet Peas are gathered the better. If they are not picked before ten in the morning, then they should be left until the evening. Everyone must have noticed how very quickly Sweet Peas which are picked during the hottest part of the day fade and wither. There are various ways of gathering Sweet Peas, and more often than not amateurs practise one of the wrong ways, either breaking off the stalks, or else cutting them with scissors or a knife. The best way is to pull out the stem from the socket, that is, from the junction of the stem and growth. By steadying the plant with the left hand just below the point of junction, a slight pull at the stem with the right hand will bring



A DIFFERENCE IN FLOWER ARRANGEMENT: BAD ON THE LEFT, GOOD ON THE RIGHT.

it out. When the flowers are gathered in this way they are likely to last longer than when bruised by cutting or breaking.

**Colour Association.**—In the arrangement of the blossoms the association of colour is all important; it is possible without much trouble to produce some delightful effects. As a rule I think one colour, or perhaps two colours, in the same vase give the most pleasing results, the latter more often than the former. Such a bright mauve as the variety Mrs. W. Wright, for instance, looks very well in a vase alone, but I think the crimson King Edward alone is less attractive than when associated with, say, the white Dorothy Eckford. Whether the addition of a flower of a blue shade is an improvement is, I think, open to much doubt. The variety Helen Pierce, mottled with blue on a white ground, is one that makes a particularly handsome vaseful by itself; and the bicolors—those in which there are two distinct shades of colour, *e.g.* Jeannie Gordon, Triumph, and others—are usually best alone. It is with the more delicate shades that one can obtain some beautiful colour associations. For instance, the apricot-coloured Henry



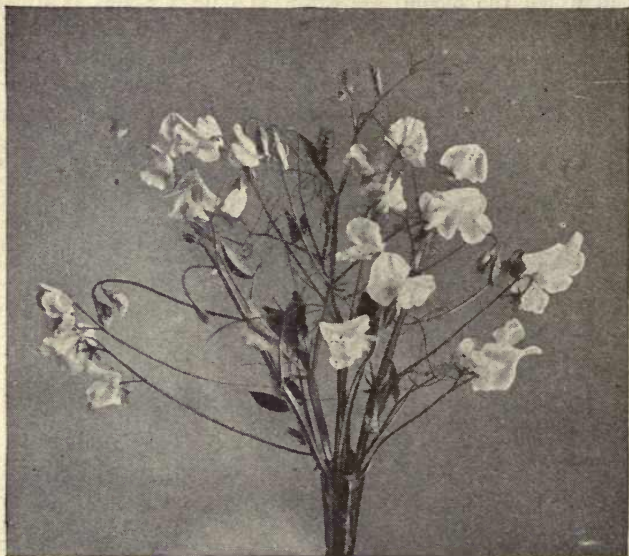
Eckford, with one of the lavenders or mauves is very delightful. Black Knight (maroon) with the Hon. Mrs. Kenyon, or Clara Curtis (primrose) is also very pretty. But a little consideration, and perhaps a little practice, will soon convince one that there are many other charming associations to be worked out in arranging Sweet Peas.

**Different Kinds of Flowers.**—There is a great difference in the way in which the blooms are arranged on the stems in different varieties, as those who have grown Sweet Peas must have noticed. To my mind the perfect disposition is when the blooms are clustered fairly closely together, sufficiently close to hide the stem—an example of which is seen in the right-hand spray of the illustration



SWEET PEA MRS. ALFRED WATKINS (PINK): THE CURVING STEMS MAKE THIS VARIETY VALUABLE FOR HOME DECORATION.

on page 36. A totally different arrangement is shown on the left-hand side of the picture. This, I think, altogether lacks the charm of the other. Although some varieties show a tendency to produce blossoms dispersed on the stem in this way, it is often due to rich feeding at the root, which has the effect of elongating the stem to an extent that is to be deprecated. Now, in the arrangement of Sweet Peas in



THE TOPS OF SWEET PEA PLANTS—FLOWERS AND FOLIAGE ON THE SAME STEM.

a vase, this kind of flower is apt to produce a disappointing effect. It is true that it is not to be despised in setting up a vase of blooms at an exhibition, but for filling the vase for the table or hall I much prefer the more natural arrangement.

**The Art of Arrangement.**—The art of setting up Sweet Peas, or in fact any kind of flower, lies in disposing them lightly. To crowd blooms in a vase is quite to spoil their natural grace and beauty. Some of the most successful vases of Carnations I have seen were arranged by the decorator first bunching the flowers



AN EPERGNE OF SWEET PEAS.

loosely in the hand, blooms downwards, then turning them up quickly and placing them in the vase. A slight readjustment of some blooms was all that was found necessary. I do not go so far as to say that this is the best way of setting up Sweet Peas, or even Carnations, in a vase, but I mention it just to show that the simpler the arrangement the more likely is it to be satisfactory. The art of arranging flowers naturally is one that comes only after much practice, and there is not much that one can teach by writing on the subject, beyond the fact that above all things the flowers must not be crowded in the vase, and that the more rearrangement there is the less likely is the result to be pleasing. In this matter, at all events, it is the first work that is invariably the best. Directly you begin to take out a stem here and put it in there you make the arrangement worse than it was, unless you are quite expert. The art of setting up flowers has been much simplified by various appliances whose object is to keep the blooms exactly where they are placed.

**Floral Aids.**—Perhaps the most popular is the metal stand that is put in a bowl, or the piece of zinc with holes in it that fits in the neck of a vase. It is a comparatively simple matter to produce a pleasing arrangement with the help of these appliances. Perhaps the danger to be feared is that of disposing the flowers too stiffly. It needs a fine skill to produce an attractive vaseful of Sweet Peas when one has simply the open neck of the vase in which to fix the stems. Even then, by carefully disposing the blooms so that one stalk is supported by another, after a little practice progress is made quickly. There is no doubt that when one is able to arrange flowers skilfully, more natural effects are obtained than when recourse is had to the use of artificial aids. Still, the latter are most useful, and to those who are not expert in the art of flower arranging I can confidently recommend them. The chief thing to remember is that the more lightly and, in reason, loosely disposed the Sweet Peas are the more delightful will they appear.

**Flowers and Foliage.**—Then there is the question of what to arrange with Sweet Peas or whether to use the flowers alone. It is an axiom of flower arrangement that no foliage is so well suited as that of the plant itself, but I think so far as the Sweet Pea is concerned, one may venture to modify this slightly. Only so far as to say that if Sweet Pea foliage is used it must be on the same growth as that carrying the blossoms, or, in other words, the tops of the shoots—flowers, buds and leaves together, must be cut off (see illustration, page 38). If pieces of the haulm, or growth, are

inserted amongst the flowers the result is seldom satisfactory, and the vase has a heavy, unnatural appearance. When flowers and leaves are on the same shoot the result is quite different. Of foreign material to arrange with Sweet Peas there is nothing better, or, I think, nothing so good, as sprays of Gypsophila, which bears an elegant mass of small flowers on slender, branching shoots. These associate admirably with Sweet Pea flowers and are very generally employed. One variety might be mentioned as especially suitable for table decoration, although it is perhaps invidious to make the distinction since there are now so many very beautiful sorts, numbers of which are especially well adapted for home decoration; it is the variety Mrs. Alfred Watkins, a lovely pink Sweet Pea, shown in the illustration on page 37. One peculiar characteristic of this sort is that it has gracefully curving stems which seem to lend themselves particularly well to use in vases. This peculiarity may be readily noticed in the photograph.

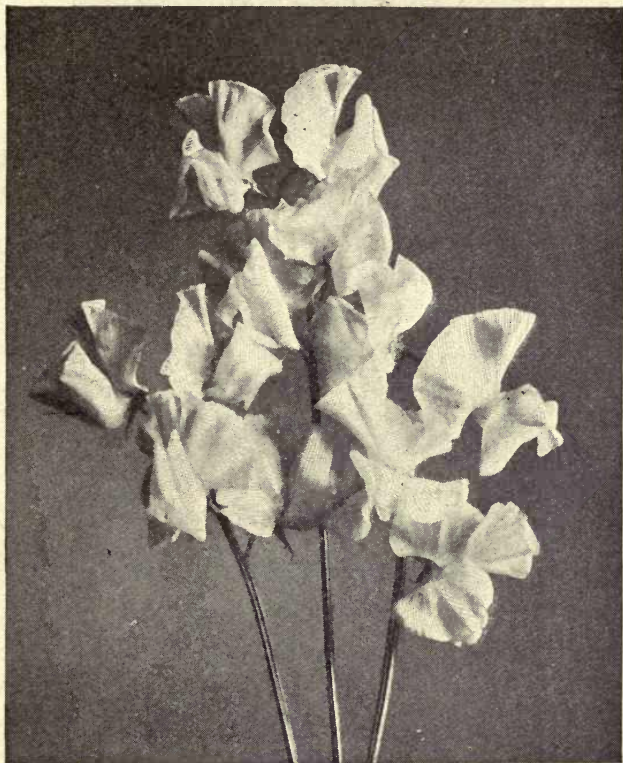
## CHAPTER VI

### A Chat About Varieties

It is no light task to write a chapter on varieties of Sweet Peas in the year 1909: not only are they innumerable, but some are scarcely distinct from others, although different names distinguish them. There are waved forms, forms with plain standards, and intermediates which are neither the one nor the other. In fact, so numerous are the aspects of the subject of Sweet Pea varieties that not only a chapter, but a whole book might be written about them. Most of the new varieties which are put on the market in large numbers every year are of the waved standard form, and it seems to be indisputable that this is to be the Sweet Pea of the future, and that those who practise cross-fertilisation are working on these lines. Still, it would be a thousand pities if we were to lose sight of the plain standard forms, and not for a moment do I think such a thing probable, for not only are there many very beautiful varieties among them, but they possess certain advantages to which the waved varieties are strangers. For example, as a rule their petals are thicker, of greater substance than the latter; they last longer when cut, and are less likely to lose their colour in strong sunshine, especially when this follows a spell of dull, wet weather, than the Sweet Peas with waved standards, for many of these are of delicate texture—perfectly beautiful, it is true, yet scarcely so well adapted to the wear and tear of ordinary garden conditions as the older forms.

**Waved Varieties.**—Having said this much in favour of the plain standard varieties, I admit, and I think everyone who has grown Sweet Peas must admit, that the waved varieties are far more attractive and of greater beauty than the others. There is something very fascinating about the exquisitely waved margin to some of the new sorts, and their shades of colouring are more tender, more delicately beautiful than the stronger tints of the older sorts. While we are getting away from crude colouring in the new Sweet Peas, and are introducing some exquisitely tender shades, is there not a want

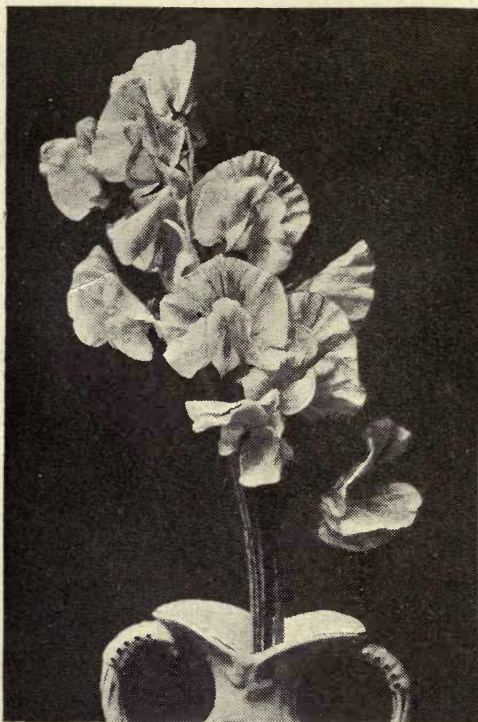
of strong colours among them? It is difficult to say whether some of the newer Sweet Peas are correctly described as "waved" or not. Different experts hold different opinions. Take, for instance, the lavender-coloured sort Frank Dolby; this came out as a "waved"



SWEET PEA BOBBY K. (APPLE BLOSSOM COLOUR).

standard sort, yet there is a great difference in the waviness of this variety and, say, Mrs. Ireland, one of the novelties for 1909. And, as far as I can see, it is impossible to fix any definite standard by which it shall be determined whether a variety is waved or not, since there are several degrees of this characteristic. Another

point that is now forcing itself upon the consideration of experts is this: "Is not the 'waviness' too pronounced in some of the latest sorts?" If this characteristic becomes developed to an abnormal



SWEET PEA PRINCE OLAF (MARKED WITH  
BLUE ON WHITE GROUND).

extent the last state of the "waved" Sweet Pea will be worse than the first.

One of the many services which the National Sweet Pea Society has rendered, both to exhibitors of the flower and to those who grow for ordinary garden decoration only, is the publication of a list of too-much-alike varieties. This is quite indispensable to all Sweet Pea



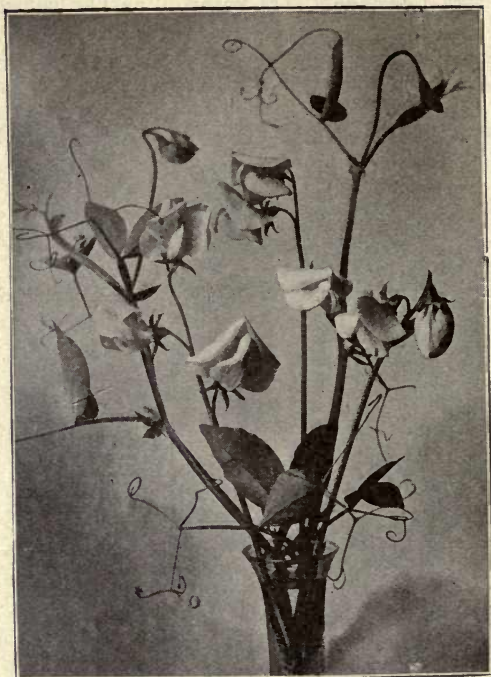
growers, so that I include it here, with full acknowledgment to the authors.

**Too-Much-Alike Varieties.**—The National Sweet Pea Society brackets the following varieties as too much alike. “Not more than one of the bracketed varieties shall be shown on the same stand at any exhibition of the National Sweet Pea Society.” Priority is given to the first name.

{ Etta Dyke	{ Flora Norton
{ White Spencer	{ Miss Philbrick
{ Queen Alexandra	{ Modesty
{ Scarlet Gem	{ Duchess of Sutherland
{ Her Majesty	{ Sensation
{ Splendour	{ Countess of Aberdeen
{ Duke of Sutherland	{ John Ingman
{ Monarch	{ George Herbert
{ Lottie Eckford	{ E. J. Castle
{ Maid of Honour	{ Rosy Morn
{ Ivy Miller	{ Rosie Sydenham
{ Black Knight	{ Mrs. W. King
{ Stanley	{ Phyllis Unwin
{ Boreatton	{ Countess Spencer
{ Lord Rosebery	{ Paradise
{ Cyril Breadmore	{ Enchantress
{ Mrs. Collier	{ Olive Bolton
{ Mrs. Felton	{ Codsall Rose
{ Dora Cowper	{ Gorgeous
{ Ceres	{ Miss B. Whiley
{ Yellow Dorothy Eckford	{ Mildred Ward
{ Captain of the Blues	{ Countess of Lathom
{ Bolton's Blue	{ Coral Gem
{ Lady Grisel Hamilton	{ *Princess Victoria
{ Countess of Radnor	{ Pink Gem
{ New Countess	
{ Princess May	

**The Best Sweet Peas for Exhibition.**—The editor of *The Gardener* recently organised a competition amongst readers of the paper with the object of ascertaining which were the best varieties for exhibition. The following list gives the names in order of merit,

\* Dobbie's Princess Victoria is meant, not the old variety of the name, which is cerise with carmine standard.



SWEET PEA JEANNIE GORDON (A CHARMING  
BICOLOR VARIETY).

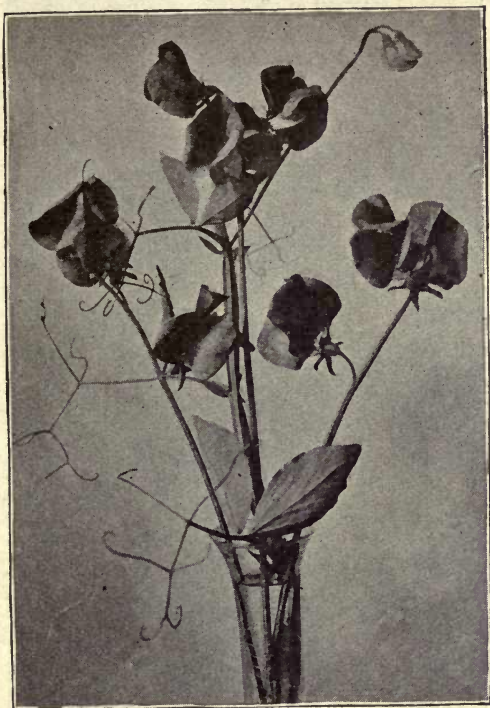
their position being determined by the number of votes they received.

{ Helen Lewis  
 { Helen Pierce  
 John Ingman  
 Black Knight  
 { King Edward VII.  
 { Queen Alexandra  
 Mrs. Hardcastle Sykes  
 { Countess Spencer  
 { Frank Dolby  
 Mrs. Collier  
 Dorothy Eckford  
 Henry Eckford

{ Lord Nelson  
 { Mrs. W. Wright  
 { Jeannie Gordon  
 Nora Unwin  
 Lady G. Hamilton  
 Saint George  
 Romolo Piazzani  
 Sybil Eckford  
 The Marquis  
 Miss Willmott  
 Dainty  
 Duke of Westminster

Others following in close succession were Gladys Unwin, Etta Dyke, Coccinea, Phenomenal, A. J. Cook, Queen of Spain, Jessie Cuthbertson, Evelyn Hemus, Audrey Crier, and America.

The following list is that sent in by the winning competitor ; the varieties are in order of merit. It will be noticed that while



SWEET PEA MISS WILLMOTT (ROSY ORANGE).

it approximates fairly closely to the list above a few other sorts are mentioned.

Helen Lewis  
Countess Spencer  
John Ingman  
Dorothy Eckford

Helen Pierce  
King Edward VII.  
Mrs. Hardcastle Sykes  
Mrs. Collier



A BEAUTIFUL PICOTEE-EDGED SWEET PEA :  
ELSIE HERBERT.

Black Knight  
 Jeannie Gordon  
 Frank Dolby  
 Queen Alexandra  
 Henry Eckford  
 Lady Grisel Hamilton  
 Dora Breadmore  
 Lord Nelson

Mrs. Walter Wright  
 Bolton's Pink  
 Dainty  
 Romolo Piazzani  
 Nora Unwin  
 Duke of Westminster  
 Janet Scott  
 Sybil Eckford

**The Best of the Varieties Sent Out in 1908.**—Another interesting list the compilation of which was effected in the same way—from votes sent in by readers of *The Gardener*—is the following, which may be taken to represent the best of the varieties put on the market in the spring of 1908. It will be noticed that owing to the restricted number of varieties several have received a similar number of votes.

{ Evelyn Hemus  
 { Mrs. Henry Bell

{ Etta Dyke  
 { St. George  
 { The Marquis

{ Constance Oliver  
 { Prince of Asturias  
 { Elsie Herbert

{ Audrey Crier  
 { Rosie Adams  
 { Princess Victoria

Sutton's Queen

{ Bobby K.  
 { Marjorie Willis  
 { Clara Curtis

{ Paradise Ivory  
 { Prince Olaf

{ Cream Spencer  
 { James Grieve

{ Paradise Carmine  
 { Chrissie Unwin  
 { Mrs. Breadmore  
 { Hannah Dale  
 { Menie Christie

{ Silas Cole  
 { White Spencer  
 { Lord Nelson  
 { May Perret  
 { Nancy Perkin  
 { Red Flake Paradise  
 { Lorna Doone  
 { Miss Drayson

The following list will be found of service to those, who, in a small way, grow Sweet Peas for exhibition. It was compiled by a reader of *The Gardener*, who comments on it thus :

“ My experience may be of interest and value to amateurs whose garden space, like mine, is limited. I grew too many varieties, and consequently, when our local show came round, although having fine blooms, I was unable to stage the regulation number of each variety to enable me to compete. I send herewith a list of the varieties, bracketing those which I consider similar in colour (not too much alike, for if I had room I would grow them all, and many others, they are so beautiful). The first in each section proved most successful with me. From eighty plants placed one foot apart I cut

over 2,000 bloom spikes per week for several weeks during July and August.

Dorothy Eckford	}	Effect, white
Nora Unwin		
White Spencer		
Phenomenal		
Mrs. Hardcastle Sykes	}	Effect, pink
Countess Spencer		
Agnes Eckford		
John Ingman	}	Effect, rosy orange
Helen Lewis		
St. George		
Prince Olaf	}	Effect, blue
Helen Pierce		
Zoë		
Frank Dolby	}	Effect, lavender
Lady Grisel Hamilton		
Mrs. Collier	}	Effect, pale primrose
Primrose Spencer		
King Edward VII.	}	Effect, bright crimson
Queen Alexandra		

“Black Knight, maroon; Lord Nelson, dark blue, and The Marquis, rich mauve, are quite distinct.”

**The Best Sweet Peas of each Colour.**—The floral committee of the National Sweet Pea Society recommends the following varieties as the best in their colours :

*White.*—Dorothy Eckford, Etta Dyke, and Nora Unwin.

*Crimson and Scarlet.*—King Edward and Queen Alexandra.

*Rose and Carmine.*—John Ingman.

*Yellow and Buff.*—James Grieve and Paradise Ivory.

*Blue.*—Lord Nelson and A. J. Cook.

*Blush.*—Mrs. Hardcastle Sykes.

*Cerise.*—Chrissie Unwin.

*Pink.*—Countess Spencer and Constance Oliver.

*Orange Shades.*—Helen Lewis and St. George.

*Lavender.*—Lady Grisel Hamilton and Frank Dolby.

*Violet and Purple.*—Rosie Adams.

*Magenta.*—Menie Christie.

*Picotée edged.*—Evelyn Hemus.

*Fancy.*—Sybil Eckford.

*Mauve.*—Mrs. Walter Wright and The Marquis.

*Maroon and Bronze.*—Black Knight and Hannah Dale.

*Striped and Flaked (Red and Rose).*—Jessie Cuthbertson and Paradise

Red Flaked.

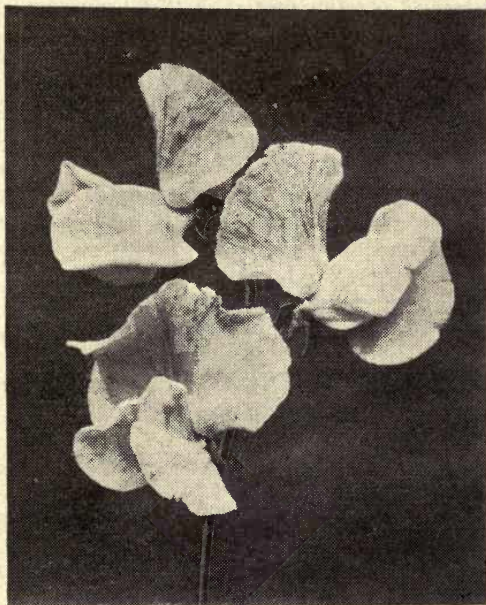
*Striped and Flaked (Purple and Blue).*—Prince Olaf.

*Bicolor.*—Jeannie Gordon.

*Marbled.*—Helen Pierce.

**The Newest Varieties.**—The five varieties described below were those honoured by the National Sweet Pea Society, after a trial, with many others in University College Gardens, Reading, in 1908.

*George Stark* (Stark and Son, Great Ryburgh, Norfolk).—This beautiful variety was unanimously chosen as a worthy recipient of the silver medal offered by the National Sweet Pea Society as the



THE CHARMING NEW SWEET PEA MRS. A.  
IRELAND (SOFT ROSE AND BLUSH).

best novelty of the year. It might be described in brief as a Spencer Queen Alexandra. This conveys that it is a scarlet with a waved standard. It is a large flower of vivid colour, the blossoms being borne in threes on a stout stem. The substance in the bloom encourages the belief that it will stand sunshine. (*Silver medal and first class certificate.*)

*Mrs. A. Ireland* (Dobbie and Co., Rothesay, N.B.).—A brief

description of this would be "A Spencer Jeannie Gordon." But it is a larger, bolder, and more substantial flower than Jeannie Gordon; indeed, it is one of the most massive and imposing varieties yet introduced. The flowers are of huge size, and full of substance. The remarkably broad, deep standard is a prominent feature. The waving is not considerable, but is clearly marked. The standard is a beautiful soft rose, the wings pale blush, or they might be described as cream overlaid with delicate rose. The flowers come in threes and fours. (*First class certificate.*)

*Mrs. Henry Bell* (R. Bolton, Warton, Carnforth).—The colouring of Sutton's Queen will give an idea of the hues of this lovely variety. It is cream, broadly bordered with pink. The rosy border descends deeply into the heart of the standard. The flower is well waved, and is disposed in a bold and striking manner on the stem. Threes are plentiful. There is abundance of substance in the bloom. The variety is exquisite in both form and marking, and cannot fail to become highly popular. (*First class certificate.*)

*Constance Oliver* (W. Lumley, Dawn Nurseries, Denvilles, Havant, Hants).—A charming variety, deep pink in colour, with creamy centre, and beautifully waved. The flowers are large and substantial, and are borne in threes and fours. The colour is a favourite one with the public, and the variety is likely to become very popular alike for market, exhibition, and garden culture. (*Award of merit.*)

*Paradise Ivory* (Miss Evelyn Hemus, Holdfast Hall, Upton-on-Severn). A variety of the all-conquering Spencer type, that is, with large, substantial, waved flowers. The colour is quite distinct from that of the so-called yellows, and is well indicated by the name. The flowers are borne in threes and fours. It is a most pleasing variety, and is sure of a wide constituency of growers. (*Award of merit.*)



## CHAPTER VII

### Raising New Sweet Peas

**Cross - Fertilisation.**—The cross-fertilisation of Sweet Peas, or, in fact, of any flower, with a view to raising new varieties, has a special charm, a charm that is largely due to the fact that one never knows what may “turn up.” Ninety-nine per cent. of the seedling flowers may be worthless, most probably they will be, but the remaining one per cent. may be worth perpetuating, and may prove of monetary value to the raiser. I have raised many cross-bred Sweet Peas, but, so far, I have not tasted the sweets which have been the lot of more fortunate raisers. Now that so many are cross-breeding Sweet Peas (and it seems as though almost everyone who grows them is trying his hand!) it frequently happens that the same variety comes to light in several gardens, and the grower who is able to fix the variety first is he who may rightly claim the honour of its introduction and whatever cash goes with it. It has been my lot to raise several new varieties of Sweet Peas, which, to me, were very beautiful and quite new, but, alas! on visits to the National Sweet Pea Show, or some other equally familiar, I have been non-plussed and disappointed at seeing, what was to all intents and purposes, the same new Sweet Pea of which I believed myself to be the sole possessor! Still I, no doubt in common with many others, am plodding on in the hope that one day something good will turn up—something peculiar to my own garden.

**An Unstable Flower.**—It is the experience of most workers among the Sweet Pea that it is the most unstable of flowers. Mr. Robert Sydenham, who has a wide experience of the raising and distributing of new varieties, says that the waved varieties are not to be depended upon to come true, and, after a season or two of correct blossoming will break away and throw many “rogues” for no apparent reason. The waved varieties are more difficult to fix than the plain standard sorts. Many of the latter are absolutely fixed, and when stocks are obtained from reliable growers it is rare indeed to find “rogues” among them. Who will dare prophesy

when the waved varieties will cease to disappoint, since the first waved variety known, Countess Spencer, itself still exhibits a tendency to sportiveness? There is no doubt that much may be done to ensure true stocks by careful selection and seed saving, and rigorous elimination of "rogues," and lastly, but by no means least of all, by holding the stocks, and growing them on until the grower is satisfied that he has them true. The influence of soil, or situation, or climate, or all three combined, has a marked effect on Sweet Peas. Varieties which have proved true when grown at home by the raisers have sported in the most extraordinary fashion when grown in University College Gardens, Reading, in the trials of the Sweet Pea Society.

**Self-Fertilisation.**—There is no reason why anyone who grows Sweet Peas should not attempt to raise new varieties by cross-fertilisation if he wishes to do so, and thinks it worth while. That is to say, there is no reason so far as the actual carrying out of the work is concerned, for it is perfectly simple, and to a certain extent a purely mechanical operation. All that I can attempt to do here is to explain to the reader how the actual cross-fertilisation is effected. It is for him to make a study of the matter if he wishes to achieve the best results. Mr. Biffen, of Cambridge University, who carries out cross-fertilisation and selection on Mendelian principles, is credited with the statement that any variety, even waved sorts, may be fixed absolutely. So far as my experience and observation go, the fertilisation of the Sweet Pea is effected while the flower is still in the bud stage. One has often been told that bees have been noticed busily at work among the flowers, carrying pollen from one to the other, and this has been taken by many amateurs as conclusive evidence that cross-fertilisation is effected by bees. But such observers fail to take into consideration the fact that the bee can only get the pollen when the flower has passed the bud stage, and experience goes to show that self-fertilisation has then taken place.

There is, however, one point that I have never seen touched upon and that seems to leave a loophole for some slight doubt as to whether the action of the bee at so late a stage *must* be void. It has been proved (not with Sweet Peas, but with other flowers) that when cross-fertilisation has taken place a short time after self-pollination, a cross-bred progeny has resulted, owing to the action of the foreign pollen being stronger than that of the flower's own pollen. But I should imagine in the case of the Sweet Pea *self-fertilisation*

would actually have taken place before foreign pollen could possibly be introduced by insect agency, since at any rate several days elapse between the period of self-fertilisation and the opening of the bloom sufficiently to admit of the stigma being reached by the bees. It is generally admitted that a small beetle which is fond of Sweet Pea blooms can have no part in effecting cross-fertilisation. In fact, I, in common with the great majority of Sweet Pea growers, feel convinced that cross-fertilisation of the Sweet Pea is possible only by artificial means.

**Cross-Fertilisation Explained.**—It will be gathered from these remarks that when one wishes to impregnate the stigma of one Sweet Pea with pollen from some other distinct variety with a view to effecting a cross, the anthers must be removed from the seed-bearing parent early. In fact it is necessary to do this just as the petals begin to show colour. One first removes the petals (although when one has become expert in the work this is not found necessary) with a small pair of scissors with long pointed blades. It is then easy to get at the stamens and cut off the anthers which bear the pollen. It is most necessary to make sure that the pollen is not already shed, otherwise the labour will be vain. By stripping off the petals from the flower to be used as the male or pollen parent the anthers are exposed, and all one has to do is to transfer the pollen to the stigma of the flower which is to act as the seed-bearer. That is an explanation of the operation. The proper moment when the stigma is ready to receive the pollen can only be ascertained by experience, and the state of the pollen is also important. It should be used when of a bright yellow colour, invariably to be found in young though properly opened blooms. When it has lost its yellow colour and becomes greyish or white it is useless. In order to make sure that no foreign pollen is introduced by insect agency after cross-pollination has been effected each of the flowers so treated is enclosed in a small muslin bag.

To those who are altogether new to the practice of raising cross-bred Sweet Peas, the first year's crop of bloom from the seeds of the cross-fertilised flowers will be disappointing, for it usually consists of blossoms of uniform colouring, ugly purple, or maroon or mauve. The colour varies in different crosses, but in my experience seed from the same cross produces flowers of similar colouring. But seed saved from these blooms of disappointing colours gives in the following year a variety of flowers, possibly one or two good and many bad. It is then that one must determine whether or not

any one variety is worth saving. The accompanying illustrations and explanations should serve to elucidate any points not already made clear.

**A Simple Exposition of the Mendelian Theory in Cross-Breeding.**—In view of the widespread interest taken in Mendel's theory relative to the cross-breeding of plants, a few elementary observations may be welcomed by raisers, or would-be raisers, of new Sweet Peas. To follow out Mendel's laws to any extent is an exceedingly intricate study, for it leads to a multiplicity of confusing equations that are calculated to repel rather than to assist the student.

**Mendel and His Experiments.**—Before considering the application of Mendel's laws it may not be out of place to take a passing view of Mendel himself. George Johann Mendel was a priest in an Augustinian foundation at Alt-Brünn. In 1851 he moved to Vienna and spent four years there studying physics and natural science. From the report of the Royal Horticultural

#### FIG. 7.—CROSS-FERTILISATION OF THE SWEET PEA

- Z, external parts of flower or parts of corolla: *h*, *vevillum* or standard; *i*, *alæ*, or wings; *j*, *carina*, or keel. A, other parts of blossom: *k*, *calyx*, composed of leaves called *sepals*; *l*, *stamens*, ten in number, nine of them being joined into a tube by their *filaments* or stalks, the remaining one is free; *m*, *pistil*, consisting of a solitary *carpel*, which even at this early stage is seen to be a young pod, inside which are the *ovules*, destined to become *seeds*; *n*, anthers of stamens by which pollen or fertilising "*dust*" is carried; *o*, stigma of pistil or receptive organ.
- B, flowering stem: *p*, flower at stage when usually self-fertilisation has been effected; *q*, blossom at stage when emasculation (removal of anthers of stamens), must be effected, the wings being held open by Chrysanthemum flower-dressing tweezers, and the keel depressed by a needle; the anthers are removed from the flower before pollen cases burst; *r*, wings; *s*, keel.
- C, flower before emasculation (shown in section for clearness): *t*, sepals; *u*, standard; *v*, wing; *w*, keel; *x*, carpel or pod; *y*, stamens from which anthers are to be cut off.
- D, emasculated flower (in section): *z*, feathered stigma to which pollen of desired variety is to be applied liberally by means of a camel-hair brush.
- E, result of effective pollination and fertilisation: *a*, pod open; *b*, seeds.

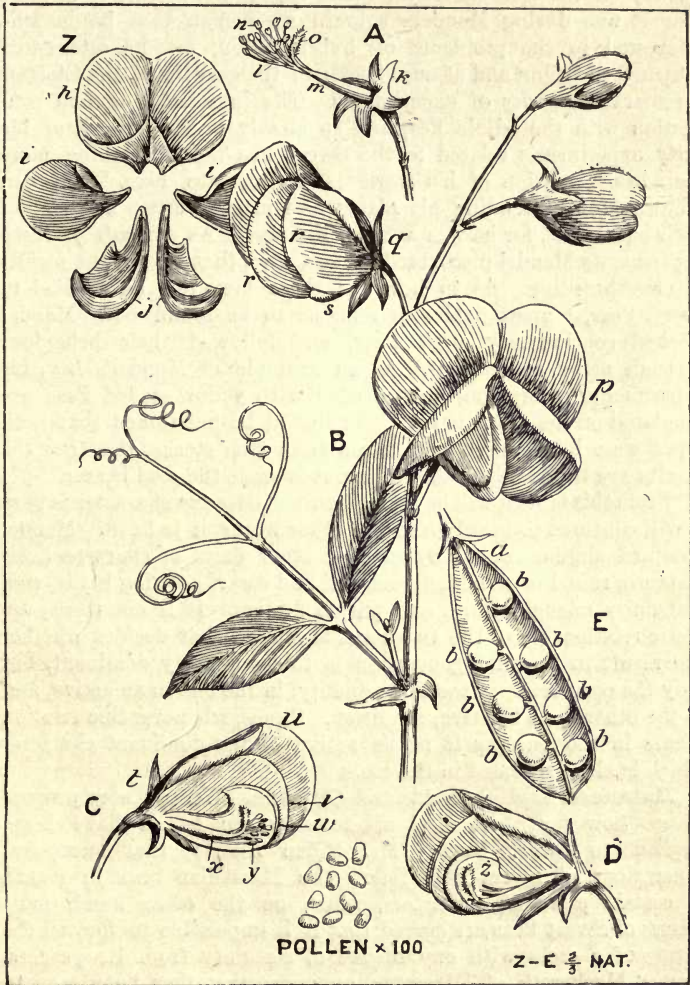
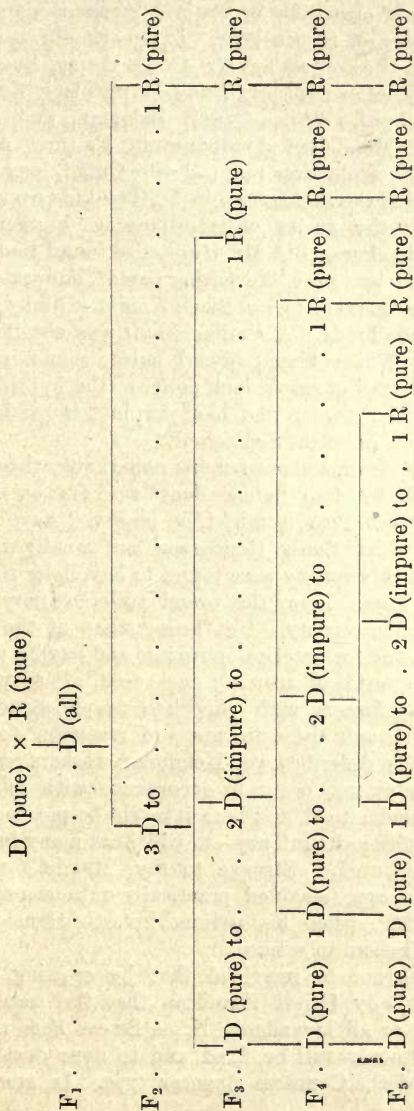


FIG. 7.—CROSS-FERTILISATION OF THE SWEET PEA.

Society on the Conference on Plant Breeding in 1906, it appears that it was during Mendel's sojourn at Vienna that he became interested in the problems of hybridisation, for he afterwards returned to Brünn and at once began in the gardens of the Cloister a remarkable series of experiments. The first series was in connection with the edible Pea, and so closely is the subject of his early experiments related to the Sweet Pea that something more than brief mention of his work is appropriate here. We can picture Mendel tending his plants and making exact notes upon their characters, for he was a keen observer. As a result of these experiments Mendel discovered certain laws that govern the results of cross-breeding. As to how far these laws can be applied to Sweet Peas, a great deal still remains to be found out. Mendel worked continuously with Peas, and followed their behaviour through many generations. As an example of Mendel's law, his experiments in crossing green-seeded with yellow-seeded Peas are tabulated on the opposite page. It should be mentioned that both types were in the first place taken from true stocks, also that the results are the same whichever parent is made the seed-bearer.

From this table it will be seen that when once the character is pure it will continue to breed pure; in other words, it is fixed. Mendel obtained similar results by crossing other pairs of characters, for instance, round or wrinkled seed, tall and dwarf growing kinds, and, singularly enough, white and purple flowers. It is not the systematic relationship of the two parents chosen that decides whether the result in the first generation is to be entirely dominant, but only the occurrence of the same quality, in the one in an active, and in the other in an inactive, condition. Hence, whenever this relation occurs in the parents it is the active or the dominant character which is alone revealed in the cross.

**Balanced and Unbalanced Crosses.**—We can now proceed to see how far these laws of heredity can be, or have been, applied to Sweet Peas. Mr. Biffen asserts that successive generations of Sweet Peas follow the Mendelian laws in regard to certain pairs of characters, while, on the other hand, most raisers of Sweet Peas are agreed that it is impossible to foretell the nature of a cross with any degree of certainty from its parents. Messrs. Mackereth, of Ulverston, announce that they hope soon to bring some startling results to light bearing upon Mendel's laws which will simplify the process of fixing Sweet Peas. With these somewhat conflicting statements before us it may be of interest to



D = Dominant character, in this instance yellow-seeded pea.  
 R = Recessive character—i.e. green-seeded.  
 F denotes the generation thus—  
 F<sub>1</sub> = 1st generation.  
 F<sub>2</sub> = 2nd generation, and so on.

note the evidence there is either for or against Mendelism and its application to the crossing of Sweet Peas. A remarkable instance in support of Mendelism is recorded by Mr. C. C. Hurst, Burbage, among the following varieties; specimen flowers of Black Knight, Sadie Burpee, Pink Cupid, White Cupid, Salopian, and their hybrid forms, showing Mendelian dominance in  $F_1$  (first generation) of red over white, purple over red, tall over Cupid, long over round pollen grains, whilst the segregation in  $F_2$  (breaking up in the second generation) and the purity of recessives in  $F_3$  were in accordance with Mendelian laws. But Mr. Hurst also found that in a few cases the hybrid characters were like neither parent, but appeared to revert to an older or ancestral form, *e.g.* Black Knight  $\times$  Pink Cupid gave all wild purple cross-breds. A similar result was obtained at Cambridge by crossing White Cupid (dwarf habit, round pollen grains) with White Bush (tall growing, long pollen); the hybrid was much taller than the taller parent and had purple flowers, being, therefore, a reversion both in height and colour.

Yet another case of reversion even more remarkable than the foregoing was obtained by two independent workers on Mendelian laws. Most Sweet Peas it might be observed have long pollen grains, but the white Emily Henderson has usually round pollen. A few plants of this variety were found to have long pollen, like most other Sweet Peas. Now, the round pollen variety was crossed with the long pollen variety. Not losing sight of the fact that both varieties were one for practical purposes and having white flowers, nevertheless the result of crossing gave seed, all of which produced plants bearing flowers with chocolate purple standards and purple wings. Although these instances of reversion do not conform to the law already described, yet Mendelian workers reasonably claim that such cases may occur in accordance with relative laws so far imperfectly understood, and here it might be pointed out that this study is still quite in its infancy—to which its many imperfections should be attributed. Strange to say, Mendel's work, conducted over fifty years ago, remained practically unknown to the world until the year 1900, when his patient investigations were re-discovered and made known to science.

In conclusion, let it not be imagined that by crossing, say, Countess Spencer with Lady Grisel Hamilton that the resultant crosses will be all pinks or all lavenders. Some Sweet Peas never have been, and probably never will be, fixed, and to none does this apply more than those of the Countess Spencer type. In crossing



varieties unfixed in their natures one is obviously dealing with characters quite outside the scope of Mendel's laws, and there is no limit, at least in the first generation, to the diversity of colours so to be obtained. The whole cause of confusion between scientists and horticulturists is that the former in following in Mendel's footsteps select characters which are at once single and constant, and deal only with pairs of characters which are of antagonistic qualities; whilst horticulturists, regardless of these rules, cross qualities which do not find an opponent in the other parent.

## CHAPTER VIII

### “Don'ts” for Sweet Pea Growers

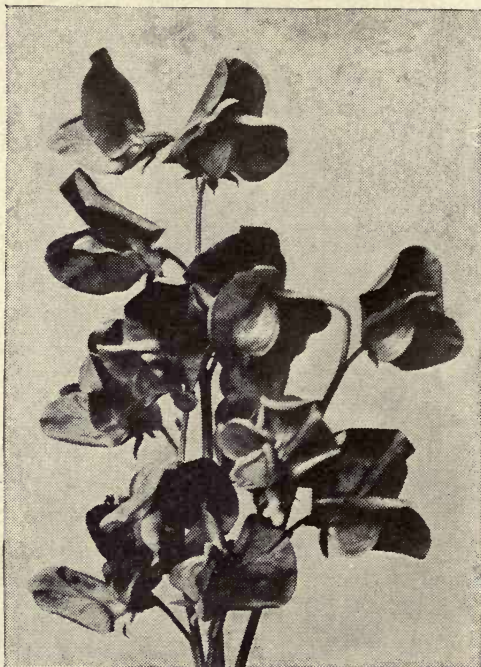
- DON'T sow the seeds before digging the soil at least two feet deep.
- DON'T sow the seeds in the autumn if your garden soil is heavy.
- DON'T fail to sow seeds in pots in January or early February, placing them in a greenhouse, if you wish to grow flowers suitable for exhibition. Plant out of doors in April.
- DON'T omit the necessary item of growing the very best sorts if you wish to compete at the National or any other show.
- DON'T neglect to dig the ground at least two feet deep in the autumn, placing a layer of well-decayed manure about eighteen inches deep.
- DON'T think you can grow Sweet Peas, say, ten feet high, if the ground is only dug one foot deep.
- DON'T forget that the deeper (in reason) the soil is cultivated the more vigorous will be the plants, and the finer the flowers.
- DON'T ignore the fact that it is possible to grow Sweet Peas with flower stems eighteen or twenty inches long.
- DON'T fail to remember that the vigorous plants to be seen in the best growers' gardens, with leaves not unlike those of small cabbages in size and texture, are the result of planting in really deeply-dug, well-manured soil.
- DON'T forget to plant out the seedlings the second week in April if the seeds are sown in January.
- DON'T omit to note that the middle of February is the best time for a general sowing of Sweet Peas out of doors for garden decoration.
- DON'T fail to remember that exhibitors set out their plants some twelve or eighteen inches apart in the row, having the rows several feet distant from each other.
- DON'T think it is absolutely necessary to practise this method if your aim is to grow flowers for house and garden decoration.



SWEET PEAS IN AN AMATEUR'S GARDEN AT AMERSHAM.

DON'T expect Sweet Peas sown in April to be as fine as those sown in February.

DON'T forget that early sowing is half the battle in the successful cultivation of the Sweet Pea.

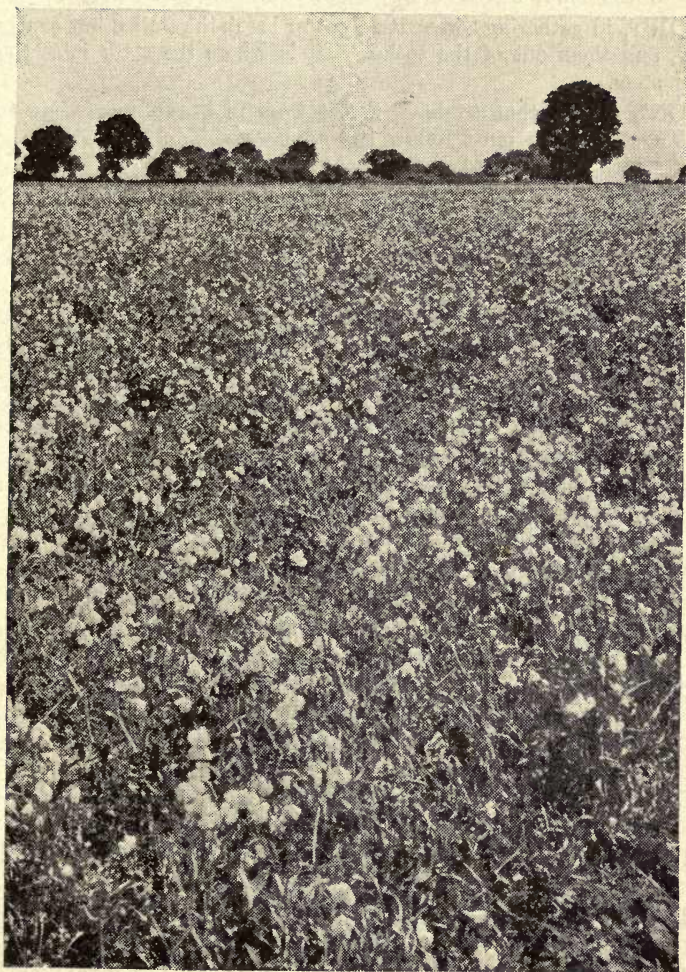


SWEET PEA LORD NELSON OR BRILLIANT BLUE (ONE OF THE FINEST BLUE VARIETIES).

DON'T imagine that you can grow Sweet Peas well on the same plot of ground for an indefinite number of years.

DON'T forget that it would be far better to grow one or two crops of potatoes occasionally, for there is such a thing as "land-sickness," and this occurs when one kind of crop is grown for a number of years on the same ground.

DON'T forget that as a rule the varieties with plain standards are



A SWEET PEA FARM.

better suited to withstand the effects of bad weather than some of the newer waved sorts, which have rather flimsy petals.

DON'T, in gathering Sweet Peas, cut or break the stalks, but gently pull them out of the socket, that is, where the stalk joins the stem.

DON'T forget that to have Sweet Peas in bloom from July to October you must follow the advice given in *The Gardener*, which is recognised as *the Sweet Pea paper*.

DON'T fail to note that it is most essential to remove all dead and fading blossoms if a long season of bloom is to be hoped for.

DON'T, when staking, neglect to insert the sticks firmly, putting them nine or ten inches in the soil.

DON'T forget that most Sweet Pea growers are of the opinion that hazel sticks are quite the best material to use for staking Sweet Peas.

DON'T forget that *The Gardener* issues a special Sweet Pea Number the fifth week in every year—either the last week in January or the first week in February.

DON'T, if you live in the suburbs, neglect to grow Sweet Peas in tubs, for this is quite one of the most delightful phases of suburban gardening.

DON'T be in too big a hurry to make your Sweet Peas grow strong and lusty by applying manure, or all the buds may fall off.

DON'T neglect to grow two or three kinds of Sweet Peas together, for if the colours are carefully chosen the result is most pleasing.

DON'T forget that Henry Eckford, with Romolo Piazzani, Clara Curtis with Mrs. Walter Wright, King Edward VII. with Dorothy Eckford, are a few colour associations that give most pleasing results.

DON'T imagine that these are the only colour arrangements possible with Sweet Peas. They are but a few of many.

DON'T think that because nearly everyone grows Sweet Peas in straight rows you are obliged to do the same.

DON'T forget that zigzag rows not only provide welcome relief from the straight rows, but are themselves very attractive.

DON'T fail to try some, at least, of the new varieties every year, or you miss one of the sweets of Sweet Pea growing. They are all advertised in *The Gardener*.

- DON'T, if you want to have Sweet Peas in May or June, fail to sow seeds in September, and grow the plants in a greenhouse during the winter.
- DON'T attempt to force them by means of a high, moist temperature, or failure becomes a certainty.
- DON'T, if you wish to have Sweet Peas in winter, omit to grow the Télemly or Zvolaneck varieties.
- DON'T attempt the Cupid Sweet Peas on a large scale unless you are quite sure you know how to grow them. They are unreliable.
- DON'T fail to notice that experience goes to show they need a hot, dry position in the garden, and even then they are not always satisfactory.

## CHAPTER IX

### Sweet Peas in Suburban Gardens

If your garden is in the suburbs, and has less than its fair share of light and sunshine and good soil, this is scarcely a good reason why you should not attempt the cultivation of Sweet Peas. I am inclined to think that the tremendous stir which Sweet Peas have made during the last few years has tended somewhat to create an impression that these flowers are difficult of cultivation. Perhaps it is that the standard of well-grown Sweet Peas has been raised, and that even small growers have come to expect more from their own efforts. The Sweet Pea is one of the easiest of flowers to grow, and needs only the most elementary cultivation to give most satisfactory results. Yet is not this the reason so many achieve results which can only be described as mediocre? For I think it will most generally be found that failures, not only with Sweet Peas, but with all kinds of flowers, are attributable to the neglect of elementary details.

And the chief of these is digging, for even the free application of manure cannot make up for neglect of digging. In fact heavy applications of manure to undug soil are liable to render the latter sour and altogether uncongenial to the roots of plants. *À mesure* (as the French gardeners would say) as the conditions of soil and atmosphere decrease in suitability, so the value of digging is enhanced. Therefore, in the suburban garden it may be said to have reached the maximum of usefulness. So the very best advice I can give to any suburban gardener who wishes to grow Sweet Peas really well (and they can be grown well in the suburbs) is to dig, dig, dig. Dig the border where the seeds are to be sown, not one foot deep, but two or even three feet deep. The deeper in reason the soil is dug, the higher will the Sweet Peas grow. For instance, Sweet Peas in tubs which contain only about twelve inches of soil grow, say, six feet high; in ground dug two feet deep they reach eight feet; while Mr. T. Jones and other famous exhibitors trench the ground three feet deep and grow Peas ten and twelve feet high.





SWEET PEAS GROWN IN TUBS AND BOXES.

*(From a photograph kindly sent by Mr. Breadmore.)*

But in the latter case there is no doubt that digging alone does not send them up to such a height. There is a layer of well-rotted manure some eighteen inches or so below the surface, and when the roots get well hold of this and the three feet of cultivated soil it is little wonder that they rise!

Deep digging, early sowing, careful watering in spring, thorough watering in summer, and the removal of all incipient seed pods, are the chief items to be taken note of and practised by the suburban grower, by every grower in fact who would be successful, but above all by the suburban grower. Some varieties I can thoroughly recommend for the garden in the suburbs are King Edward VII., Helen Piercè, Jeannie Gordon, Mrs. Walter Wright, Queen Alexandra, and Dorothy Eckford, all vigorous free-blooming sorts.

**Sweet Peas in Tubs and Boxes.**—No one can plead lack of space as an apology for neglecting to grow Sweet Peas, since they will succeed even in window-boxes. I do not go so far as to say that prize flowers may be had from the plants thus grown, but, at any rate if kept well watered (that is to say, if the soil is always kept moist) and all blossoms are picked off as they fade, there will be quite a fair display. But in tubs and boxes when the plants have, say, twelve inches depth of soil in which to root, really first-rate plants can be had, plants that will give, at any rate, three blooms on a stem, and with careful attention will blossom from July until October. Ornamental tubs, such as are made for shrubs look the best, but an excellent substitute is found in the disused butter tubs which may be had very cheaply from the grocer. All they need to make them look quite presentable is a coat or two of dark green paint. They will last at least two seasons, and to make them efficient as plant growers a few holes are bored in the base by means of a red-hot poker. The holes are covered with a piece of flower-pot, some rough material such as pieces of turf, or dead leaves, or rough manure is placed in the bottom, and the tub is ready for filling with the prepared soil mixture.

**Filling the Tubs.**—This should consist chiefly of turfy loam, —turves pulled into pieces about the size of a pigeon's egg—and above all things it must be made firm by ramming with a flat-bottomed wooden rammer. In mixing the soil well decayed manure may be added at the rate of one-fourth of the latter to three-fourths of the former. Sweet Peas cannot be grown successfully in tubs unless the soil is made firm. The tubs are filled to within an inch or less of the rim, for the soil will sink quite an inch

during the season. It is absurd to think of sowing the seeds at six or eight inches apart, as if this method were followed the tubs would hardly contain more than half a dozen plants each, and my experience is that although six plants at six inches apart might cover a certain area of ground out of doors more satisfactorily than a dozen plants at three inches apart, the dozen plants would give a better return in a tub. The reason is that Sweet Peas in tubs do not grow so vigorously or branch out so much as plants sown in the open ground. I reckon to have at least a dozen plants in each tub.

**Essentials to Success.**—The essentials to success I believe to be these: (1) filling the tubs with good turfy soil made firm; (2) sowing the seeds in the middle of February; (3) careful watering until the plants are well rooted, copious supplies during summer, and removal of dead and fading flowers. I have seen various methods adopted for staking Sweet Peas in tubs, but have not met with any superior to the use of hazel sticks. The general appearance of the plants is improved if the sticks are pulled together slightly by means of string, tied round them in one or two places, not tightly but just sufficient to keep them neat. As the plants progress any tendency to stiffness or formality of outline is soon done away with by the shoots and flowers. The application of artificial manures to Sweet Peas growing in tubs is a matter requiring the most careful attention. The least overdose will cause the buds to turn yellow and fall off. This should be given only when diluted with water according to the makers' recommendation. This is safer than sprinkling the fertiliser directly on the soil and watering it in; and so far as Sweet Peas in tubs are concerned I have found it most advisable. As to varieties, those already recommended for the suburban garden are suitable.

## CHAPTER X

### Sweet Pea Trials and Troubles—A Chapter of Replies to Questions

**New Sweet Peas for a Small Garden.**—I should advise Countess Spencer, Evelyn Hemus, Etta Dyke, John Ingman, James Grieve, A. J. Cook, Mrs. Andrew Ireland, Constance Oliver, and Helen Lewis. Some of these may be rather expensive, but as you do not mention the price I assume that this will not matter.

**Sweet Peas for Market.**—Yes; if you are situated in a district in which good markets for cut blooms are readily accessible the plants will pay, but they must be well grown. Excellent varieties are Countess Spencer, Dorothy Eckford, King Edward VII., and Lady Grisel Hamilton, and they are procurable at reasonable prices.

**Selection of Sweet Peas.**—The list is an excellent one, but I should substitute Etta Dyke for Nora Unwin. You ought also to grow A. J. Cook and Lord Nelson as blues, and Menie Christie for its colour, cerise, though the blooms are often rather small. Rosie Adams and The Marquis are quite distinct, but both are not required in a set of twelve. Of the three you mention I should recommend John Ingman.

**The Perennial or Everlasting Pea.**—The seed pods should be collected when quite ripe, and spread out on paper in a dry and airy place. When thoroughly dry the seeds may be taken out of the pods and kept dry until the time for sowing comes round. March is a suitable time for sowing; loamy soil, plentifully enriched with stable manure, is the kind of soil from which the best results are looked for. This Pea is of great service for covering arbours, fences, and trelliswork, and it does not look amiss when allowed to ramble over the stones of a rockery.

**Manure for Sweet Peas.**—Farmyard manure is excellent, but it must be applied in the autumn, and the ground should be worked at least  $2\frac{1}{2}$  feet in depth. In February, or as soon afterwards as you can get on the ground, prick in a mixture of 3

parts of superphosphate of lime and 2 parts of sulphate of potash at the rate of 3 oz. to the square yard. Surface mulching of short manure, with occasional waterings with nitrate of soda and soot water, will be of great benefit. The plants should be at least 12 inches asunder, and not more than three stems must be retained.

**Everlasting Peas.**—These are useful and showy, and such persistent growers that they will live and thrive in positions where few other plants would exist, for now and then they may be seen in courtyards sending up their shoots between the joints of bricks, or running up and supporting themselves by grasping with their tendrils the branches in hedgerows of cottage gardens or shrubs in borders which they almost overwhelm but clothe with fresh beauty. This habit and facility for taking care of themselves render these Everlasting Peas of great value for out of the way places, or the backs of borders in front of evergreens, in either of which positions they are very effective.

**Superphosphate of Lime for Sweet Peas.**—In the event of a hot, dry season you will find it necessary to be very liberal with the water-can in growing Sweet Peas against a south-south-east wall ; a mulch of long manure about the beginning of July will also be very beneficial. You should not dig in both superphosphate and Clay's Fertilizer at once ; the latter is very rich in the essential constituents of the other—viz. phosphates—but as it also contains ammonia it would be better used for feeding later than would the superphosphate. Of this, I should think 2 ozs. per square yard a very good dressing for your plot, seeing that you have well manured it. Do not dig it in ; scratch it in with a rake.

**Twenty-four Sweet Peas for Exhibition.**—The following would make a good selection: A. J. Cook, Chrissie Unwin, Constance Oliver, Countess Spencer, Dora Breadmore, Dorothy Eckford, Elsie Herbert, Etta Dyke, Evelyn Hemus, Frank Dolby, Hannah Dale, Helen Lewis, Henry Eckford, James Grieve, John Ingman, King Edward VII., Lady Grisel Hamilton, Lord Nelson, Menie Christie, Mrs. Collier, Mrs. Hardcastle Sykes, Mrs. Walter Wright, Queen Alexandra and The Marquis. Most of the principal colours are duplicated, as you wish. I am sorry to hear of your disappointment with several varieties of the Spencer class, and fear that others have shared it. They are certainly not fixed, particularly Audrey Crier and Burpee's White Spencer. I note that George Herbert and E. J. Castle have both done well with you, and that the former is the better. As regards your complaint that

there is too much pink and too little orange in Helen Lewis, I have noticed the same thing in many places ; but I should like to see what happens in 1909 before deciding that the variety is deteriorating. Meantime I suggest your trying Maggie Stark.

**Pinching Sweet Peas.**—That pinching Sweet Peas will make the plants bushy, and



SHOWING HOW THE METHOD OF STOPPING OR TAKING OUT THE POINT OF A WEAK SHOOT BRINGS ABOUT THE DEVELOPMENT OF A STURDY PLANT

also induce more rootlets to form, may be taken as a thoroughly established fact, but I should not care to say that pinching would cause the formation of nodules on the roots. These are due to the presence of certain bacteria in the soil, and though a pinched plant may carry more nodules by reason of its increased root system, yet there is nothing in the act of pinching directly to promote the growth of bacteria or the formation of nodules. You ask if any advantage is gained by pinching. I certainly think so, especially when plants run up weak and spindly in pots. Why not try both pinched and un-

pinched plants for yourself this year and note the difference ?

**Sweet Peas Ruined by Mice.**—I have heard of several sowings of Sweet Peas in pots and boxes being ruined by mice. It is wonderful how these creatures know where to find the seeds, and growers would do well to place some poison about, or traps. I saw a portion of a valuable sowing of novelties completely destroyed in one

night in a neighbour's greenhouse, and a well-known English specialist writes me to the same effect. Perhaps this warning may save others.

**Sweet Peas Inoculated.**—Your experience is certainly interesting, but it is necessary that many more results should be published before anything definite can be said either for or against this new method of stimulating Sweet Peas and similar plants. We do not, however, think that inoculation can account for the frost-proof nature of Mrs. Alfred Watkins as against Duke of Westminster not inoculated which subsequently succumbed to the frost (see page 76). At the time of writing there is still much divergence of opinion as to the merits of inoculation with nitro-bacterine: the weight of evidence appears to indicate that it is of little practical value so far as Sweet Pea growing is concerned.

**Shading Sweet Peas.**—You say nothing as to soil and situation, and much depends upon these. Varieties which burn badly in heavy soils and low-lying sites are found to escape unharmed on light soils and breezy hillsides. In an ordinary season neither Nora Unwin, Mrs. Walter Wright, Mrs. Collier, Mrs. Hardcastle Sykes, Jeannie Gordon, King Edward VII., Black Knight, Countess Spencer, nor Frank Dolby will require shading. Henry Eckford should be shaded from the midday sun in all seasons; and from all bright sunshine in an extra hot season. Lord Nelson burns in hot sunshine, but not to the extent that Henry Eckford does; it takes on a glorious colour in light shade. Mrs. Hardcastle Sykes often loses a little colour in bright sun, but this can be restored by a temporary shading. The colour of Countess Spencer can be deepened considerably in partial shade, and Mrs. Wright and Black Knight are safest with temporary midday shade in hot seasons.

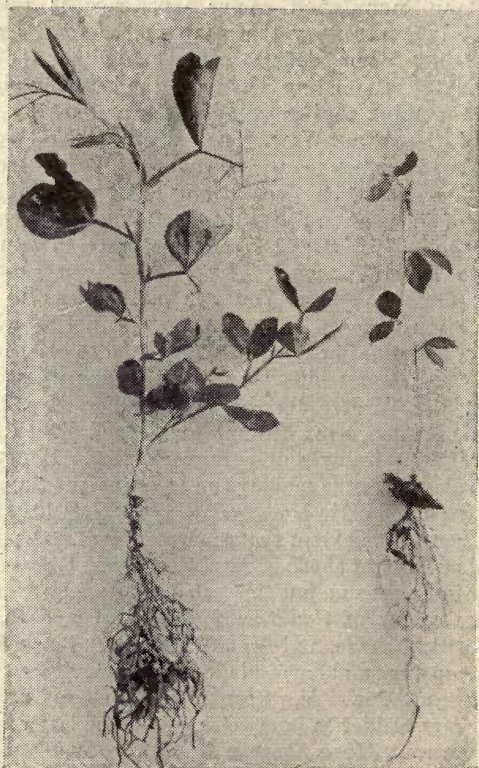
**Yellow Sweet Pea.**—As a Spencer yellow Clara Curtis is splendid. I prefer Mrs. Collier to James Grieve, but the latter is excellent.

**Etta Dyke and Nora Unwin Sweet Peas.**—Notwithstanding the undoubted excellence of Nora Unwin, I consider Etta Dyke superior for exhibition purposes.

**Sowing Sweet Peas.**—In addition to the autumn sowing in frames you should sow out of doors about the end of the third week in March in order to have a long succession of excellent blooms. Wood ashes are splendid, and should be worked into the ground in the spring.

**Waved Sweet Peas.**—Some of the best varieties with waved standards of the colours you name are Etta Dyke, white; Countess

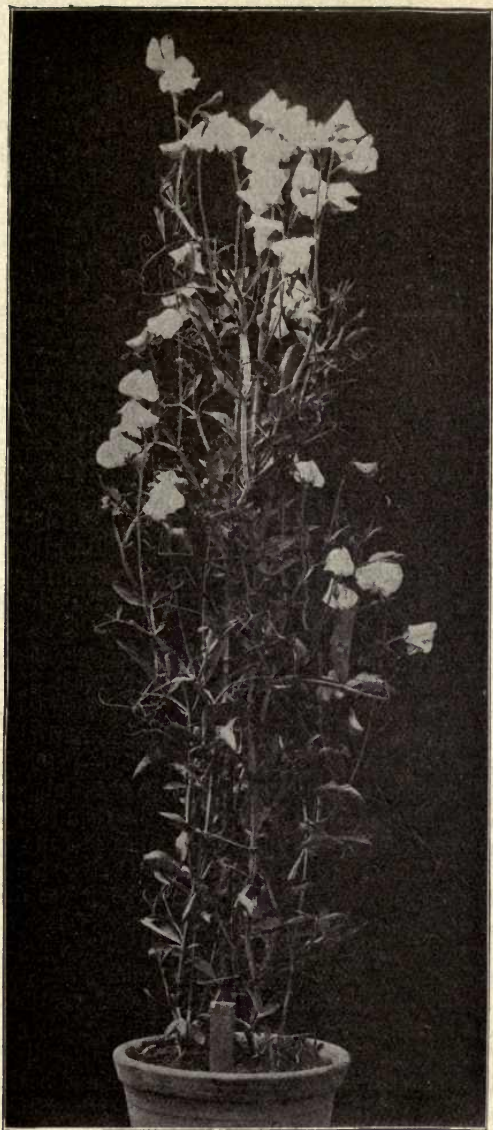
Spencer, pink ; Clara Curtis, yellow ; Frank Dolby, lavender ;  
A. J. Cook, blue but not dark ; George Stark, scarlet (this will not



SHOWING THE EFFECT OF INOCULATION WITH  
NITRO-BACTERINE. ON THE LEFT GROWTH  
FROM INOCULATED SEED : ON THE RIGHT  
GROWTH FROM SEED NOT INOCULATED. (SEE  
NOTE ON PREVIOUS PAGE.)

be put on the market before the autumn of 1909). There is no  
marbled variety with waved standards. I should also recommend





SWEET PEA AS GROWN IN A FLOWER POT  
8 INCHES IN DIAMETER

The King, crimson ; Mrs. Andrew Ireland, bicolor ; Mrs. Henry Bell, cream, with a deep border of rose ; Evelyn Hemus, cream, pink edge ; Rosie Adams, rose standards, violet wings ; Constance Oliver, rose, cream centre ; and Elsie Herbert, white, pink edge. All of these are splendid exhibition varieties.

**Superphosphate and Sweet Peas.**—You should have taken out a trench at least twice as wide, viz. two feet, if you wish to get good exhibition flowers. Again, it was a mistake to mix the bone meal with the soil at the bottom of the trench. I always believe in keeping artificials of all sorts near the surface, as they work down rapidly with rains, and are wasted when buried deeply. You have acted quite correctly in scattering on and raking in the superphosphate, and you need not have the slightest apprehension as to its harming either the seeds or the plants. The first week in March is a very good time to sow, but better wait a few weeks than sow if the soil is wet and does not work easily.

**Sweet Peas for Market.**—There is no doubt that Sweet Peas are a very remunerative crop if well and intelligently handled, but so many growers now send to the London markets that competition is very keen. If you can dispose of the flowers locally I would advise you to do so by all means, as you will make more money first hand and also avoid railway rates. In bunching, keep strictly to one variety or colour in each bunch, as mixed Sweet Peas command little sale. Cut when two flowers on a spray are opened, make up into bunches of twelve sprays per bunch, and stand the ends of the stems in water for a few hours before despatching them. If the bunches are packed so that they cannot shake about, no packing beyond a few sheets of tissue paper will be required. Prices vary very much according to the supply, but in early June it is not unusual to get 2s. 6d. per dozen bunches of twelve sprays in Covent Garden Market ; as the season advances the prices drop to about 1s. per dozen bunches. In sending to London, select only the best flowers, for nothing inferior has a chance of selling.

**Sweet Peas for Early Bloom.**—If your greenhouse is very light, efficiently heated, and well equipped with ventilators, there is no apparent reason why you should not successfully grow *Télemly* Sweet Peas. They are easy to manage and will flower from Christmas onwards if the plants are kept clean and healthy.

**Sweet Pea Seedlings and Soot.**—I am afraid that you have been far too liberal in the application of soot to the seedlings, and this is borne out by your own experience, *i.e.* “the seedlings

appear to have suffered most where the soot is thickest." The seedlings sent for examination are themselves by no means free from soot. Now, in applying soot it should only be given as a dressing to the soil around the plants, and if by any chance soot has alighted on the foliage it should be washed off with a rosed water-can. Generally speaking, soot is a perfectly safe thing to apply; however, it must not be given to the extent which you appear to have done, and another thing to be sure about is that the soot itself is pure.

**Sweet Peas, Yellow Disease, and Hard Water.**—I do not think that hard water was responsible for the disease which you describe; neither do I think that you have cleared the ground by allowing it to lie fallow. If Sweet Peas are planted on the same site again this year there is every probability of their being again attacked. If possible give them a complete change of position, and watch closely for the appearance of the first yellow spots. As soon as they show spray the plants with Bordeaux mixture or a solution of sulphide of potassium,  $\frac{1}{2}$  oz. to 1 gallon of water. A dose of nitrate of soda,  $\frac{1}{2}$  oz. in 1 gallon of water would also help the plants to fight the disease. With regard to softening of water, a simple plan is to drop in a lump of ordinary washing soda and stir till dissolved.

**Clumps of Sweet Peas for Exhibition.**—The system of growing two varieties together in the same clump is not always suitable for exhibition purposes. For instance you would find Mrs. Walter Wright a much stronger grower than Queen of Spain, and Helen Lewis taller and more vigorous than Henry Eckford; thus you will see that the weaker variety in each pair hardly has a fair chance. The same remark applies to several more of your clumps; the colours, again, of some would not harmonise or contrast at all well, so that the clumps would lose points for garden decoration. One instance of this will suffice: George Herbert is of such a strong and vivid colour that it would make Primrose Waved look like a dirty white. I would strongly advise you, at any rate for exhibition purposes, to have only one variety in each clump. You will require twenty sprays of any variety exhibited, and it will have to be a good clump to yield twenty sprays on a given day in spite of weather fluctuations. If you are entering strong competition, two clumps of each variety, five or six plants in each, will not be too many.

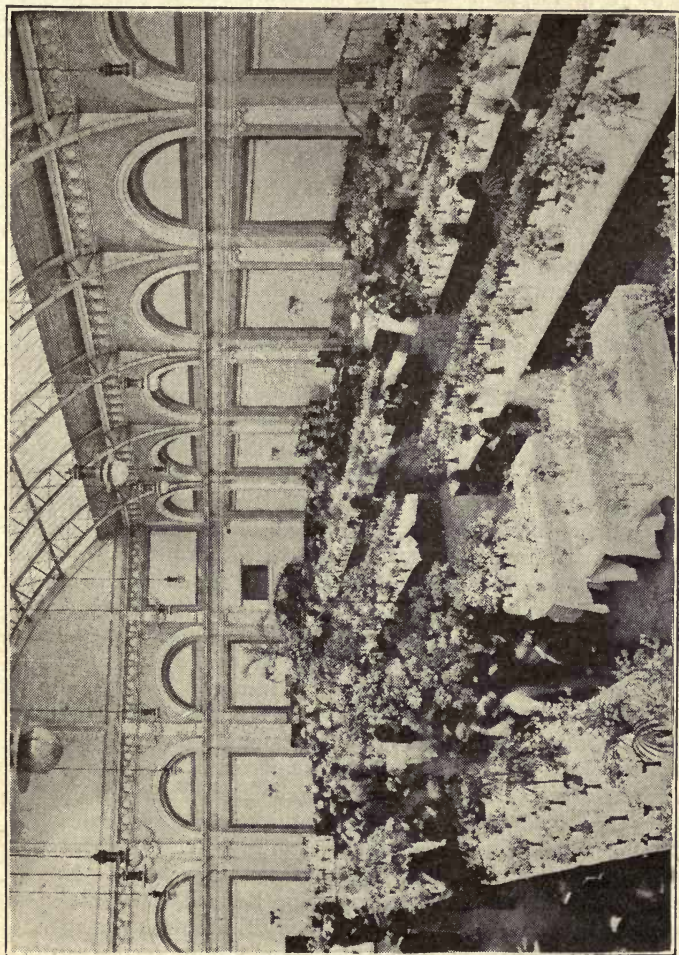
**Fish Manure for Sweet Peas.**—Judging from the analysis you have obtained a very good fertiliser, and one that should be very suitable for Sweet Peas. As you will probably be sowing seeds

within the next few weeks you should give the ground a dressing at once. Do not dig it into the bottom soil, now or at any time, but scatter it on the surface and scratch it in with a rake; about 2 oz. per square yard will be a good dressing. The manure is not suitable for autumn or early winter application.

**Fixing a New Sweet Pea.**—When a new plant or variety is properly fixed it will come true from seed year after year without showing any great variation from the original stock. The present system of fixing is to select and to re-select; that is, to pick out the true type and to discard the remainder. It is sometimes necessary to do this for many seasons before a variety becomes properly fixed, and Sweet Peas can never be called fixed until they have been proved so for at least three seasons. Yes; it is possible to take cuttings of Sweet Peas, and it is always advisable first of all to propagate plants in this way in the case of valuable sports occurring. You may experience a little difficulty in procuring the old-fashioned bicolor type of Sweet Pea, which as you say, is so sweet scented.

**Preparing Ground for Sweet Peas.**—As you speak of club root being bad in cauliflowers, I infer that your land is on the light side. This being so, you would find superphosphate of lime better than bone-meal—you do not want both. Soot is good on any land, and would be especially useful on yours, as land taken in from grass generally contains a lot of insect and animal life, to which soot is distasteful. You say nothing of the quantity of lime you have applied, but as Sweet Peas like lime and insect pests dislike it you can do no harm by giving another light dressing. Next year, you should trench the Sweet Pea plot, and mix the dung with the lower spits of soil; I would not advise you to interfere with it further in spring, beyond giving the soot, superphosphate and lime.

**Sweet Peas on Bamboo Poles.**—The system of growing Sweet Peas which you describe is such an unnatural one that I should not care to guarantee its success; in any case, it will give you a good deal of trouble. Runner Beans are very often trained up single poles in the way you suggest, but they climb naturally, and without assistance, by twining themselves round the pole. The Sweet Pea climbs and clings by means of tendrils, which are borne on the ends of the leaves and some distance from the main stem or central axis. A vigorous plant also throws out numerous side branches, which again carry tendrils, but still farther away from the main stem. Thus you will see that by fixing one central Bamboo pole to each plant you will be depriving the Pea of any support from



GENERAL VIEW OF THE NATIONAL SWEET PEA SHOW IN 1908.

its tendrils, and you will have to keep all growth in place by tying. Try poles by all means, as if successful the result would be very pretty, but be prepared for more than the ordinary amount of work. You would find rough poles—such as larch, oak, or ash—better than bamboos. Personally, I should prefer to give each plant a nice twiggy hazel bough.

**Sixteen Sweet Peas for Exhibition.**—The following sixteen varieties are all distinct, vigorous, and carry three to four flowers on a stem: Lord Nelson, Countess Spencer or Paradise, Frank Dolby, Helen Lewis, John Ingman or George Herbert, Helen Pierce, King Edward VII., Queen Alexandra, Mrs. Collier, Nora Unwin, Mrs. Hardcastle Sykes, Jeannie Gordon, A. J. Cook, Sybil Eckford, Black Knight, and Dora Breadmore. The above list includes none of the 1908 novelties, but the best of the 1907 and older varieties. They should be quite good enough to win in all but the strongest competition.

**Red Lead and Sweet Peas.**—When properly applied there is no question that red lead safeguards Sweet Pea seeds against birds, mice, and ground vermin generally. I do not, however, think you will find it efficacious against slugs, as these attack the young plants and not the seeds. To coat the seeds properly put a little red lead in a bag, damp the seeds, and then drop them into the bag, shaking them round and round so that they get coated all over. I do not know in what way the red lead could be injurious to the plant; I have certainly never heard of any injury following its use. It is a deadly poison, but Sweet Peas are, of course, not eaten—that is, by their growers. On the other hand, culinary Peas are dusted with red lead very generally, and no harm results.

**Exhibition Sweet Pea List for Criticism.**—If you only intend to exhibit in classes for twelve or for six varieties you will probably find the sixteen sorts you have sufficient. However, I may point out that Countess Spencer and Enchantress are not allowed on the same stand by the N.S.P.S., so that reduces your varieties to fifteen. Then, Horace Wright is scarcely likely to give you exhibition flowers, and I would advise you to get Lord Nelson instead. I also think that either King Edward VII. or Queen Alexandra should take the place of Henry Eckford, as you already have an orange variety in Helen Lewis, and no crimson or scarlet; if you want the latest and best in scarlets you should purchase Miss E. F. Drayson. Audrey Crier would certainly strengthen the list, but you do not want Bobby K. with Mrs. Hardcastle Sykes, and

Silver Wings is sold out. Countess Spencer, Audrey Crier, John Ingman, and Helen Lewis are all likely to "sport," so grow as many as possible of these; probably one or two of the novelties you have may also be sportive. You must shade Henry Eckford, Helen Lewis, Lord Nelson, and possibly St. George from strong sunshine.

**Exhibition Sweet Peas in Clumps.**—Your plan of growing in clumps with nine plants round the outside and one plant in the centre of each clump is not good; the plant in the centre would be quite useless and would be smothered by the others. What I propose will entirely alter the arrangement of your plot, but it will give far more satisfactory results. Limit the clumps to five plants each and keep them all at the outside of the circle. For this system you will require to allow about 2 feet diameter for each clump, which will keep the plants a good foot apart. Allow 18 inches between the margins of the clumps in the rows, and from 3 to 4 feet between the rows of clumps. Use the superphosphate by all means; it is the standard artificial for Sweet Peas, and you certainly need not fear it will cause finger and toe disease, as this never attacks Sweet Peas. With regard to vases, they should all be of uniform size and as plain as possible. At the N.S.P.S. show vases are provided at a charge of 1d. each.

**Sweet Peas for the Garden.**—Your list is very good on the whole, but for a garden primrose I would take James Grieve in preference to Primrose Spencer, in spite of the fact that the latter is, or is supposed to be, waved. The Marquis is not far off Mrs. Walter Wright in colour, but A. J. Cook, which is waved in the Gladys Unwin degree, is newer still, and is a very beautiful and valuable variety, which you ought to include. Try to find room also for Mrs. Henry Bell, Constance Oliver, and Evelyn Hemus. They are lovely varieties. Frank Dolby has very little waving, and I cannot agree that it should be reckoned a waved sort, in spite of the fact that it is sometimes described as such. Compare it for form with Countess Spencer, the typical waved variety, and with a recognised plain sort like Mrs. Walter Wright, and you will see my point.

## CHAPTER XI

### Autumn-Sown Sweet Peas—Sweet Peas from Cuttings— Growing Sweet Peas in Pots

**Autumn-Sown Sweet Peas.**—I believe that comparatively few Sweet Pea growers sow their seeds in the autumn, but while it is a plan that one cannot recommend for general practice, there is little doubt that in some gardens it is the best thing to do. Gardens in the country which have a light soil through which moisture passes away readily in the winter are those in which autumn-sown Sweet Peas are likely to thrive best. There is little or no danger of their dying off during the inclement weather of the winter months, and they start into growth in the spring already well rooted, and with a much better opportunity for giving a good account of themselves in a hot, dry soil, than spring-sown seeds. For, of course, soil which keeps fairly dry during the wet weather that

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#### FIG. 8.—SOWING OUTDOORS IN AUTUMN AND PROTECTING

- N, hedge, board fence, or wall shelter on north. O, south border with drills at right angles to shelter: *x*, rows (dotted lines) 4 feet apart. P, row parallel with hedge (N) and 4 feet from it: *y*, drill 3 inches deep; *z*, seeds placed in 2 inches distance apart in alternate order; *a*, 2-inch covering of fine soil; *b*, 1 inch thickness of sifted coal ashes on fine soil; *c*, ashes surface; *d*, soil, thus raised, not hollowed.
- Q, protecting: *e*, spruce, yew, or other evergreen tree, preferably conifer branches, placed on north side of row; *f*, Sweet Pea plants; *g*, mulching of cocoanut fibre refuse, 2 inches thick, but not on ashes or in contact with stems of Sweet Pea plants. Protecting the earth ridge: *h*, bank formed on north side of row; *i*, place from where soil is drawn; *j*, row of plants; *k*, mulching of short manure or partially rotted leaves.
- R, earthing up Sweet Peas: *l*, ridges; *m*, furrows; *t t*, rows of plants.
- S, border clumps: *n*, tall varieties protected by Spruce branches; *o*, dwarf or bush varieties ditto; *p*, tall variety protected by earth ridge; *q*, dwarf or bush variety ditto; *r*, south or sunny side open.



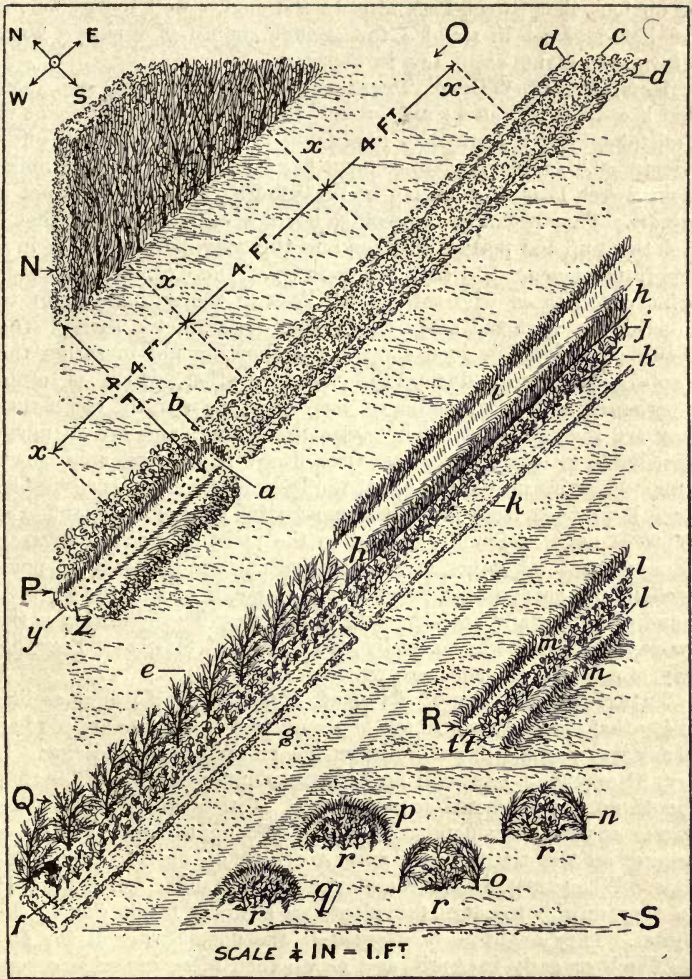


FIG. 8.—SOWING OUTDOORS IN AUTUMN AND PROTECTING.

comes in winter is also unusually dry in the summer. Thus it will be obvious that Sweet Peas already thoroughly well rooted before the hot days set in stand a far greater chance of giving a good return than plants sown, say, in February.

**Sowing and Winter Treatment.**—But in heavy soil, soil that keeps wet and sticky all through the winter, autumn sowing is a mistake, for it is more than likely that the seedlings will die off—"damp off," as the gardening term has it. I have tried autumn-sown Sweet Peas in a garden in the suburbs, but they were not a success. They began to damp off so badly in early December that I took them up and potted them, and in this way, keeping them in a cold frame, managed to save the majority. There is one important point which those who sow Sweet Peas in the autumn ought to observe, viz. that the seeds should not be sown too early. The month of October is soon enough. If they are put in earlier the plants grow rapidly during the warm weather, which is often experienced in late September or early October, with the result that they are several inches high before the winter, and are so much more liable to injury from frost than dwarf plants from seeds sown later. Earthing up the soil about the base of the stems is advisable, since it protects from injury the most vital part of the plant—the collar—a name commonly applied to the point of junction between stem and root. Another, and a safer method, one that may be practised in any garden possessing a cold frame, is to sow the seeds in pots in October, and keep them in the frame. The following is the experience of one who annually grows most of his Sweet Peas this way, and is altogether pleased with the results :

**Injurious Effects of Applied Heat.**—I would at once like to say that Sweet Peas will not be a success if the plants are coddled in any way ; they will not be improved but injured by forcing. If dry, 8° or 10° of frost will not kill the plants ; but if possible they should not be subjected to any frost. If they are frozen in the frames some mats should at once be put on to prevent the sun shining on the plants. The mats are kept on until the frost has gone. When treated thus the plants will not suffer. But it would be very unwise to place the plants in a warm frame during the winter. They ought to be planted in the open border at the end of March or early in April, and as we then often experience very cold weather, a serious check to growth would result. Even when grown in a cool frame the plants must be further hardened before they are planted in their flowering quarters. This can easily be

done by placing the pots on boards, or a bed of ashes in front of a wall or hedge, to give protection from the east and north winds during the fortnight prior to the final planting. And for a long time before this is done it is advisable to take off the lights altogether every day except when frosts or heavy rains occur. There is no need to replot the young plants.

I will state briefly how I recently treated my autumn-raised plants, which eventually did better than any others that I have grown. My plants were raised in pots. In January they were carefully turned out and planted 7 inches apart in a prepared shallow bed of soil in a cold frame. Almost immediately very strong basal shoots commenced to grow, and the main haulm strengthened wonderfully well too.

I was obliged to put small sticks to these plants very early in the season, and when the time came for the final planting the plants were grand specimens, strong and hardy. I put down a few ashes in the frame first and made them smooth and firm; on the ashes I placed a thin layer of well rotted manure, and finally a good compost 6 inches deep. It was a very easy matter to remove the young plants by placing a spade under the soil. The roots formed a network in the manure at the bottom, and all came away clean from the ashes.

**Sweet Peas from Cuttings.**—The practice of increasing Sweet Peas by means of cuttings is not generally known, although it is a commendable method to adopt, especially with new and rare varieties. When one has to pay at the rate of half-a-crown for a dozen seeds, the fact that one can take off the tops, and insert them as cuttings, is worth knowing. In the case of standard varieties when practically any quantity of seeds are obtainable at a small cost, it is not necessary or advisable to increase the stock from cuttings. The seeds are sown in January, preferably in a heated greenhouse. This will induce quick germination and growth. The young plants are allowed to attain a height of 4 to 5 inches. Then about 2 inches of the top of the shoot may be taken off to form a cutting. This will leave at least two leaves on the seedlings, from which two or three new growths will push out. When these are from 3 to 4 in length 2 inches off the ends may be again taken for cuttings. Thus one can have on an average four cuttings from each plant; these, with the plant itself, will make five young plants from each seed which germinated. Many more could, if necessary, be obtained from each seedling, but this is scarcely

advisable, as any further propagation would probably weaken the plants and the summer growth would be poor.

**How to Root the Cuttings.**—A suitable place in which to root the cuttings is a close frame, hand light, or bell glass placed on the greenhouse stage. Dibble the cuttings in pots filled with sandy soil, placing four cuttings round the side of a 4-inch (large 60 size) pot, or singly in the centre of a smaller size. If watered as soon as



SWEET PEA CUTTINGS.

inserted, and shaded from sunshine, the cuttings will root in about ten days. Air is then gradually admitted, until finally the young plants are ready for potting off singly, if rooted several together in a pot. The plants rooted singly in small pots, may be moved on into 4-inch pots. When nicely rooted the plants are gradually hardened off and transferred to a frame with the varieties raised from seeds, the subsequent treatment being the same for both. During the past summer we have raised a fair number of plants from

cuttings, and these grew well and flowered profusely. In fact no difference was discernible between the plants from cuttings and those raised in the ordinary way from seeds.

**On Sowing Seeds.**—The practice of sowing Sweet Peas in pots



SHOWING HOW WELL THE CUTTINGS FORM  
ROOTS.

and placing them in a cool greenhouse or frame is favoured by many growers, especially with new or scarce sorts. When seeds cost  $2\frac{1}{2}$ d. each, the price, for instance, recently paid for Mrs. Hardcastle Sykes, it is risky to sow them in the open ground. With the latter



HOW TO SOW SWEET PEAS IN POTS.



THE SEEDLINGS READY FOR TRANSPLANTING  
OUT OF DOORS.

method there is always the possibility of the seeds falling a prey to mice, and the seedlings to birds and slugs. In a greenhouse or frame these pests are easy to combat. Late in January, or early in February is the best time for sowing the seeds. If the young plants become drawn the tops should be pinched out. This will cause several shoots to develop near the base, and so establish a good foundation. Pots 5 or 6 inches in diameter are the most convenient sizes.

For very scarce sorts pots  $2\frac{1}{2}$  inches in diameter may be used, placing a single seed in the centre of each pot. Wash the pots clean and allow them to dry thoroughly before using, as when dirty or wet pots are employed the ball of soil does not leave the pot properly when planting out. Soil for filling the pots should be prepared as follows: three parts turfy loam, one part leaf mould, and one part sand. Put large circular shaped pieces of crock over the holes in the bottom of the pots, place several small ones over them, covering these with a few pieces of coarse, turfy soil. Fill the pots to within one inch of the top, making all moderately firm. Place four or five seeds at equal distances round the pot, and cover with  $\frac{1}{2}$  inch of sifted soil. As previously mentioned, one seed is sufficient in a  $2\frac{1}{2}$ -inch pot. Press the surface of the soil even with a round tin having a smooth base.

**Treatment of the Seedlings.**—Each pot should be carefully labelled with the name of the variety, where the seeds were obtained, if from different sources, the date of sowing, and number of seeds in each pot if the quantities vary. When the soil is moist it will be better not to water the seed pots till the following day. It may be advisable to soak the seeds in water for a few hours previous to sowing in order to assist them to germinate more readily. Amateurs who have no heat in their greenhouse or frame need have no fear of failure from this cause; this simply means that the seeds take a little longer to germinate. If the weather is severe the frame must be protected, for although the Sweet Pea is a hardy plant, the plants are more liable to damage from frost in a pot than in the open ground. Those who raise their plants in a slightly heated greenhouse should move the pots to a cold frame when the young plants are 2 or 3 inches in height. At this stage they will require support of some kind. A few twigs from a half worn out birch broom will answer the purpose admirably.

**Hardening off the Young Plants.**—Bear in mind that the Sweet Pea is a hardy plant and must have abundance of air and

light on all favourable occasions to ensure sturdy plants when the time arrives for planting in the open ground. When air is given a piece of net or wire should be placed along the opening to keep out cats, as they are very fond of crawling in a frame and sunning themselves under glass in spring. The lights may be removed altogether on fine days towards the end of March, and at night by the beginning of April. The exact date of planting them in the flowering quarters depends largely on the weather: from April 10th to 20th is a good time. Holes in which to place the plants should be made with a trowel. Carefully work in the soil round the roots, and press firmly.

### HOW TO GROW SWEET PEAS IN POTS

Sweet Peas are very useful for providing cut flowers, and the demand for them is so great that it is the aim of all cultivators to secure as long a season of bloom as possible. To this end, where there is suitable convenience in the shape of a good-sized, light, and airy house, a number of popular varieties should be grown in pots; then they may be had in bloom quite early in the spring, say, during

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#### FIG. 9.—GROWING SWEET PEAS IN POTS

- T, section of 5-inch pot in which to sow five seeds: *s*, drainage; *t*, rougher parts of compost; *u*, soil (four parts turfy loam, one part decayed manure and leaves from an old hotbed, one part in equal proportions of sharp sand and charcoal dust, with a sprinkling of steamed bone-meal) made tolerably firm; *v*, seeds; *w*, fine soil; *x*, space for holding water in watering.
- U, section of small lean-to greenhouse: *y*, shelf near glass on which seed pots are to be placed; *z*, front sashes opening; *a*, top ventilators: temperature—night, 40° to 45°; day, 45° to 50°, the latter with free or full ventilation.
- V, plants transferred from 5-inch to 8-inch pot: *b*, drainage (corks, oyster shells, cinders); *c*,  $\frac{1}{2}$  inch bones (steamed) and charcoal ("nuts") in equal proportions; *d*, rougher parts of compost; *e*, soil made tolerably firm; *f*, ball of soil and roots; *g*, watering space.
- W, plants after potting into 8-inch pot and staking.
- X, position of plants in cool greenhouse (frost excluded), or with temperature named under U.
- Y, plant from seed sown in 3-inch pot, stopped at third joint and shifted into 6-inch pot.



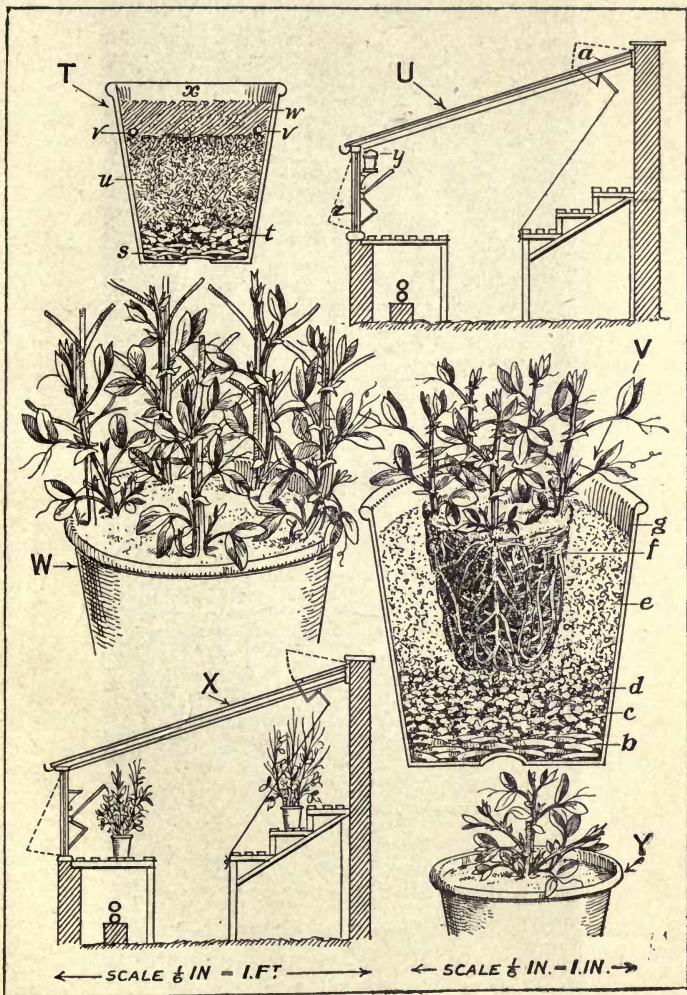
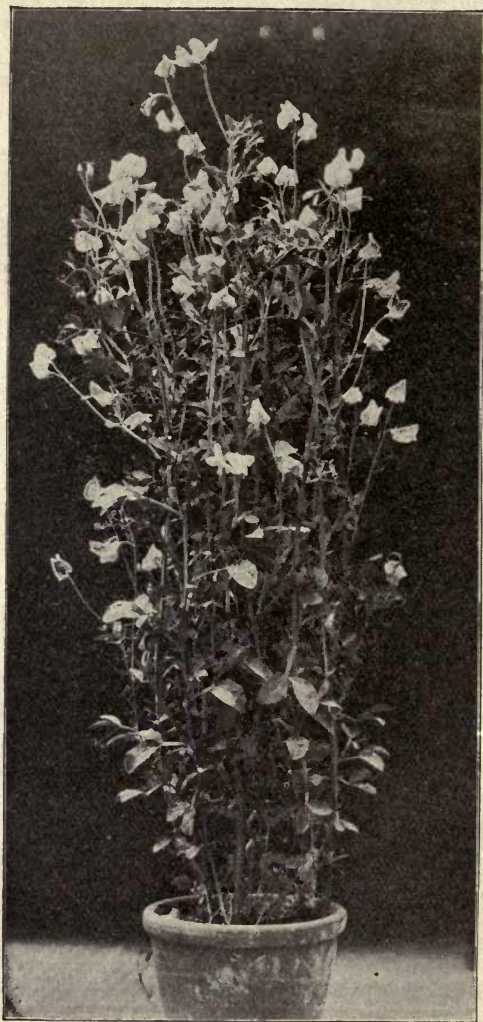
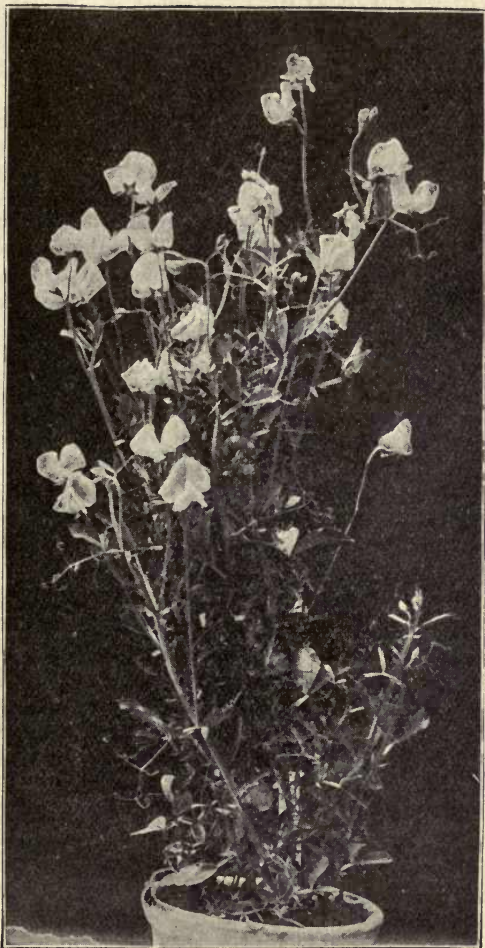


FIG. 9.—GROWING SWEET PEAS IN POTS.



SWEET PEA DOROTHY ECKFORD, AS GROWN  
IN AN 8-INCH POT.



SWEET PEA TRIUMPH GROWN IN A POT.

April or early May. At that time many of the forced bulbs are going out of bloom, so they are particularly welcome. Mr. Thomas Stevenson recommends the following method of cultivation.

**Sow Seeds in September.**—Seeds may be sown in September, and these, if kept growing quite steadily during the winter months, ought to be nicely in bloom by the middle of April; but it must be remembered that Sweet Peas cannot be forced; a warm temperature weakens the plants, and at the time the first flowers begin to open it is very apt to make the buds fall. The seeds are sown in 5-inch pots, placing five or six seeds round the edge of the pots in a fairly light soil mixture that is not too rich, leaf soil and loam with the addition of a little sand and a sprinkling of bone meal being suitable. The seedlings are placed in a cold frame, the lights being kept off in fine weather. In fact, they need not be put on except to keep off heavy rain, though it is advisable to put a fish net over the frame to protect the plants from birds.

**A Sprinkling of Soot** around and over the pots will ward off the attacks of slugs. Mice are very fond of the seedlings, and a sharp look-out must be kept for them; if they put in an appearance they must be trapped or poisoned. My usual practice is to place a few pieces of bread and butter about the frames upon which has been spread a little phosphorus paste; by this means mice can be kept down. When the weather begins to get cold and wet, it is as well to remove the pots to a shelf in a cool house. In this position they may remain till early January, when the plants ought to be from 4 to 6 inches in height. Until the end of February growth will be slow, but if an examination is made of the roots it will be found that they are getting well hold of the soil, and with the advent of rather longer and brighter days, growth will be quite fast enough. A little more heat may be given, but unless the weather is very mild out of doors, 50° should be the maximum night temperature.

**Treatment throughout Winter.**—Very little water is needed during the winter months. I prefer to keep the soil rather dry, although, of course, not quite dry. As growth advances more water will be needed, but at all times it must be judiciously applied, especially when the plants just show bloom, as an overdose of water or manure at that season will possibly make them drop their buds. As soon as the flowers begin to open nicely they will take water very freely, and manure water, such as cow or horse manure, with the addition of a little soot, may be given at each watering. Also a little artificial fertiliser, such as Clay's or any other manures, on the

market, may be given, say, once a week, and this will add greatly to the size of the flowers as well as lengthen the period of blooming.

**Staking, etc.**—In the young state a few birch twigs should be put around the plants to keep them upright, but later I think the neatest way of staking is to use four or five long bamboos to each pot, tying the tops of each stake to a hoop of wire or hazel of about 15 to 18 inches in diameter. Matting or string may then be used to tie round the plants as they make growth. Green fly is about the only pest that is likely to trouble the Sweet Pea indoors; this sometimes makes its appearance in the points of the shoots, and if left there long enough will cripple the plants, but if syringed with a little soft soap, or the house occasionally fumigated, green fly is easily kept down. By following the above directions a good supply of flowers may be had from April till the middle of July, and even after that if necessary; but by then, unless the weather is extremely bad, there will be plenty out of doors. It is a good plan to save a little seed from these pot-grown plants, especially if a new variety is being tried in pots, as not all seasons are really favourable to the ripening of the seed out of doors. A few varieties which have proved very satisfactory in pots are Gracie Greenwood, John Ingman, Dorothy Eckford, King Edward VII., Lady Grisel Hamilton, and Paradise. I think it is advisable to grow a number of plants of one sort rather than many varieties.

### WINTER-FLOWERING SWEET PEAS.

Comparatively few grow winter-flowering Sweet Peas; even the market growers are giving them up. The strains most commonly cultivated are known as the *Télemly*, *Zvolaneck* and *Engelman's*. The first originated with the Rev. Edwyn Arkwright, at *Télemly*, Algiers, the second with Mr. Zvolaneck in the United States, and the third with Mr. Engelman in England. Mr. Arkwright gives the following interesting account of the discovery of his strain of winter-flowering Sweet Peas:—The *Télemly* Sweet Peas blossom (in Algiers) from Christmas until Easter, only ceasing in May, when the English varieties begin. I got this treasure, as I did the *White Iris*, by a happy accident. It used to be no unusual thing to see the old-fashioned American Pea, *Blanche Ferry*, occasionally blooming in March, but about ten years ago one particular plant in this garden came out in February. This was promptly isolated, and

some of her seedlings blossomed the next year in January, and lo! one of them was red. From this last has sprung one sport after another—the Télemly strain, which now includes all the usual varieties from pure white and pale primrose, through various intermediate shades to duplicates of Lady Grisel Hamilton, Salopian, David Williamson, and Black Knight. I have of late years had so many applications for seeds that someone suggested my advertising them, and devoting the proceeds of their sale to the benefit of the British Cottage Hospital at Mustapha. This I have done with very satisfactory results, and the Télemly Peas have now found their way to the Riviera, to Madeira, to the Cape, to Australia, and to America.

**The Value of the Winter-Flowering Sweet Pea**, from the point of view of one who grows them for market, is indicated in the following notes which are contributed by Mr. C. Engelman: I have grown the ordinary Sweet Peas for some years under glass, sowing them in the autumn and keeping them at low temperatures until the early spring, when with the lengthening days the heat is increased. In this way it is comparatively easy to get flowers in April, but almost impossible to have them sooner, for even if the plants have reached a considerable height as early as February, they absolutely refuse to produce flowers. Among some Peas I found, a few years ago, one plant in a row of Captain of the Blues which—though the flower was in every way identical with this variety—was of dwarfer habit and did not form a bush, but simply ran up in one shoot and flowered soon after Christmas. It was sown at the end of October. I got a little seed, and about 75 per cent. of this kept the parent's habit, while the rest went back to the ordinary grandiflorus type. The following year I heard about Mr. Zvolanek's strain of winter-flowering Sweet Peas, and purchased some of them. I found these to have exactly the same habit as my own. I am therefore of the opinion that all these winter-flowering Sweet Peas are simply sports of the ordinary *L. odoratus*. Since then I have also had similar sports from Miss Willmott, Dorothy Eckford, and Lady Grisel Hamilton; I have also crossed these with Mr. Zvolanek's and the Algerian kinds, which are practically all the same, and hope to be able to select some strong, large-flowering kinds in the course of a year or two.

I know that some say a Sweet Pea never sports. But whoever advances this theory evidently means that a single Sweet Pea plant never bears two distinctly coloured flowers, such as we occasionally



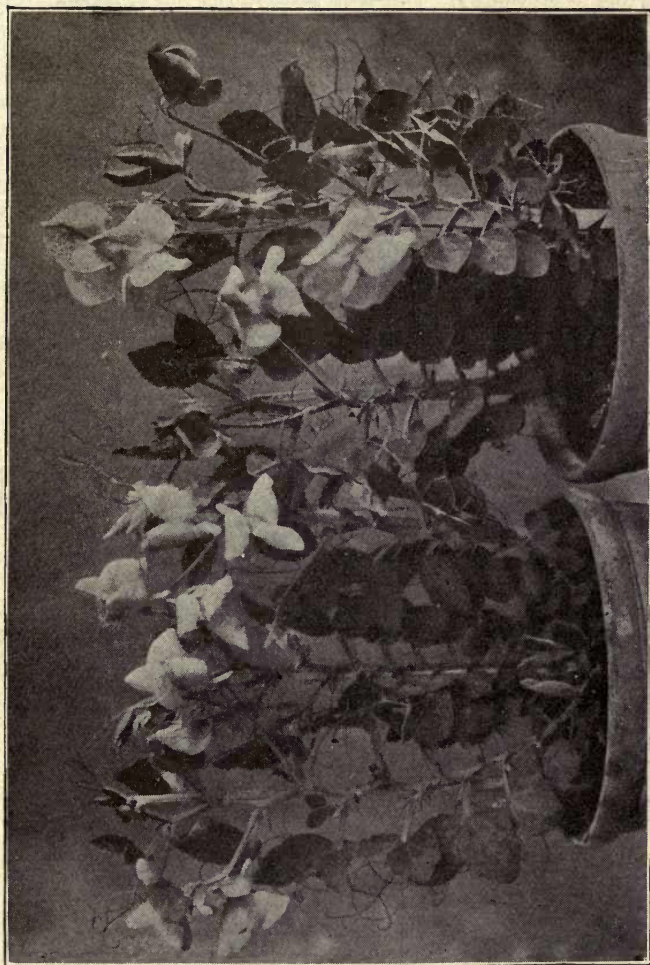
CUPID SWEET PEA ROYALTY.

find with chrysanthemums, carnations, roses, etc. All the pros and cons of this question originate with the difference of opinion as regards the definition of the word "sport." Whatever these winter-flowering Sweet Peas are, at present they are certainly not what they might be, at least in the winter. Some of them are very good in the spring, and if sown in January, planted in a cool, light, and airy house, they will give some very good blooms about April. They can also certainly be had in flower throughout the winter, if sown in August or September, but owing to the lack of light the blooms are small and open badly in midwinter. No doubt in Algiers, or under glass in the States, where there is bright sun, even if the temperature outdoors is low, these winter-flowering varieties can be brought to perfection, and have doubtless a distinct commercial value. Here, however, they are hardly likely to be of great use to the man who grows for profit.

**Cupid Sweet Peas.**—Opinion as to the merits of these appears somewhat divided, but a writer in *The Gardener* who has cultivated them since their introduction in 1895, declares them to be a "worthy race," and gives the following hints concerning them: They are of little use for cutting, owing to their short stems, but seeing that the tall type will give a constant supply of cut bloom, one can well afford to use Cupids purely for garden decoration. The great trouble is that the buds drop off before they open. After repeated tests I consider much of this to be due to position. It must be remembered that Cupid White first originated as a sport from Emily Henderson, in California, and it is generally supposed that the climate caused the break. Cupid Sweet Peas will thrive on a dry soil quite unsuitable to the tall sorts. To plant Cupids on a heavy soil in the ordinary fashion is to court failure, for the plants will not stand excessive moisture. If planted on the level in such soil the first rain will cause the buds to drop wholesale, although the plants will grow vigorously. To succeed with them on a heavy soil it is necessary to plant on a raised bed or bank. The water is then carried off quickly. Rain naturally lowers the temperature, and the dense foliage of this type prevents evaporation.

The greatest success we ever achieved with Cupids was when we grew them on a bank. The soil was extremely poor. The foundation of the bank was made with old raspberry roots, crowfoot weed and the like, the whole being well trampled. The base was solid and no attempt was made to break it up owing to the network of tree roots. Cupid Sweet Peas in small pots were pricked out 2 inches





CUPID SWEET PEA MADAME CARNOT.

apart. They were three inches high. A light coating of cow dung was dug in previously. This took place at the end of April. Water was given, and when the plants began to grow a slight application of nitrate of soda was supplied. They went away strongly, and in July were one dense mass covering the soil from view.

In setting out these miniature Peas they must be placed closely or they will not succeed. Beautiful ribbon borders can be made with them by sowing 1 inch apart and allowing them to grow at will. For cultivation in pots no special treatment is necessary, but deep pots must be used; an 8-inch pot will take a dozen seeds. A cold frame gives them all the protection necessary, but they need shelter from rain. Plants may be lifted from the open and potted. There are quite a number of varieties, and when grown in blocks of separate colours the effect is delightful.

## CHAPTER XII

### Insect Pests and Diseases

OLD meadow land is not at all good for Sweet Peas, that is, in the first year of taking it in from pasture. After it has been used for another crop and lain fallow for a while, it makes excellent Sweet Pea soil. I know that many people hold a contrary opinion, and argue that as stock has fed on the ground for years it must, of necessity, be rich in manurial constituents. This I grant, but the benefits of the manurial deposit are far more than outweighed by the immense number of insect and animal pests always present in such land. Of these

**Wireworms, Leather Jackets, and Slugs** are sure to be abundant. Cockchafer grubs, too, may be present, and one or two of these will eat more plants in a week than the cultivator can grow in a month. Millipedes are also likely to be lying in wait to complete the work of destruction that other pests begin, and that omnivorous devourer of all garden stuff, the caterpillar of the cabbage moth. But most of the above are well known and of good size. Not so another pest, or perhaps two other pests, which are far from uncommon on newly broken grass land. These are the

**Stem Eelworm and White Worm.**—These do a great deal of harm to Sweet Peas. The stem eelworm is responsible for that scourge of the farmer, the clover sickness, and its presence in pasture land is more or less regulated by the quantity of clover in the grass. That the clover and the Sweet Pea are allied is common knowledge, so that the fact that a pest which attacks one should also attack the other need cause no surprise; what does cause surprise is the terrible amount of damage which such tiny pests can do. They are not visible to the naked eye. The rate at which a large, healthy plant will collapse after attack is all but astounding. The white worm—shall I say fortunately?—is much larger and can be readily detected in the tissue of the stem attacked. Unlike the eelworm, it is supposed only to attack vegetation already in process of decay, generally through some other pest's attack; whether this

is so or not I would not care positively to say, but I know that when once a plant has been fastened on by these white worms there is very little hope of its recovery. This pest is commonly found in cow dung, hence its presence in old pasture land is readily accounted for. Both these pests accomplish the death of the plant in what may be called a mysterious way, *i.e.* there is nothing on or near the plant to account for its collapse. I have seen plants collapse at all stages from a few inches to 2 feet or more high.

**Remedies.**—The best thing to do when an attack of either pest is noticed or suspected, is to grow the plants on as quickly as possible. This is best done by feeding them, and there is no better food for the purpose than nitrate of soda. In warm weather this makes its presence felt in the soil in a few hours, and the effect upon the plants is almost immediate. Half an ounce should be stirred into a gallon of water, and this quantity given to each clump or 6 feet run of row. Three such waterings on alternate nights will have a wonderful effect upon the plants—in fact, so good is the result that I would advise all readers who want first rate flowers to adopt this practice as a preventive until the plants are nearing the flowering period. At that time nitrate is dangerous to some varieties in some hands. I have also used the patent destroyers, Vaporite, Slugene, Kilogrub, Alphol for both of these pests and I think I can say with good results. Sulphate of iron is also exceedingly valuable against eelworm, and for this reason

FIG. 10.—SWEET PEA PLANTS INFESTED BY STEM EELWORM  
(*Tylenchus devastatrix*)

- F, infested plant: *c*, top growth stunted; *d*, collar, or ground level, above which eelworms are seldom found in stem of Sweet Pea; *e*, underground or root stem, usually somewhat swollen, and in which eelworms are found when plant is in a state of decay; *f*, "shell" of seed; *g*, nodosities on roots caused by eelworm, cutting off supplies of nourishment.
- G, plant collapsed from an attack of eelworm: *h*, top withered; *i*, root stems and roots decayed, nodosities rotted away, and eggs and larvæ passed into soil.
- H, bit of decayed root stem: *j*, sound plant cells; *k*, destroyed tissues; *l*, ova, or so-called eggs of eelworm; *m*, young eelworm.
- I, embryo of eelworm developed in egg or ova case.
- J, stem eelworm in mature state (female).

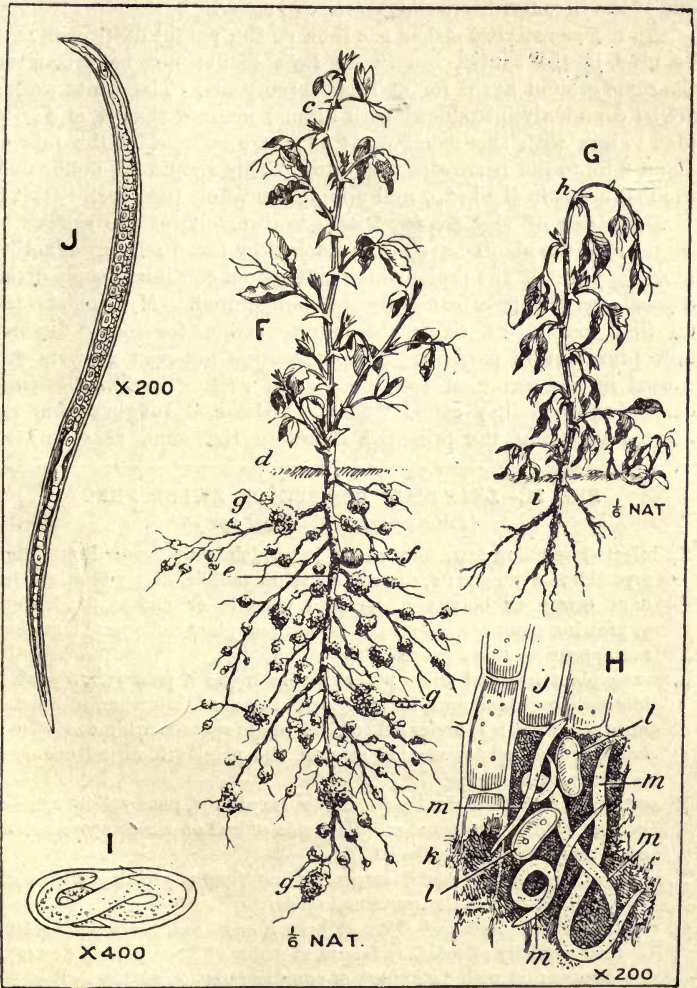


FIG. 10.—SWEET PEA PLANTS INFESTED BY STEM EELWORM.

Mackereth's Sweet Pea manure, which contains this substance, is one of the best fertilisers the grower can stock.

**As a Preventive** either gas-lime or the patent destroyers may be used in the winter, but Sweet Peas should not be grown on the same ground again for at least three years. The white worms are so commonly introduced with animal manure that it is a good plan to mix with this equal parts of soot and lime, at the rate of about 2 lb. to the barrowload of dung. This should be done while the manure is in the heap, well mixing the whole together.

**Diseases of the Sweet Pea.**—Fortunately for the grower of Sweet Peas the plants have been attacked by few diseases. Whether in a few years, if the present high cultivation continues, some dread disease may appear can only be conjectured. Mycologists tell us that too liberal treatment is responsible for many diseases now prevalent in gardens. Some sensation amongst growers was caused in the spring of 1908 by several writers in *The Gardener* discussing what they called "Streak Disease." Judging from the flowers staged at the principal shows in the same year only an

#### FIG. 11.—LEAF-SPOT DISEASE OF SWEET PEAS

(*Peronospora trifoliorum* var.)

- K, infested seedling: *n*, cotyledons in which may have been latent mycelium of fungus; *o*, disease spots on radicle, first yellowish then dark brown or black; *p*, infected plumule or underground stem; *q*, growing point often does not extend but plant collapses, sometimes not appearing above ground.
- L, young plant infected when a few inches high: *r*, pale yellow spots or blotches on stem and leaves—early stage of infection, ultimately brown or black; *s*, under side of leaf where spore-bearing condition of fungus produced; *t*, stunted growth, the plant seldom advancing to satisfactory flowering.
- M, portion of flowering stem infected by fungus: *u*, pale yellow spots on leaves; *v*, brown blotches on under side of leaf on which spore-bearing condition of fungus produced.
- N, seed pod apparently sound externally but fungus growing within the pod and on some of the contained seeds.
- O, seeds from diseased pod (N): *w*, perfect seed and normally healthy; *x*, seed partially affected by fungus at point of line; *y*, seed destroyed by disease and with "stubble" of conidiophores on surface.
- P, cluster of conidiophores bearing conidia or spores of Sweet Pea leaf-spot fungus.
- Q, Oospore or resting spore.

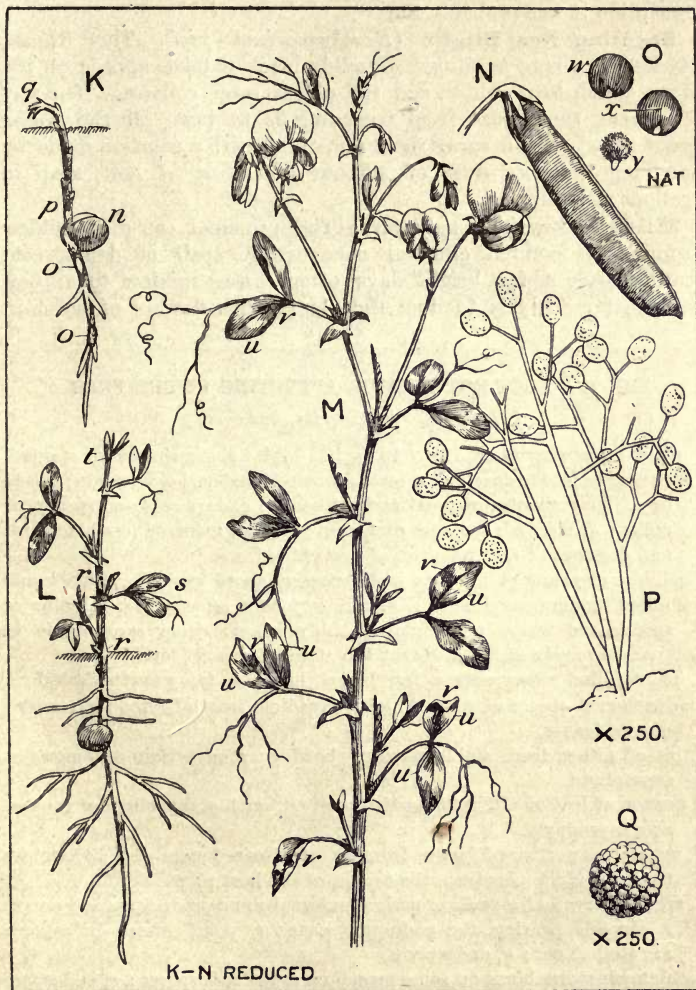


FIG. 11.—LEAF-SPOT DISEASE OF SWEET PEAS.

isolated case here and there could have appeared. From the description it was probably the

**Seedling Pea Blight** (*Brachysporium pisi*).—This disease attacks the young seedlings. Mouldy black patches appear on the leaves, which turn yellow, and the plants soon collapse. The way to prevent the disease from spreading is to burn all the young plants attacked and spray those remaining with a solution made by dissolving 1 oz. of liver of sulphur and 3 oz. of soft soap in 2 gallons of water.

**Mildew** (*Erysiphe polygoni*).—The principal cause of mildew is found in sudden climatal changes. A spell of damp, cold weather after a few bright days often causes mildew to appear. The usual remedy is to dust the plants with flowers of sulphur.

**FIG. 12.—ROOT-ROT FUNGUS AFFECTING SWEET PEAS**

(*Thielavia, syn. Torrilla, basicola*)

- R, plant collapsing when 12 to 18 inches high : *z*, growing point stunted, having ceased to develop ; *a*, leaves browned and curled upwards ; *b*, side or axillary shoots browned and withered ; *c*, dark spots on stem near collar ; *d*, blackish spots on root stem ; *e*, roots more or less blackened and destroyed ; *f*, extremities of roots killed.
- S, collapse of young plant when just springing above ground : *g*, black and killed underground stem ; *h*, not seriously affected ; *i*, remains of seed-leaves where mycelium probably passed from saprophytic to parasitic mode of life in Sweet Pea stem ; *j*, ground level.
- T, plant killed when only a few inches high : *k*, top growth ceased ; *l*, blackened stem ; *m*, roots killed ; *n*, radicle least affected ; *o*, remains of seed-leaves.
- U, bit of rather fresh stable manure showing : *p*, mycelium of fungus as saprophyte.
- V, portion of leaf mould only partially rotted, with *q*, mycelium of fungus, as a saprophyte.
- W, vegetative portion of fungus from bit of diseased stem of R : *r*, septate threads, which penetrate the tissues of the host plant
- X, special thread of mycelium pushed externally and producing endospores : *s*, threads bearing the endospore case ; *t*, point where endospores are pushed out ; *u*, endospores,
- Y, chlamydospores borne on same mycelium as the endospores : *v*, endospore thread ; *w*, chlamydospore thread ; *x*, chlamydospores ; *y*, the same breaking up, and acting as resting spores, brown or blackish.
- Z, ascospores containing eight spores : *z*, free ascospores.



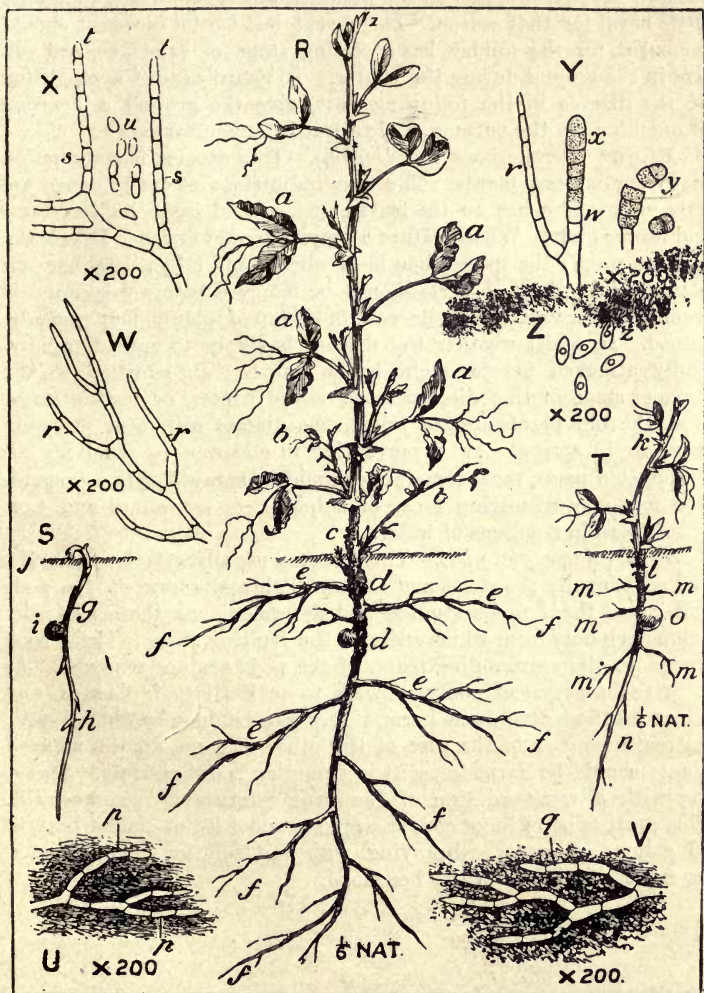


FIG. 12.—ROOT-ROT FUNGUS AFFECTING SWEET PEAS.

Mildew is fairly common on the plants in late autumn, but then does little harm for that season. The Sweet Pea haulm however, should be burnt, for the mildew has a resting stage of existence, and will live in the ground during the winter. To guard against a repetition of the disease in the following year, give the ground a dressing of quicklime in the autumn, and fork it in soon afterwards.

**Blight** (*Peronospora trifoliorum*).—This disease is common on many leguminous plants. The first indications of its presence are pale yellow blotches on the leaves, and, in bad cases, on the stems and flower buds. When mature a greyish mould forms. This is the fruiting stage; the spores then blow about, and infect neighbouring plants. The diseased parts should be removed before this stage is reached, otherwise, the whole row, or clump of plants may soon be ruined. In moist weather the disease is likely to spread rapidly. Badly attacked plants ought to be burnt. In addition to the summer stage of this disease there is the winter, or resting stage. If all the old plants are not burnt, the disease will most probably reappear in spring. As a preventive in addition to removing all the affected parts, those remaining should be sprayed with a preparation made by dissolving 1 oz. of sulphide of potassium and 4 oz. of soft soap in 3 gallons of water.

**Spot** (*Ascochyta pisi*).—This disease usually attacks the pods, and occasionally the stems and leaves. Pale spots form on the pods and cause them to be stunted and deformed. As these spots develop dark dots form which indicate the fruiting stage. These soon spread to the surrounding plants if the pods are not removed. As it is the practice of many growers to pick all their flowers, and not to let them seed, little harm, if any, can be done by this disease. As recommended in the case of the other diseases all the affected plants should be burnt to assist in stamping it out entirely. Spraying with a weak solution of Bordeaux mixture is recommended. This consists of 1½ lb. of copper sulphate and 1 lb. of slaked lime to 16 gallons of water. Spraying with the solution recommended for Sweet Pea blight is also beneficial.

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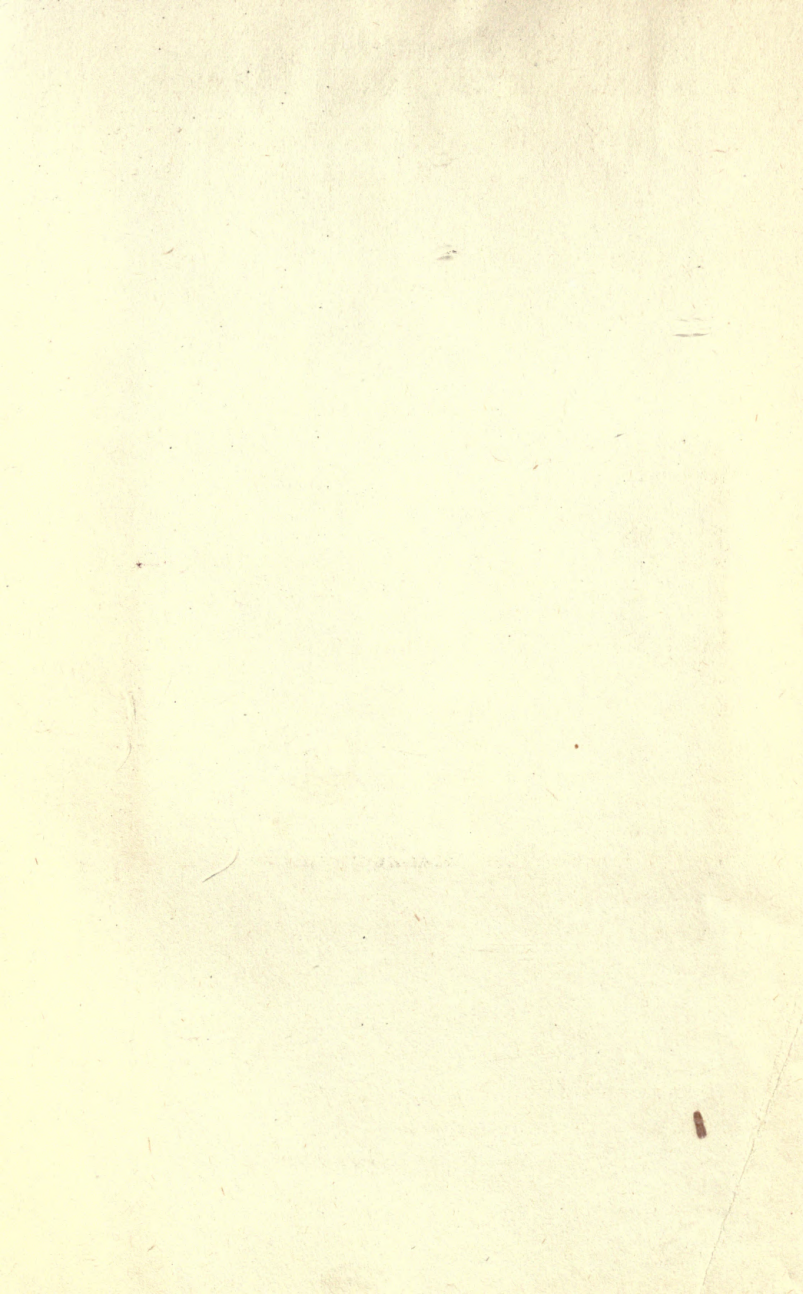
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