

# SWEET PEAS and ANTIRRHINUMS

How to grow them to Perfection

by  
*William Cuthbertson*

V.M.H.

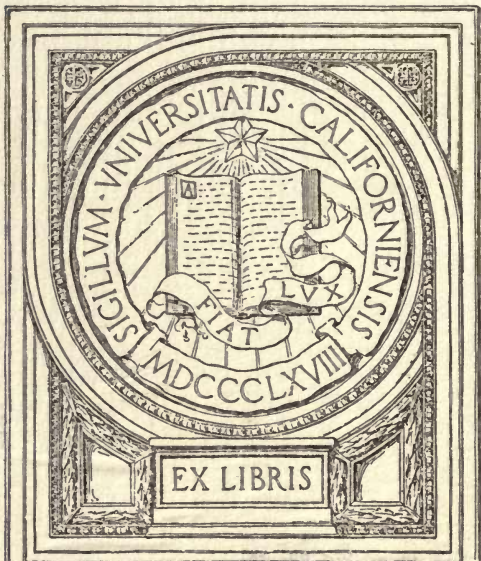
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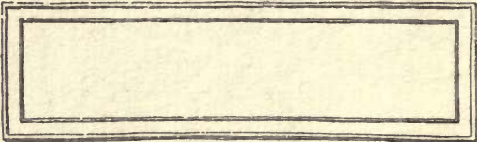
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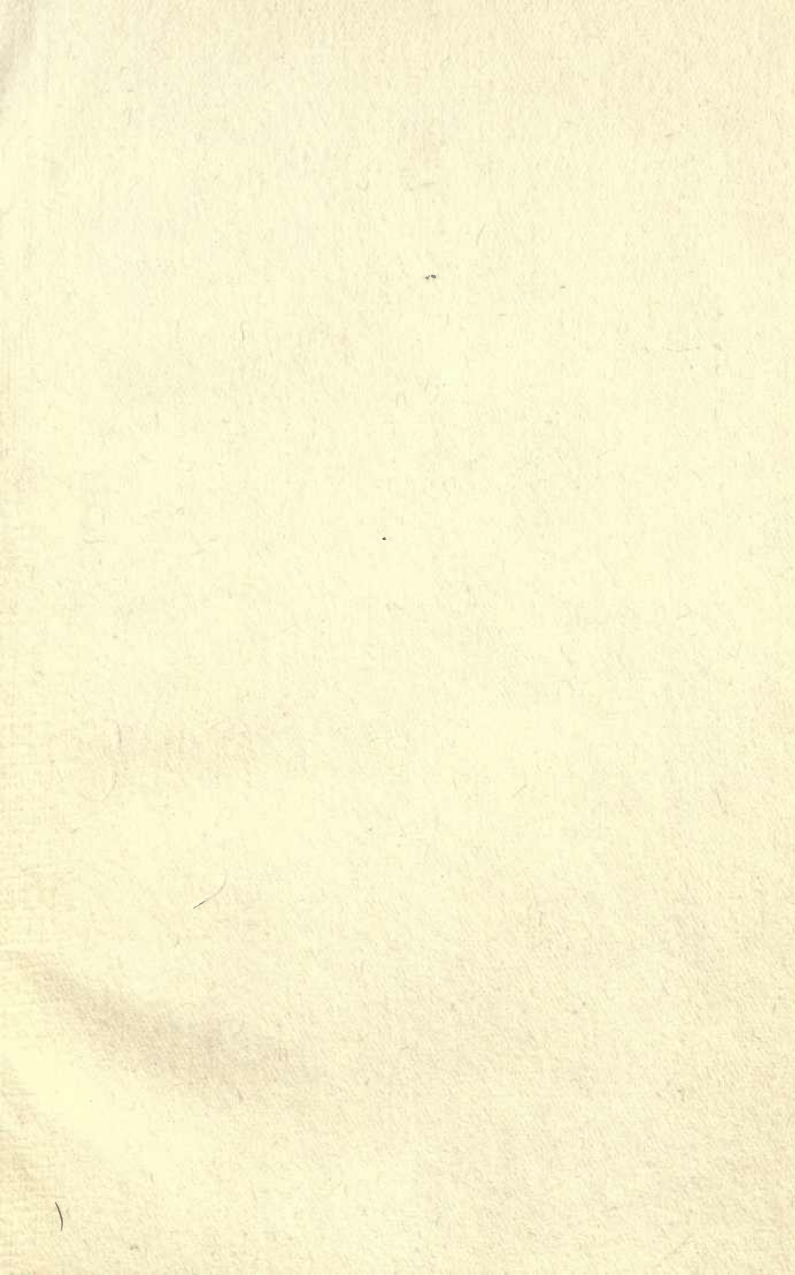


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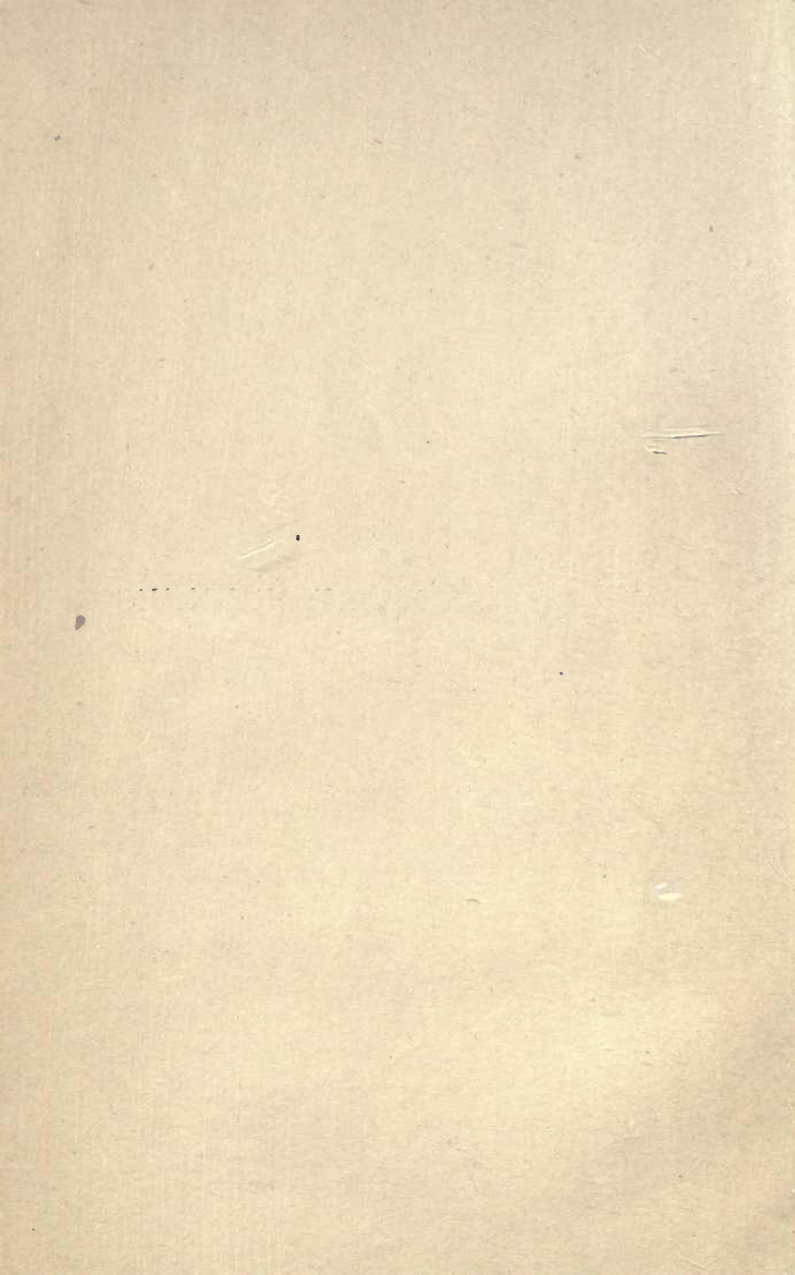
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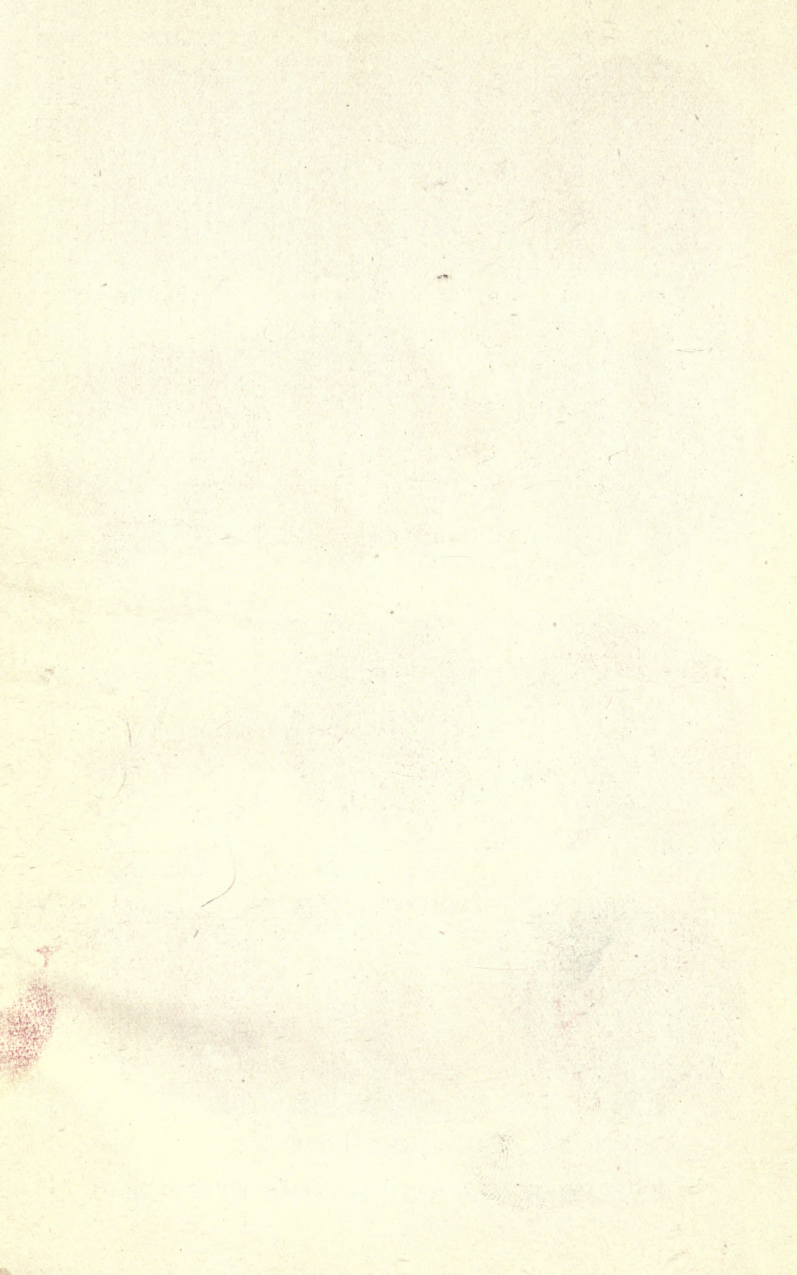


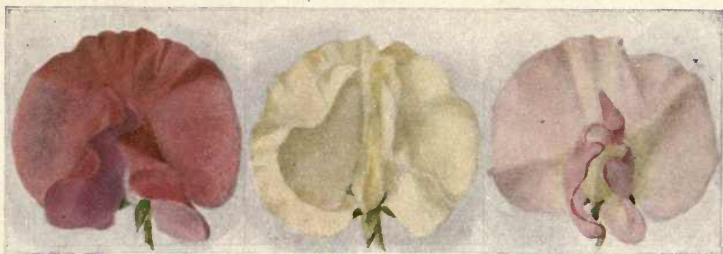




SWEET PEAS AND ANTIRRHINUMS







Rosabelle

Dobbie's Cream

Mrs. A. Hitchcock



Lavender G. Herbert

Elfrida Pearson

Sunproof Crimson



Thos. Stevenson

New Marquis

Jean Ireland



Royal Purple

Constance Hinton

Illuminator

TWELVE OF THE BEST MODERN SWEET PEAS.

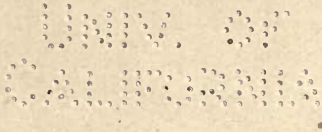


# SWEET PEAS

AND

# ANTIRRHINUMS

(SNAPDRAGONS)



BY

WILLIAM CUTHBERTSON, V.M.H.

AUTHOR OF "PANSIES, VIOLAS AND VIOLETS"

*Second Edition*

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## INTRODUCTION

WHEN I was endeavouring to make up my mind whether I should accede to Messrs. Clarke's request and write this little book, I asked the advice of several horticultural friends, among others that of Mr. S. T. Wright, the able and popular superintendent of the Royal Horticultural Society's Gardens at Wisley. Mr. Wright advised me to undertake the task because he believed I should produce a book which would be practical—evolved out of my own experiences.

It was that opinion expressed so kindly by Mr. Wright which decided the question. Many books devoted to Sweet Pea culture have appeared during the last ten years, and one naturally wonders if there is room for another. Messrs. Clarke think there is, and I hope they will not be disappointed.

## Introduction

I have associated with Sweet Peas in the present volume, Antirrhinums (*Snapdragons*), because I believe there is a rapidly growing interest in these flowers, and because I know of no work which has been published dealing with them.

W.C.

DUDDINGSTON, EDINBURGH,

*December, 1914.*

Revised to date, a second edition is now published.

W.C.

*December, 1919.*

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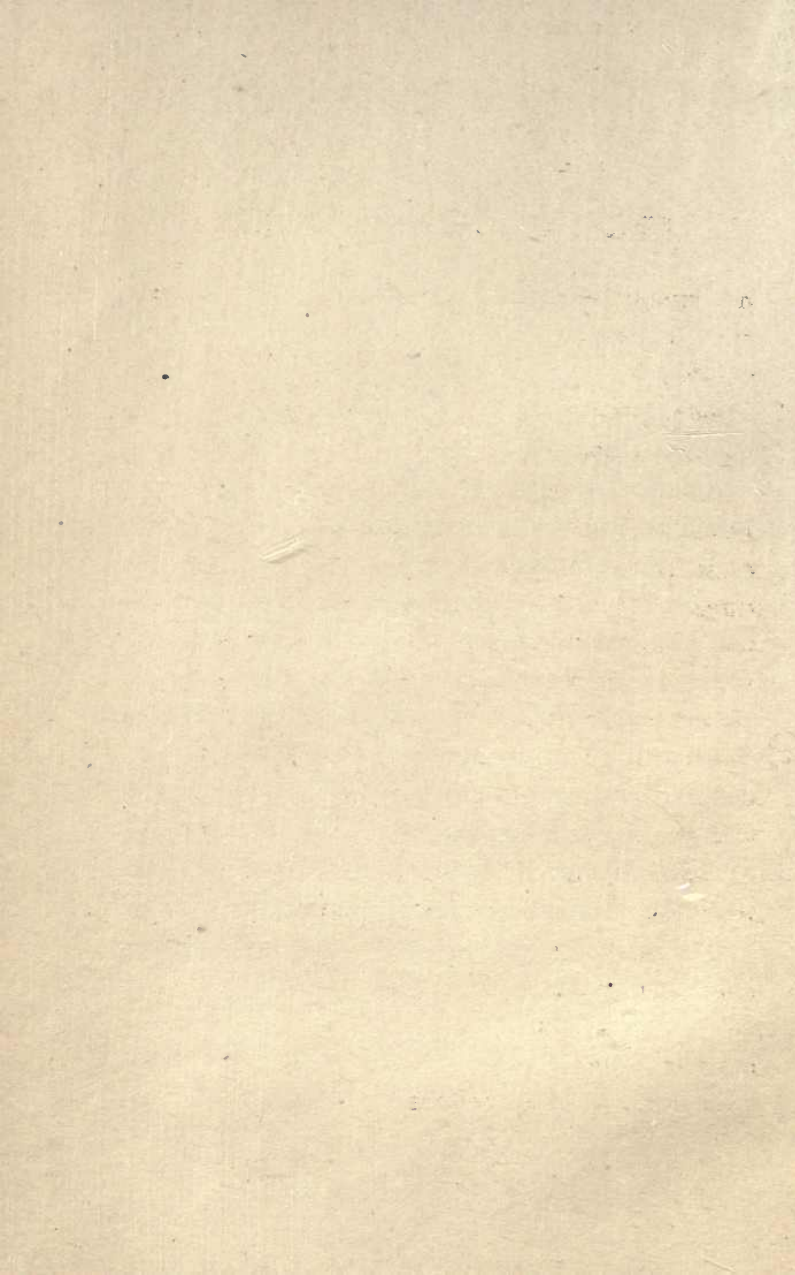
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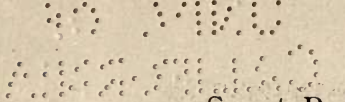
# SWEET PEAS

## CHAPTER I

### THE COMING OF THE MODERN SWEET PEA

I DO not intend to trouble my readers with a long account of the history of the Sweet Pea. A few salient facts must suffice. It is generally agreed that the home of *Lathyrus odoratus*, the wild Sweet Pea, is the Isles of the Mediterranean, especially Sicily. In 1699, seeds of it were sent to England by a well-known Italian botanist—Franciscus Cupani. He was a devout monk of the Church of Rome, and it strikes one as an interesting coincidence that nearly two hundred years later the work of another reverend Father of the same Church should have a remarkable bearing on the development of the modern Sweet Pea. I refer to Abbé Mendel.

The seeds were sent by Cupani to Dr. Uvedale, of Enfield near London, who grew them in 1700, the plants flowering the same year. It will be remembered by many that 200 years later, in 1900, the bicentenary of the introduction of the Sweet Pea into Great Britain was celebrated by a



## Sweet Peas

great exhibition of Sweet Peas at the Crystal Palace, London. My friend, the late Mr. Richard Dean, and I were largely responsible for that great event, out of which sprang the National Sweet Pea Society of England.

By the end of the eighteenth century, the following varieties of Sweet Peas were known to be in existence—purple, red, white, black, and Painted Lady. All these I imagine were simple variations from the original form. There is no record, so far as I know, of anyone having set about the work of raising new varieties scientifically until we come to Laxton and Eckford's work, towards the end of the nineteenth century.

Early in the nineteenth century, a striped variety appeared. In 1837, Messrs. James Carter and Co., of London, offered all the foregoing varieties for sale, and they were the introducers of a number of others, the most noted being Scarlet Invincible, which was the first Sweet Pea to receive a first-class Certificate from the Royal Horticultural Society; that was in the year 1865.

Before passing to the work of Mr. Henry Eckford, a short reference is necessary to that of Mr. Thomas Laxton. Mr. Laxton was a fine florist of the old school, whom I knew personally.

## The Coming of the Modern Sweet Pea

For ten years, 1883 to 1893, he was identified with new varieties of Sweet Peas. Among the better known varieties introduced by him were Invincible Carmine, Invincible Blue, Etna, Madam Carnot and Princess May.

I now come to Mr. Henry Eckford who has been termed "the father of the Sweet Pea." His name will be for ever associated with the flower. Born in Scotland in 1823, he as a young man migrated to England. While gardener to Dr. Sankey, of Sandywell, Gloucester, he began cross-fertilising Sweet Peas, with a view to their improvement. This was about the year 1870. Mr. Eckford relinquished private service and it was from his gardens at Wem, in Shropshire, that the new Sweet Peas were sent out, which made his name famous wherever flowers are grown, and which gave such an impetus to Sweet Pea culture in America. Beginning in 1882 with Bronze Prince, Mr. Eckford produced a series of new Sweet Peas year by year, which were the wonder and admiration of everyone, until the advent of the waved or Spencer type in 1904.

Mr. Eckford's varieties all belonged in these days to the hooded or erect standard type so we'll illustrate in the engraving of "Dorothy Eckford."

## Sweet Peas

It is only necessary to mention a few of Mr. Eckford's creations to revive charming memories in the minds of my older readers. In addition to Dorothy Eckford; Queen Alexandra, King



"DOROTHY ECKFORD."

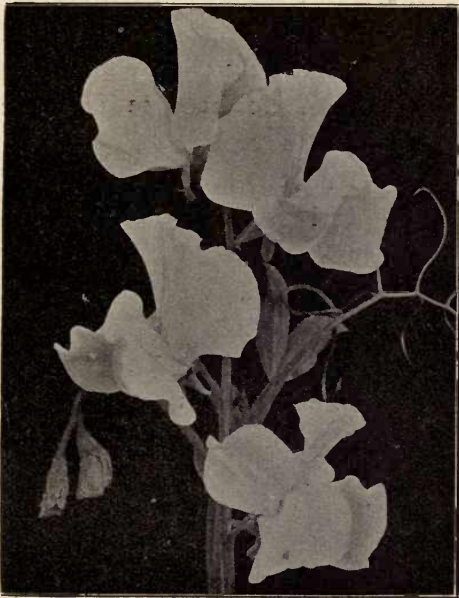
A FINE PURE WHITE HOODED FLOWER  
RAISED BY HENRY ECKFORD.

Edward, Henry Eckford, Lord Rosebery, Othello,  
Lady Penzance, Venus, Triumph, Lady Grisel  
Hamilton, Her Majesty, Primrose, Prima Donna,

## The Coming of the Modern Sweet Pea

Duchess of Westminster and Salopian were well known.

“The Modern Sweet Pea” is of course the waved or Spencer Sweet Pea, but without Eckford’s



A FINE TYPE OF SPENCER OR WAVED  
SWEET PEA.

work it is very questionable if we should to-day have had the waved Sweet Pea. It came out of one of Eckford’s varieties, I believe, as a mutation, as it cropped up in several districts of England

## Sweet Peas

about the same time and out of the same variety, "Prima Donna." It is one of the most remarkable things in horticulture that the Sweet Pea, after remaining practically constant in form for 200 years after its introduction into England, should suddenly give rise in several places to the enlarged and beautifully waved form associated with the name of Countess Spencer. The credit of first discovering and introducing this new type will always belong to Mr. Silas Cole, who was gardener to Earl Spencer at Althorp Park, Northampton, in 1901. It was in that year that Mr. Cole set up his remarkable exhibit at the show of the National Sweet Pea Society, at the Royal Aquarium, London, and from 1904, when Countess Spencer was put on the market by Mr. Robert Sydenham, the career of the modern Sweet Pea may be said to have begun.

## II

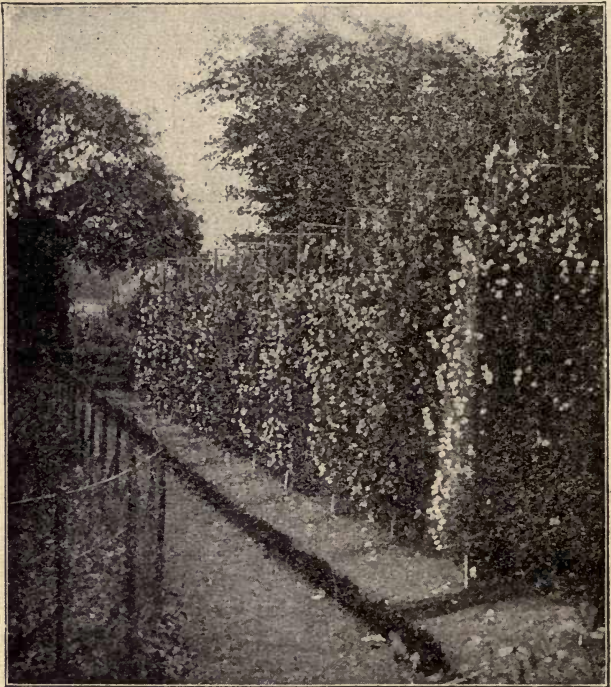
### CULTURE FOR THE AVERAGE MAN

By the average man I mean the man who requires good average sweet peas for home decoration, for cutting and giving away to friends, and who is therefore not prepared to give their culture anything like the great amount of attention bestowed by the keen exhibitor on his plants.

The basis of successful sweet pea culture is laid in the autumn in the preparation of the soil. A site in the garden ought to be selected which is well exposed to the sun, and sheltered from strong and draughty winds. Whether the plants are to be grown in lines or in clumps, I advocate the digging two spits deep of the entire area. If the subsoil is poor do not bring it to the surface, but dig it all the same. If the work is honestly carried out, the soil should be moved to the depth of two feet. Manure should be incorporated in the soil in the process of autumn digging—it is immaterial what sort of dung is used, if it is rich and well made, that is, old and

## Sweet Peas

partially decomposed. For light soils cow dung is preferable. The question is often asked how much well-made dung constitutes a good dressing? The



CLUMPS IN EDROM MANSE GARDEN, BERWICKSHIRE.

answer is one hundredweight to six square yards. Most soils are deficient in lime, and after the digging has been completed the surface might



## Culture for the Average Man

with advantage be dusted with powdered lime,<sup>1</sup> which winter rains will work into the soil. By dusting I mean powdered like a slight shower of snow, an effect which can be got by two to three ounces of lime to each square yard. In the rough condition in which it is left after the autumn digging, the ground should be left until spring, and the rougher it is left over winter, the better. Just before planting time, the surface should be worked down level with a rake or fork. The question whether to grow in clumps or lines must be left for decision to the taste of the individual.

SEED SOWING.—If the average man wants to have a few sweet peas in bloom by the end of May and during June, he must sow a few seeds in autumn, but this is not recommended unless he has a frame or greenhouse. The end of September or early October is a good time to sow in boxes, putting the seeds in rows two to three inches apart; and one to one-and-a-half inches between the seeds, which should be planted about three-quarters of an inch deep. The plants should remain in the boxes in a frame until the middle of January, when they will be much benefited by being transplanted into boxes of fresh soil or

<sup>1</sup> Freshly slaked lime.

## Sweet Peas

potted off into small pots. After growth begins the plants should have the tops pinched off to encourage side growths which will spring from near the base.

Supposing these early plants are not desired, two other methods of sowing are practised which I shall now describe.

**SOWING UNDER GLASS.**—As seeds of the fine Spencer or waved Sweet Peas are rather expensive, sowing under glass is very generally followed. It is of course necessary to have a small greenhouse or a frame to carry it out; or to get the use of a neighbour's. Early in February is quite a good time to sow, and the seeds should be placed in boxes as described above. When the plants have grown to five or six inches in height, the tops should be pinched off, and instead of transplanting as recommended with autumn-sown plants, all that requires to be done is to harden off the plants; that is, gradually to accustom them to do without the protection of the glass until they have no protection whatever night or day. This condition should be arrived at early in April, because by mid-April the plants must be planted out in their flowering quarters—a little earlier or a little later according to locality. Such plants will make a fine hedge of Sweet Peas

## Culture for the Average Man

if put out a foot apart. Six or eight of them will be enough for a clump two feet in diameter.

**SOWING IN THE OPEN.**—This should not be attempted earlier than the month of March, and only then when soil is in good friable condition. For out-of-door sowing, a double line is recommended thus :—

\*       \*       \*       \*       \*       \*       \*

    \*       \*       \*       \*       \*       \*



A FINE LINE FOR CUTTING, STAKED WITH HAZEL BRANCHES.

## Sweet Peas

the lines nine inches apart and the seeds three to four inches apart in the lines and planted one inch deep. Slugs and snails are apt to prey on the young plants and must be watched for. A slight dusting of lime is a good protection. Birds are also depredators in some districts, and if the rows cannot be protected by nets, a few lines of black sewing thread stretched tightly on short pins a few inches above the plants usually scare the birds. If the germination is good, and if the young plants are not destroyed, it will be found they are rather thick in the lines as sown. Thin them to six or nine inches apart—or even twelve, if very strong. The thinnings can be transplanted, if carefully lifted. Give them away to a friend, and so encourage the growth of good sweet peas!

As soon as possible—in the case of plants from boxes or pots as soon as they are planted out—they ought to be staked with small twigs if the permanent stakes are not available. The question of staking, *i.e.*, of securing stakes is a difficult one in many districts. Hazel branches eight feet high are ideal, or light feathery branches of any other tree make good stakes. If such cannot be procured, the wire trainers supplied by seedsmen can be used, only, if the plants are

## Culture for the Average Man

grown strongly two tiers of trainers will be found necessary, and posts must be put in at the beginning to carry them. The trainers are generally made six by four feet, so that one above the other gives a height of eight feet. It is not advisable to put up the second one until the plants have almost reached the top of the first one.

Wide meshed (four inch) wire netting is also used by some, and makes a most effectual substitute for hazel or other natural stakes. It can be got any width, and if neatly put up on posts is not long unsightly, as the growths soon obscure it. Clumps are easily made with this wide meshed wire-netting. Cut it off in lengths of six or seven feet, and secure it in the form of a circle to two posts driven into the ground at two feet apart. With all wire trainers the plants are helped if tied in here and there with thin strands of raffia. There has recently been put on the market a string or cord netting for sweet peas, called "Simplicitas Netting" and I have seen quite good results with it in sheltered gardens. It only remains to be said that the plants will be much improved, the size of the flowers enlarged, and the number of the stems increased if regular doses of weak liquid manure are given along the rows or round the clumps (keeping a few inches

## Sweet Peas

back from the stems of the plants) once a week after the first lot of flowers has expanded. It is also necessary, as has so often been said before, to cut *all* flowers immediately they begin to go over, to prevent seed forming. If seed pods are allowed to form in dry weather, the plants will go out of bloom in a fortnight and will not come into flower again.

### III

## CULTURE FOR THE EXHIBITOR

THE first concern of the grower who is going in for exhibition is to procure good true seed of the best exhibition varieties in September. A list of the best sorts will be found in another chapter. It is never advisable to grow a large number of sorts. By that I mean, if a man will never require more than twelve varieties for exhibition at once, I strongly advise growing not more than eighteen, and selecting these with the greatest care. Surely it is the best policy to have twenty-four plants of one variety rather than six plants of four varieties occupying the same space of ground. I guarantee it will be found so the day before the show. If space is very limited, twelve standard varieties and two or three novelties will generally fit a man to go into a class for twelve bunches, distinct varieties. On no account should any one depend upon the bare dozen.

The seed having been procured, sowing must be done in the last week of September or the first one in October. The seed should be sown

## Sweet Peas

in boxes or pots. If they can be allowed to stand in a greenhouse until the seeds germinate so much the better. Many people have difficulties with germination. These arise either from keeping the soil in the boxes too wet or too dry. It is quite a good plan to thoroughly soak the soil in the pots or boxes before sowing ; then lay the seeds on top and cover with half an inch or three-quarters of fine soil or sand. The pots or boxes can be shaded till germination takes place by putting sheets of brown paper over them. Seeds of cream, white, and lavender varieties should on no account be put deeper than stated, as they are more delicate and overwatering in their case causes rotting at once. Very hard skinned seeds—varieties like Elsie Herbert, Sunproof Crimson, and Mrs. Cuthbertson—will germinate quicker if a tiny little piece is chipped off the side of each seed with a pen knife before planting. If this is not done, and it is found that some varieties do not appear above ground by the time the others have germinated, the seeds can be lifted and chipped and replanted, after which they will germinate quickly. What to strive after is to give seeds under glass conditions similar to what they would find in the ground in genial March and April weather.





**FLOWERS FOR EXHIBITION AS GROWN BY MR. T. JONES,  
RUABON, WALES.**



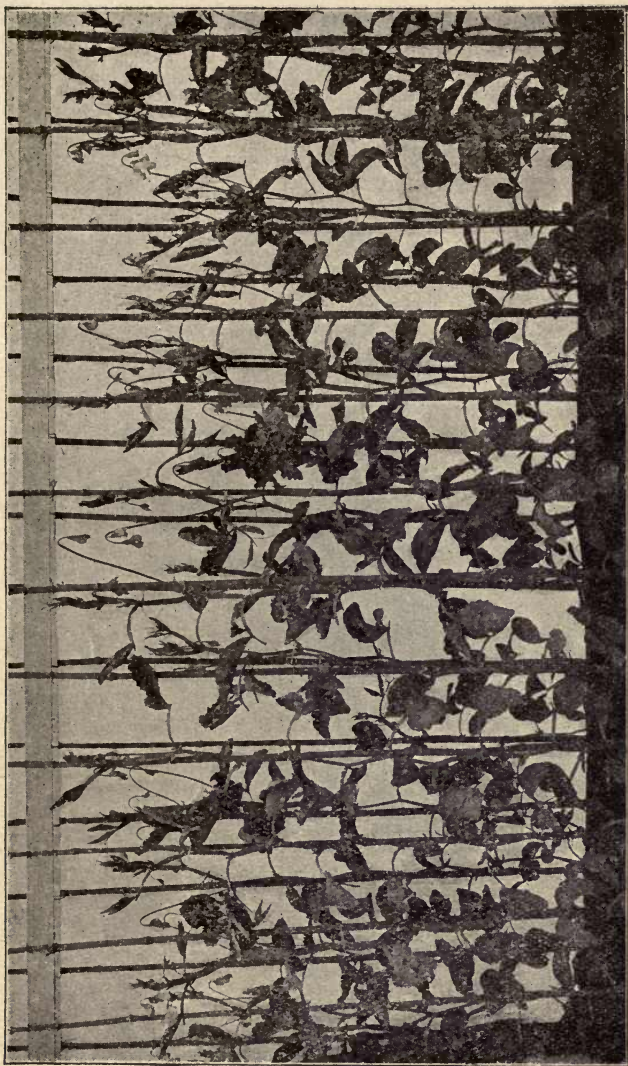
## Culture for the Exhibitor

After the plants are an inch or so in height, the boxes or pots containing them should be placed in a cold frame—keeping the sash on when weather is very wet, snowy or frosty. For two or three days after the plants are removed from the greenhouse, the sash had better be kept close over the plants till they get used to the new conditions. Watering will not often be required unless there is a period of bright sunshine. See that there are no slugs or snails about the frame, and if birds are plentiful, a piece of netting will require to be stretched over the frame to keep them from picking the leaves when the sashes are opened. The plants should remain in the frame till the beginning of the new year, when they should be carefully taken out of the boxes or pots and put into boxes of fresh sweet soil mixed with some leaf mould or old spent hops, or potted up singly into three-inch pots filled with a similar compost. If they can be kept in a cool greenhouse for a month after this change, so much the better, and then put into the frames, but, if a greenhouse is not available, they must be returned to the frame and the sash kept on for a month or so continuously, giving plenty of air during the day, especially in sunny weather. After growth has begun,

## Sweet Peas

the centre of the main shoot should be pinched off to cause side growths to break at the base of the plants. These side growths usually come away stronger than the main stem itself. When the growths become five or six inches tall, small twigs should be inserted round the edges of the pots, and even a few among the plants in boxes will be helpful. When the plants are transplanted into the boxes in January, they should be placed about three inches apart so that they can be lifted with plenty of soil adhering to the roots at planting out time in April. Then they should be planted out in lines, the strong growing varieties twelve to eighteen inches apart, so that two or three growths can be taken up, the weaker-growing ones six to twelve inches apart, as it is advisable to train only one or two growths from them. The accompanying illustration clearly shows how the work should be done.

The best growers use thin bamboo canes as shown in engraving. These are inserted six inches apart and tied firmly to wires stretched on posts, or to thin wooden rails securely nailed to posts placed about six feet apart. From the very start one growth is led up each cane and tied as required. All side growths are rubbed out, only the flower stems which will appear when the

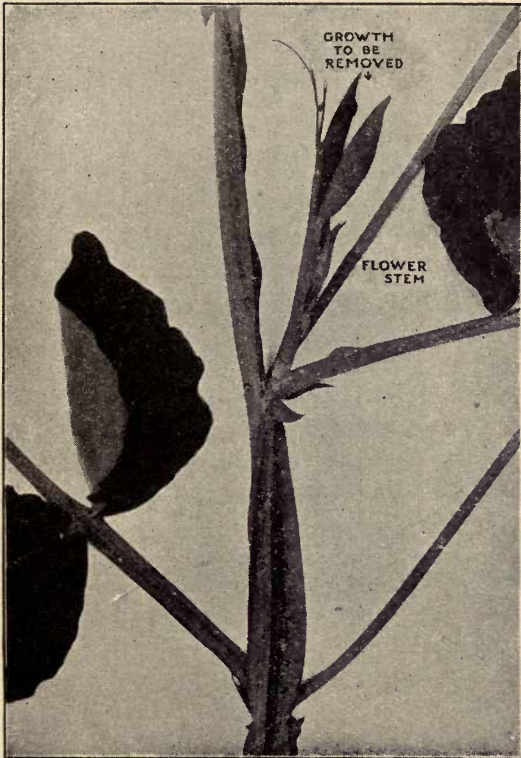


PLANTS TRAINED ON BAMBOO CANES, COMING INTO BLOOM.



## Culture for the Exhibitor

plants are about two feet high being left to develop, in addition to the main shoot which is kept going all the time. This process is well illustrated in the accompanying illustration.



After the first flowers have appeared, feeding the plants with liquid manure should begin.

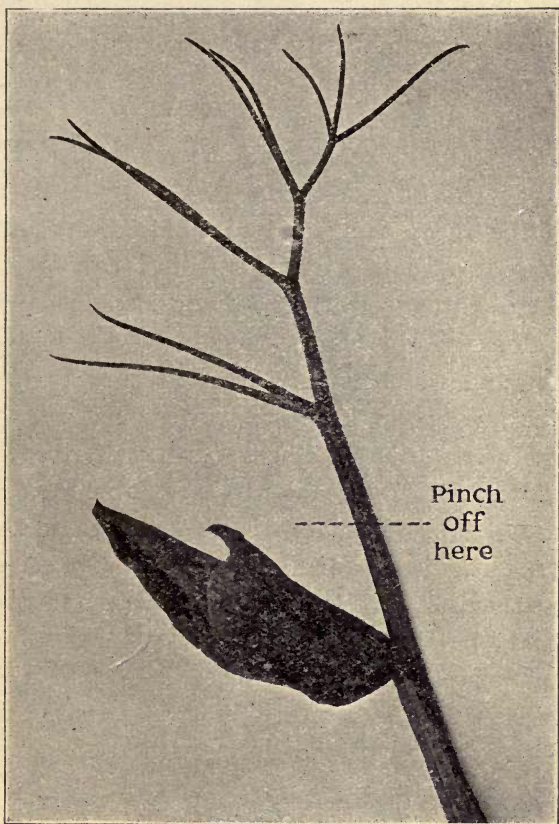
## Sweet Peas

Once a week is often enough, and there is nothing better than the old-fashioned preparation of sheep dung and soot. Put a peck of sheep dung into a thin potato sack and place it in a thirty gallon barrel stood on end with the top removed. Into another barrel of same size, put a peck of soot done up in a bag in the same way. Fill the barrels with water and allow to stand for twenty-four hours. To feed the plants take a pint of liquid out of each barrel and add to one gallon of water, stir and apply this dose along the lines of plants about six inches away from the stems. It is a good plan to make a rut with a hoe, two inches deep, apply the liquid and replace the soil. This can be done with safety once a week. As the soot and dung get exhausted increase the pint of each to one and a quarter or one and a half per gallon. Renew entirely the soot and dung when the mixture begins to get weak. One gallon of liquid is enough for five or six feet of a row of plants. One other hint here will be helpful. The flower buds on sweet pea plants often drop off without expanding. Under glass they even do this at times. It is caused by sudden changes which check growth, and there is nothing more ready to cause it than chill cold water. If soft water which has been



## Culture for the Exhibitor

exposed to the sun cannot be obtained, a little hot water added to each gallon will save the



situation—a pint to a gallon. In the height of summer this will not be necessary, but it is always

## Sweet Peas

a good thing to let water to be used for watering plants of any kind, stand exposed to air and sun for twelve hours before using. All flowers as they reach maturity *must be cut* to secure a continuance of bloom, and if plants are inclined to come into flower before they have got sufficient strength, the flowers should be removed as soon as they show for a time.

If the sheep dung and soot liquid cannot be prepared, a good artificial fertilizer can be used with advantage, either in a liquid form or applied dry alongside the plants—keeping it a few inches back—and watering it well in with pure water.

Nearly all the keenest growers remove the tendrils, and this cut illustrates how that should be done. When the plants are trained on the “cordon” system and tied regularly, tendrils are not required, and if left to develop usually twine themselves round the flower stems and cause them to be bent.

This chapter started with seed sowing. There is still a process of vital importance to the successful exhibitor to be dealt with, and that is soil preparation.

I am no believer in the four to six feet deep cultivation, with layers of manure on the sandwich principle all through. A good two feet or thirty

## Culture for the Exhibitor

inches is ample. Remove the top twelve inches and get down into the subsoil twelve or fifteen inches, incorporating thoroughly with it plenty of good half-decomposed dung—horse if the soil is heavy, cow if it is light. Into the top twelve inches when it is being replaced, incorporate more decomposed manure and some leaf soil or spent hops. If this is done and done well in November, it will require nothing more till spring, when only the top should be pricked over with a fork two or three weeks before planting. One great advantage of preparation in autumn is that the ground gets time to settle down. To get a good short-jointed growth on sweet peas, the ground must be firm. Artificial manures are all very well, but a little goes a long way. A little bone meal and a little superphosphate dusted on the top of the subsoil in autumn will be helpful, but more than that I do not advise.<sup>1</sup> If it is not too much labour and expense, the whole plot of ground should be prepared as advised, but excellent results will be obtained by preparing trenches three feet wide as advised above, leaving three feet of untrenched ground between each trench. Rows of sweet peas for exhibition should not be closer than six feet.

<sup>1</sup> See note as to liming on p. 19.

## IV

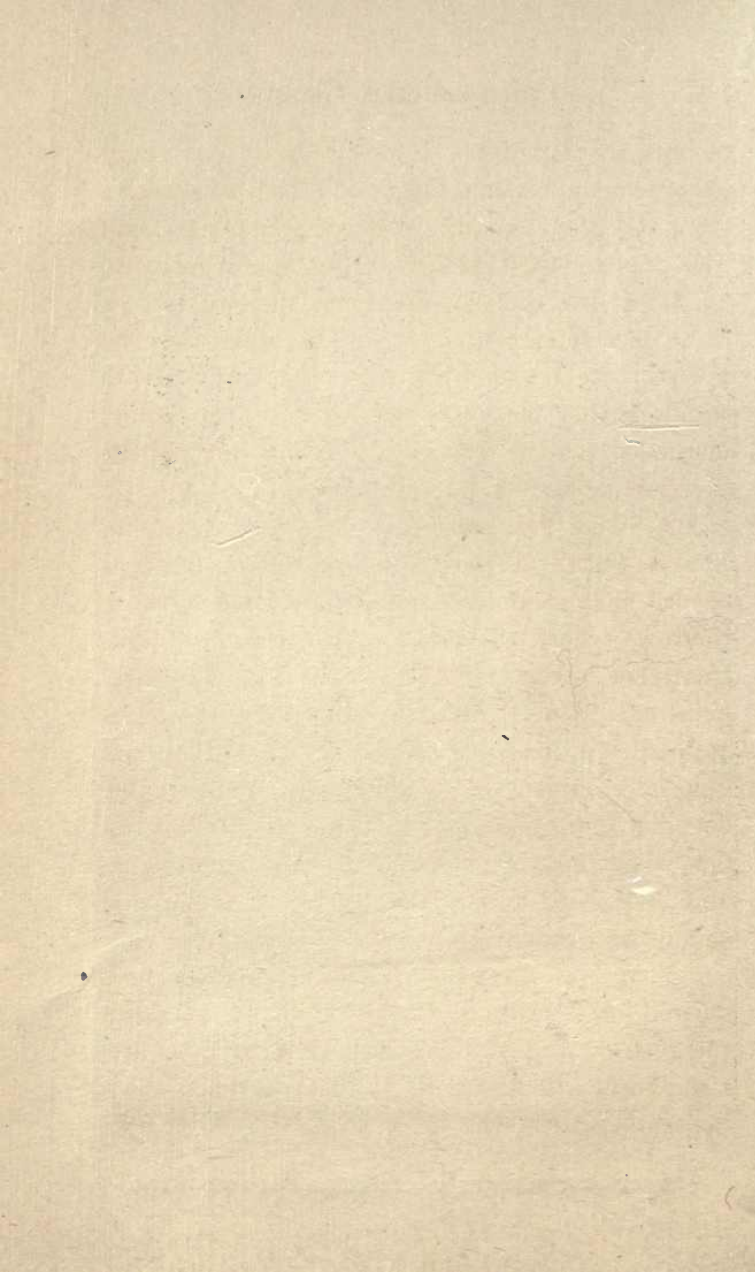
### CULTURE UNDER GLASS

GROWING Sweet Peas under glass has become quite a common practice in recent years. In America, the winter flowering section is largely grown, but great success has not been obtained with them in Britain. The winter-flowering race is different in habit from the ordinary sweet pea. They run up to a height of nearly two feet before they break out freely into side growths, and the flowers are smaller than the summer-blooming sorts. For those who wish to try these winter bloomers, I cannot do better than quote the instructions given in a Bulletin on Winter Flowering Sweet Peas, issued by the Department of Horticulture, Cornell University, U.S.A.

“ Winter flowering Sweet Peas grow six to ten or more feet high, and if they are to attain their full development, a house with this amount of headroom is required. They need all the light they can get, as the lighter the house, the more



**VERY FINE FLOWERS UNDER GLASS FOR EXHIBITION.**



## Culture under Glass

blooms there will be . . . Sweet Peas may be grown on benches, but solid beds are better since the plants require a deep, moist, cool soil. The roots should be given an opportunity to go down, by properly preparing the soil two or three feet in depth. . . . The seeds may be sown in the beds or benches where they are to stand, or they may be sown in pots. The former method gives the best results [From my experience in England, I should question this.—W.C.].

The Sweet Pea must be kept growing steadily from the day the seed is sown. When water is needed, do not apply near the plants, but between the rows, where it should be given liberally. This treatment is especially important with the early plantings. One reason why water should not be applied too near the plants is that they are especially subject to damping off. This trouble becomes more prevalent in October and November, when there are more cloudy days, cool nights and like conditions. Because of this no soil should be heaped around the stems.

“TIME TO PLANT.—When a good crop is desired for Christmas, the seed should be sown the 20th of August. . . . When sown September 1st, the plants will flower in January. When sown September 15th, the main crop will be in Feb-

## Sweet Peas

ruary, and when sown in October, the crop will be ready in March. November sowings flower in the latter part of March; December sowings in April; January sowings in April and May; February sowings from May 1st on, and a March sowing in May or June. This gives the time when a reasonable crop can be expected, although flowers will be cut, especially with certain varieties, in a shorter interval than that given. . . .

“SUPPORTS.—As soon as the peas are up, a support must be furnished. This may consist of string, wire and string, or wire netting . . .

“TEMPERATURE.—Keep the temperature in the early stage as low as possible, giving full ventilation, day and night, as late as possible without freezing. The cooler the plants can be kept while growing the stronger and healthier they will be. In this way the natural outdoor spring conditions are approximated. When the flower buds can be felt in the tips of the growing stems, the temperature should be raised one degree at night, until fifty degrees is attained, which is the proper temperature during December, January and February. On bright days, a rise of ten degrees or even fifteen degrees may be given. On cloudy days fifty-five degrees is high enough, for higher temperatures on such days often



## Culture under Glass

promote soft, succulent growth. Plenty of ventilation should be given at every opportunity, as this, with careful regulation of temperature, causes a firm growth."

In Britain plants are usually grown to bloom from the beginning of April onward till the out-of-door flowers are ready, and it can with perfect truth be said that as fine flowers can be grown in this way as out of doors. The usual standard sorts are grown. In the *Gardeners' Chronicle* of September 5th, 1914. The method of growing under glass adopted by Messrs. Dobbie & Co., was described as follows—with what remarkable success all the world knows!

"The seeds should be sown in boxes or pots at the end of September, or early in October, and allowed to remain in a cold frame or a sheltered corner out of doors, until after Christmas. By that time they will be hardy little plants, possessing plenty of roots and ready for potting on into small sixty sized pots. When they are potted they should be grown in a greenhouse or close frame. It is surprising how quickly they commence to develop, and at this stage care in watering and airing are the principal requirements. They should be grown under a cool treatment, for

## Sweet Peas

if coddled they make weak spindly growth. In six or eight weeks after potting, they should be shifted into their flowering receptacles, whether pots, boxes or tubs, or they may be planted in the border of the house. The most suitable compost is formed of good loam, a little decayed stable manure, sand, bone meal, and a dusting of soot. In this mixture, the plants will grow well until they reach the flowering stage, when the roots should be fed with manure water twice a week. If large blooms up to exhibition size are required, the plants should be thinned to two or three shoots and then staked and tied. The main growths can be trained into any shape, and when they have reached the top of the house they can be untied, bent, and thus brought down to within three or four feet of the ground without injury. The variety Mrs. Cuthbertson has grown twenty-two feet long, being taken down from the roof when necessary. Such a plant will produce fifty to sixty good flowers on each growth.

Treated in this way a long season of first-rate flowers with long stems is assured. If grown in pots, tubs or boxes for decoration, the shoots may be trained on a framework, or *Simplicitas* netting, which makes a neat, tidy support and will last for several years. A mulch of short

## Culture under Glass

manure will help to prolong the flowering season. Sweet Peas are seen at their best under glass, for rain, run or wind cannot damage them."

The following varieties are best for culture under glass—Alexander Malcolm scarlet, Ivorine cream, Mrs. Hitchcock cream pink, Mrs. T. Jones blue, Constance Hinton white, Elfrida Pearson pink, Illuminator cerise pink, Melba salmon, Mrs. Cuthbertson rose and white, Royal Purple, Thos. Stevenson orange scalret, Old Rose, Dobbie's Maroon.

The number of plants put into the flowering tubs or pots depends on how they are going to be treated. If to be disbudded and trained as cordons three or four plants must go in a ten or twelve-inch pot. If they are to be allowed to grow naturally, two good plants are enough.

## V

### BEST VARIETIES FOR DIFFERENT PURPOSES

THERE are many hundreds of varieties of Sweet Peas. In such a number many are found more suited than others for special purposes and, trying to make things as simple as possible for the reader, I proceed to set out these. To a large extent I shall be guided by the decisions of the National Sweet Pea Society, which has, each year since it was founded, issued lists of best varieties drawn up by a committee of the cleverest experts in Britain.

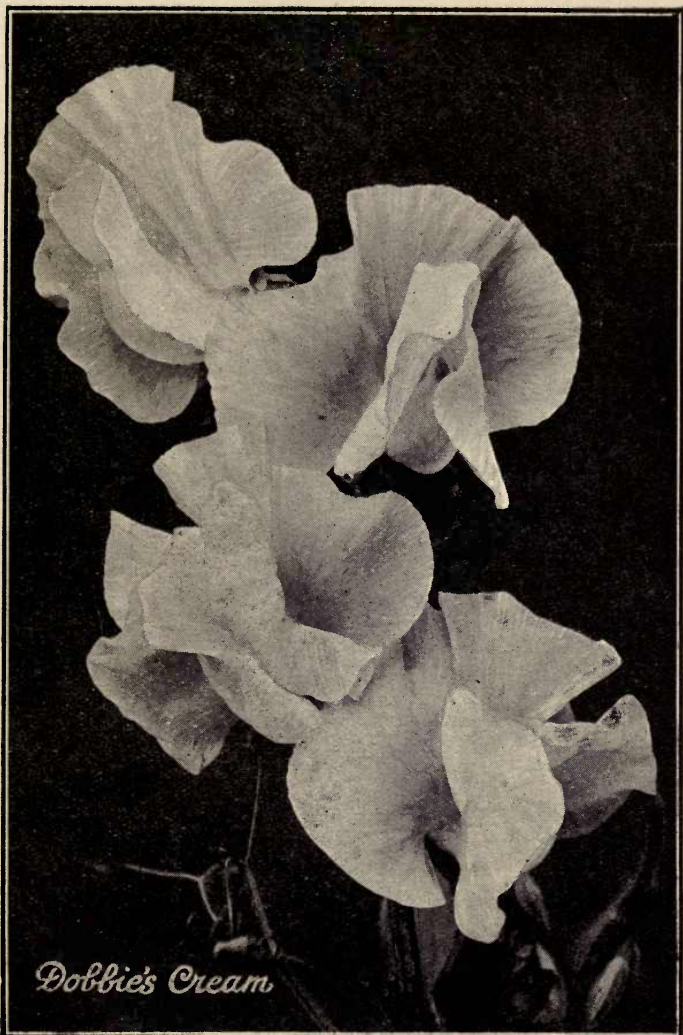
#### FOR EXHIBITION

Whites -	-	-	Constance Hinton. Edna May. Etta Dyke.
Creams	-	-	Dobbie's Cream. Ivorie.
Crimsons	-	-	Sunproof Crimson. Maud Holmes.

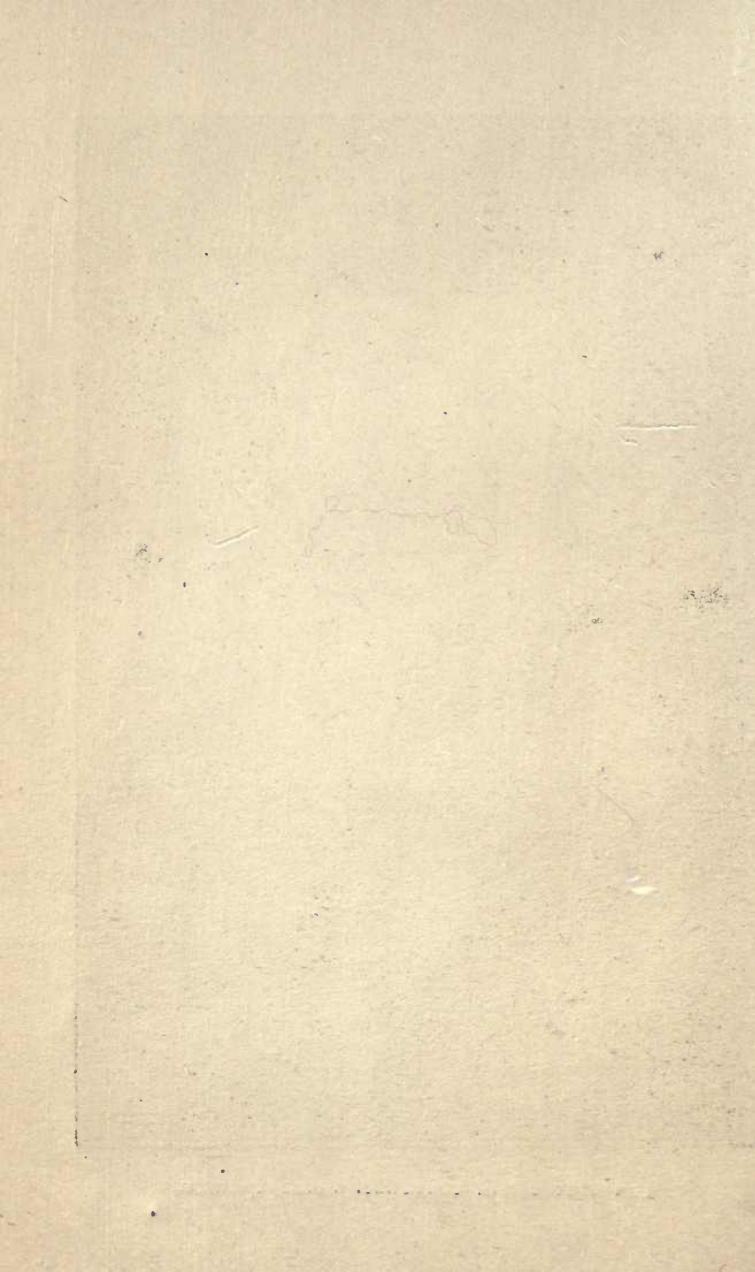


"CONSTANCE HINTON."





THE BEST CREAM COLOURED. WAVED VARIETY.





## Best Varieties for Different Purposes

Rose and Carmine	John Ingman. Rosabelle.
Orange - - -	Thomas Stevenson (orange scarlèt). Edrom Beauty (orange pink)
Pink - - -	Elfrida Pearson (pale). Hercules (deep).
Cream Pink - -	Duchess of Portland. Mrs. A. Hitchcock. Margaret Atlee (deep).
Blush - - -	Princess Victoria. Pink Pearl. Agricola (lilac blush).
Cerise - . -	Mrs. Bishop. Illuminator.
Laveoder - - -	Lavender George Herbert. Orchid. R. A. Felton.
Bicolour - - -	Mrs. Cuthbertson (rose and white). Marks Tey (maroon and mauve).
Maroon - . -	Dobbie's Maroon. Warrior.
Mauve . - -	Queen of Norway. New Marquis.

## Sweet Peas

- |               |   |   |   |  |
|---------------|---|---|---|--|
| Salmon        | - | - | - | Melba (requires shading).  |
| Purple        | - | - | - | Royal Purple.  |
| Scarlet       | - | - | - | Alex Malcolm.<br>Dobbie's Scarlet.   |
| Picotee-edged | - | - | - | Jean Ireland (cream ground).<br>Elsie Herbert (white ground)                         |
| Fancy         | - | - | - | May Campbell (cream<br>marbled carmine).<br>Charles Foster (pale mauve<br>and pink). |

### FOR GARDEN DECORATION.

(and cutting freely ; also for market or other purposes).

- |                     |   |   |                             |
|---------------------|---|---|-----------------------------|
| Mrs. A. Hitchcock   |   |   | Semi-double Cream Pink.     |
| Nora Unwin          | - | - | Fine White.                 |
| Illuminator         | - | - | Cerise pink flushed Salmon. |
| R. F. Felton        | - | - | Lavender.                   |
| Rosabelle           | - | - | Rose.                       |
| Warrior             | - | - | Maroon.                     |
| Thomas Stevenson    |   |   | Orange Scarlet.             |
| Sunproof Crimson or |   |   |                             |
| Maud Holmes         | - | - | Crimson.                    |
| Dobbie's Cream      | - | - | Cream.                      |



*Duchess of Portland*

ONE OF THE BEST CREAM-PINKS.



## Best Varieties for different Purposes

- Elfrida Pearson - Blush Pink.  
Mrs. Cuthbertson - Rose and White bicolor.  
Mrs. T. Jones - Clear Blue.

### FOR TABLE DECORATION

- Dobbie's Cream - Cream.  
Lavender George  
Herbert - - Lavender.  
Barbara or Melba - Deep Salmon.  
Jean Ireland - Buff and Rose.  
Illuminator - Pink and Salmon.  
Elsie Herbert - White, edged Rose.  
Thomas Stevenson Orange Scarlet.  
Edrom Beauty - Light Orange Pink.  
Mrs. A. Hitchcock Cream Pink.  
Mrs. T. Jones - Blue.  
Alex. Malcolm - Scarlet.

## VI

### CUTTING AND ARRANGING FLOWERS FOR EXHIBITION AND TABLE DECORATION

IN the days of long ago, my old friend and employer, Mr. James Dobbie, used to tell me that success on the exhibition table was as much dependent on the treatment the flowers received after they were cut as on what had gone before. And he was right. I have often seen indifferent flowers, well staged, beat much better ones, badly staged.

There is an art in setting up flowers, but it is an art which can be acquired. The time spent by the old florists on "dressing" their Pansies, Carnations, Roses or Chrysanthemums would, if known, surprise modern cultivators. Many an all-night sitting was put in at such work. The individual flowers of Sweet Peas do not require to be dressed, but there is great room for the display of taste in setting up and arranging.

## Exhibition and Table Decoration

Preparatory to beginning to cut flowers for exhibition, a number of jars or vases should be filled with water and placed in a light room or shed. The flowers should be cut with as long stems as possible, and for this purpose a pair of scissors is best, as the points get down into the axil and do the work without risk of cutting the main stem. Each separate variety as it is cut should be put in water.

The stage at which Sweet Peas should be cut for exhibition is when they are just coming to full perfection—certainly not after they are full-blown, and for this reason; all flowers, if cut at the right stage, increase considerably in size in water.

Most flowers which come from a distance to the big shows must be cut twenty-four to thirty hours before the show. This is obvious when we think of the distance they have to travel. With few exceptions, this long period does no harm. Varieties which it is advisable to cut as near the hour of the show as possible, are the crimsons and some deep rose-coloured sorts, also varieties which have a purple shading in the flowers. The latter do not improve in water, as the purple goes to a cold, dark shade—what we should call “blae” in Scotland.

## Sweet Peas

On the other hand, self purples, blues and lavenders all improve in water, and should be kept in a good light.

To be specific—if suitable, I should cut my flowers on Friday morning for a show on Saturday, all except the crimsons and deep-rose varieties. These I should cut on Friday night, unless the prospect of settled weather was assured and the show was near home. Then I would leave the crimsons, etc., till early Saturday morning before cutting, and carry them to the show in water, when they would retain all their particular freshness and beauty. All other sorts would have improved by standing in water for twenty-four hours.

Sometimes it is impossible to avoid cutting flowers when they are wet. In all such cases a great effort must be made to get them dry before show time. This can be done by placing the jars containing the flowers in a dry, airy position—if no better place is obtainable, close to an open window will do if the door of the room is also left open to induce movement in the air.

The number of flowers required for a vase under the regulations of the National Sweet Pea Society is twenty. If preparing for a show under



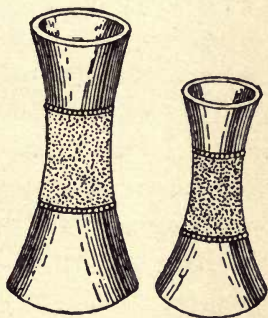
## Exhibition and Table Decoration

similar regulations, it is advisable to cut from twenty-four to thirty spikes, so that, when staging at the show, a selection of the best twenty can be made:

If twelve bunches are required, it is always advisable to carry with you one or two spare ones, as some varieties always carry better than others.



JONES'S PATENT  
SWEET PEA  
VASE.



STONEWARE VASES.

Some exhibitors carry their flowers all the way to the show in jars of water, but this is not essential. A very excellent way is to tie a handful of wet moss round the bottom of the stems, or wrap a piece of newspaper, which has been soaked in

## Sweet Peas

water, round the bottom six inches of the stems, then put a swirl of tissue paper round the entire bunch. The bunches can be stood upright in a square box like a tea-chest or they can be packed on their sides in a flat box, one layer deep.

Of course, it is essential that the flowers be absolutely dry before being packed in this way, and it is hardly necessary to say that the boxes must not be left to the tender mercies of railway porters without supervision. These men are often abused, but I have had over thirty years experience of them, and have never found them unkind to boxes of flowers, if politely asked to handle them carefully.

The flowers are usually staged in glass vases or small stone jars, and to prevent the flower stems slipping down to the bottom of the vases or jars, several pieces of Gypsophila or a number of rushes cut square across the top, are inserted into the mouths of the jars. When this is done the blossoms remain readily in the position desired by the exhibitor.

In arranging the vases on the show table, it is always best to work for a harmony of colour rather than contrasts.

The vases should be placed on stepped or tiered

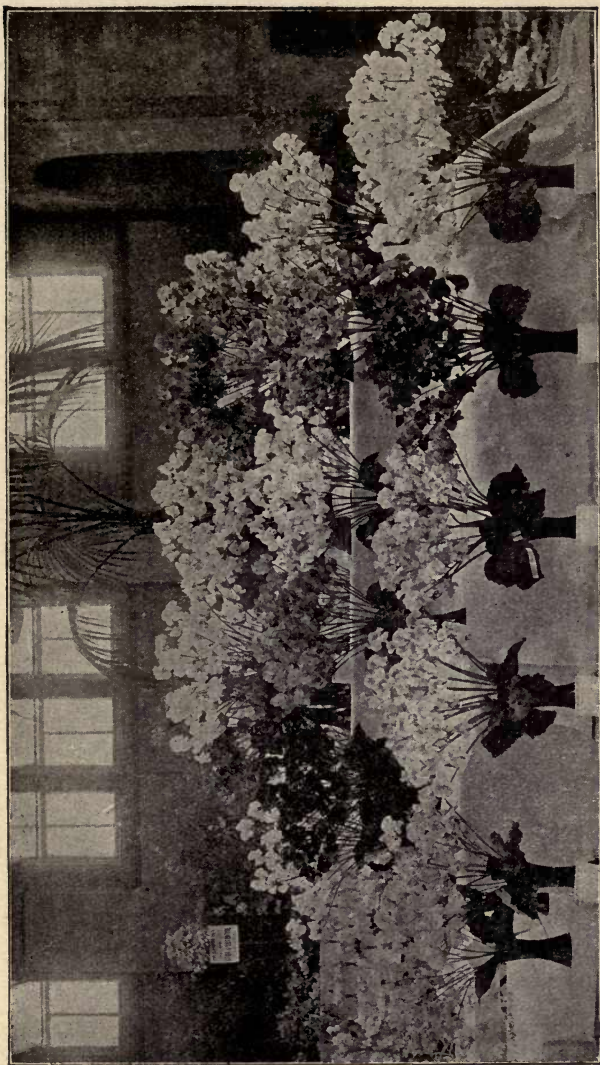
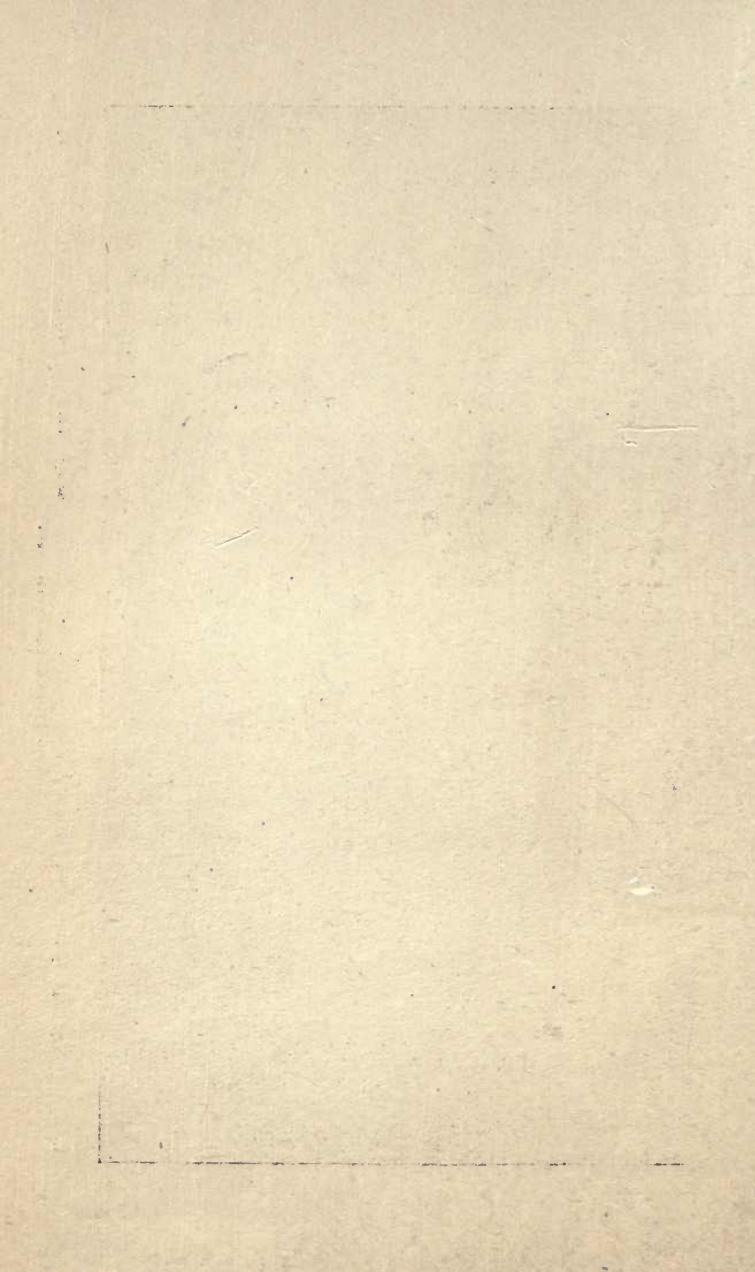


EXHIBIT SET UP BY MR. TOM JONES, OF RUABON, WHICH WON THE INTERNATIONAL TROPHY AT CARLISLE IN 1913.



## Exhibition and Table Decoration

staging so that every bunch will be easily seen by the judges.

Each bunch should be named. Most societies make this a condition, but whether or not it should be done, as naming always makes a flower show more interesting and often conveys valuable information to beginners.

### TABLE DECORATION

The arranging of flowers nicely on dinner tables and in vases about the home is quite an art.

For an ordinary dinner table, five vases for the centre and one for each of the four corners makes an ideal decoration if they are harmoniously filled with beautiful flowers. Not more than two colours should ever be used at the same time—for example, cream and lavender, cream and salmon, a variety such as “Jean Ireland” with a few blooms of “Illuminator” or “Melba.”

A decoration of “Elsie Herbert” by itself is very charming.

If the flowers are good, the arrangement does not present many difficulties. The trouble is often to find suitable foliage to associate with Sweet Peas, as a change from their own foliage

## Sweet Peas

is a pleasant variation when Sweet Peas are being pretty constantly used.

Trails of Smilax or Asparagus do very well, especially the former. If pieces of bronzy tinted foliage or Selaginella can be obtained to associate with buff-coloured flowers, the effect is very fine.

On no account should flowers be laid on the table without being in water, as is sometimes done, and mirrors in the centres of tables are never in good taste.

In filling large jars for other positions in the home, the foregoing suggestions should be carried out.

The best effects are always obtained by large vases of one colour.

No better advice can be given to the beginner than to experiment on every possible opportunity with the flowers he cuts from time to time to keep his plants going. Arrange vases of different varieties and observe their behaviour. Experience gained in this way is many times more valuable than anything that can be learned by reading. If a successful exhibitor lives near, his aid might be called in, and I am sure it will be given.

I never yet knew a florist who was not willing

## Exhibition and Table Decoration

to help a beginner. Take a handful of *good* flowers to him and observe the effect—he cannot help handling them as if they were things appealing to his better nature, and all the time he is doing so you are learning your lesson.

## VII

### SEED GROWING

WHEN the grandiflora or old type of Sweet Pea was the only one in existence, seed growing presented few difficulties. It was a common sight then to see acres of plants unstaked, from which quite good crops of seed were obtained; now-a-days, if the same method was tried with the waved varieties, the result would be a complete failure.

The reason is that the waved forms with a very few exceptions are not free seeders. The reproductive organs are more delicate; they are not so well situated to assure pollination being accomplished, and adverse weather conditions at once tell on them.

Sweet Pea growing for seed has therefore "changed hands" in England, and what is done now is done by growers who are more or less experts. It has been found that spring-sown plants are much less reliable than autumn-sown ones for seed, and therefore the practice of autumn-sowing is generally followed by the best firms. The seed





SWEET PEAS UNDER GLASS FOR SEED.



## Seed Growing

may be sown in the open where the plants are to remain and flower if the land is well drained and the exposure good, and where such sowings



LINES FOR SEED IN ESSEX.

are successful and come through the winter untarnished, the yield is always good, provided a decent summer follows. In England it is always

## Sweet Peas

necessary to stake Sweet Peas in some way; they cannot be left to support themselves as in California, and therefore it is necessary to sow in rows at least five feet apart. Staking of course in the field does not require to be done so carefully as in a garden, and such stakes have to be used as can conveniently be obtained by cutting down hedges or brushwood, or by using wire meshed wire netting.

It will be readily understood that sowing seeds in the open field of very choice varieties is at all times rather a risky business, and besides valuable stock seed can be made to go a very much longer way by being sown in pots or boxes under glass and planted out in spring. This is the method followed by my firm, Messrs. Dobbie & Co., at their farm in Essex, and the results obtained by them are admitted to be the best in Europe. It means more work, more expense, and a large extent of glass, but success is much more certain, and, as I have already said, the utmost possible can be made out of scarce things, yet, in addition to the method just described, it has been found necessary by Messrs. Dobbie & Co. to adopt a still more reliable system, *i.e.* the growing of some sorts under glass for seed. Several of the most charming varieties are so uncertain

## Seed Growing

in the open air that large glass houses have been specially built to grow them in, and the success which has been obtained by this method has been great. I do not say it would pay in a wholesale way, but when a firm like Dobbies is growing almost solely for their own retail trade, it works out all right.



A FINE CROP OF SEED UNDER GLASS.

## Sweet Peas

The harvesting in England is done by hand picking. The pods begin to get ripe by the end of July and they require to be gathered once or twice a week according to the weather conditions which prevail. In some seasons this work may go on until the end of September, but such prolonged seasons are not liked as they mean the process of ripening is slow and unsatisfactory.

In England where the crops are grown on stakes, the process of roguing is easily done and growers have no excuse for not purifying their stocks, if they possess the knowledge and skill necessary to do the work. People who do not possess such, should certainly not call themselves experts. A great work has been done in the way of renewing stocks in recent years. Varieties are raised by cross-fertilization, identical with the older named varieties, and many of the stocks on the market now are not the original ones, but new re-created ones.

The care of stock seed is an expression which may not convey much to the ordinary reader, but it is the crux of all successful seed growing, whether it be Sweet Peas or anything else. Just as the rearer of pedigree cattle looks ever and always to the parents of his stock, so does the raiser of good strains of seeds. In two generations

## Seed Growing

a stock, however good, could be ruined, and in two generations a stock, however good, can be improved; but to accomplish the latter oftentimes requires a life's knowledge and experience, and further, it always means living in closest touch with the plants or animals to observe their points—to detect weaknesses and to be ready to take advantage of the slightest improvements. In conclusion, permit me to say, never grudge a fair price for pure seeds. Life is too short to run the risk of disappointment, and the loss of a year, by risking cheap products in one's garden.

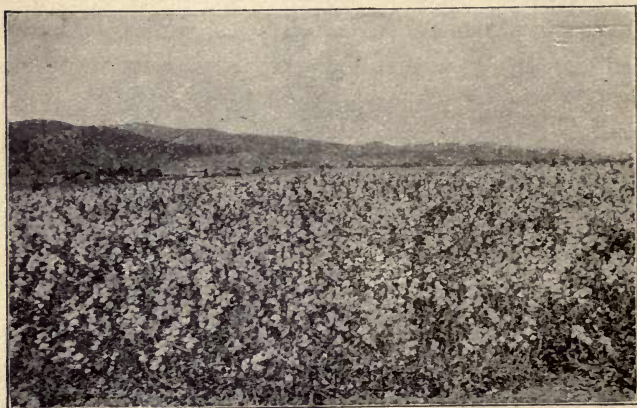
### IN CALIFORNIA

California is the great Sweet Pea seed growing centre of the world. As all know, the climate is superb and the soil conditions are admirable in the stretch of land from San Francisco to Los Angeles. There, in the year 1914, nearly 3,000 acres were devoted to Sweet Pea culture for seed. Many firms are engaged in the business, the chief one being Messrs. C. C. Morse & Co., who grow about 400 acres of the most up-to-date varieties in the most up-to-date style.

The method of procedure is as follows. Immediately the summer crops are removed, the land is ploughed by powerful steam ploughs, and as

## Sweet Peas

it often has had no rain for months, it comes up in great rough blocks. Manure is not applied, as the natural fertility of the soil is great and carries crops to perfection without dung or artificial manure. Rain and weather gradually act on the ploughed land, and by November it



TEN ACRES OF "WHITE SPENCER" FOR SEED IN CALIFORNIA.

is worked down into fine friable condition. Sowing is done during November and December—it must be completed by Christmas if satisfactory yields are to be expected. The seed is sown by seed-drilling machines in rows three feet apart, and from eight to ten pounds of seed is required to sow an acre. After germination, the ground



## Seed Growing

between the rows is constantly cultivated and hoed until the plants meet in the drills, which is usually in April. The plants make great growth—from three to five feet in height, and they branch out so vigorously that every inch of the ground is covered: a field of Sweet Peas in May and June might be compared to a fine field of wheat in this country just before harvest—as well filled up and as level in appearance, and it is quite common to see ten to twenty acres of one variety. Under such conditions one can imagine the process of “rogueing” to be a difficult one, and the Californian growers have found it so, but on the up-to-date ranches like Morse’s the work of “rogueing” is now reduced to the minimum on account of the greatest care being exercised to obtain specially pure stock seed. This is grown apart and worked up from true types of all the best varieties.

The plants remain in bloom in normal seasons from the end of April to mid-June. The harvest is usually ready in July, and the vast areas are cut with mowers and the crops piled on huge canvas sheets, where they remain in that perfect climate until they are threshed. A motor threshing machine is drawn alongside and the work performed. The yield ranges in good seasons

## Sweet Peas

from about 400 lbs. of Spencer or waved varieties, to 1,000 lbs. of old type varieties per acre. After threshing, the seed is removed to the cleaning houses and put through a series of electrically driven mills. This milling is so perfect that hand picking is not necessary to make a marketable sample. From San Francisco and other centres the seed is despatched to all parts of the world. In California the labour problem is a most serious one in all seed-growing undertakings. Everything that can possibly be done by machinery is done, as the cost, *i.e.* the wages, of even the commonest labour is two to three times what it is in Britain. Then there are difficulties sometimes with the weather even in that so-called perfect region—heat waves come and things are rushed prematurely to maturity, with the result that the crops are well nigh failures, and the merchants have to be content with twenty-five per cent., or less sometimes, of the amounts contracted for. Aphis or fly is another trouble, and frequently large areas have to be ploughed up, the trouble gets so bad.

Messrs. W. Atlee Burpee & Co., of Philadelphia, who are so well known throughout the Sweet Pea world, have a ranch for seed-growing in California.

## Seed Growing

California is truly a country of big things, and if growers get big crops three seasons out of every four, doubtless they are doing very well at this business of growing Sweet Peas for seed.

## CHAPTER VIII

### RAISING NEW VARIETIES

PRIOR to the introduction of the waved Sweet Pea Countess Spencer, the raising of new varieties was almost entirely in the hands of Mr. Henry Eckford, and had been for a long series of years. As already mentioned, Countess Spencer was raised by Mr. Cole—head gardener to Earl Spencer, at Althorp Park—and sold by him to Mr. Sydenham, who sent it to America to be grown for seed. When the produce came back to Britain and was sold, it was found to contain many other varieties (some waved and some old type), besides Countess Spencer. This must have arisen through part of the stock seed being unfixed. No theory of insect cross-fertilization can ever account for what that stock contained. It gave Helen Lewis, John Ingman and many others which were isolated and fixed by different firms. There are two ways of obtaining new varieties. First by cross-breeding. Second, by watching for, and fixing, distinct variations or breaks which

## Raising New Varieties

from time to time occur in standard varieties. Fine varieties like Mrs. Cuthbertson, Rosabelle



THE AUTHOR OPERATING.

(Dobbie's), Mrs. Hugh Dickson and New Marquis, originated as breaks, while Marks Tey, May Campbell, Elfrida Pearson, Melba, Dobbie's

## Sweet Peas

Scarlet and Hercules were bred from selected parents. Raising new varieties is very interesting and very fascinating work, but it takes years to achieve results. By results I mean the fixing a variety after it is raised and working up a stock to make it of commercial value. This need not however prevent the smallest grower keeping a look-out for "breaks," as seminal variations are rather improperly called. A pod or two of seed can usually be saved and the produce grown the following year to ascertain if it is fixed. Then if it is, it can be submitted to an expert to ascertain if it is ever likely to be of much commercial value.

I will now proceed to explain the process of raising new varieties by cross-fertilization. Supposing, for the sake of illustration, it was desired to endeavour to get a large scarlet variety which would produce four bloom sprays in abundance—which no scarlet variety at present does—one would ask oneself which was the brightest scarlet. The answer might be Dobbie's Scarlet, Red Star, or Scarlet Monarch. Well one of these would be one of the parents, while the other would be a vigorous growing variety which produced large flowers on four bloom sprays every time. Asking oneself which varieties did



SPLITTING THE KEEL WITH  
NEEDLE TO EXPOSE ORGANS



REMOVING THE  
STAMENS



APPLYING POLLEN DIRECT FROM  
ANTHERS OF MALE FLOWER





## Raising New Varieties

this, irrespective of colour, one would answer, Mrs. Cuthbertson, Agricola, Hercules or Marks Tey. One of these, say Mrs. Cuthbertson, would be adopted as the female parent, and in the early bud stage, some flowers would require to be emasculated by removing all the anthers before they had dehisced, *i.e.*, burst and shed their pollen. These flowers must be carefully marked and the next day, or the following one, pollen must be brought from the other parent, the bright scarlet one, and applied to the stigma of Mrs. Cuthbertson. How this is best done is shown in the accompanying illustration. The marked flowers should then follow their normal process and ripen pods of seed which must be carefully saved and kept in separate packets till sowing time. The seeds are sown and treated in the ordinary way, special strong culture not being advisable for such plants. They ought however to be planted where they can have room to grow as distinct plants and not get intertwined with any others. It is here that one of the most wonderful and interesting things happens. On the flowers produced on these plants no dependence at all can be placed. Students of Mendel's law will understand why this is, and those who have not studied Mendelism ought to do so if they

## Sweet Peas

seriously intend to take up the raising of new Sweet Peas. The seeds of the plants produced in this, the first or F 1 generation, must be carefully saved and carefully kept separate and labelled. Next sowing time they, or a part of them, must be sown and planted at least a foot apart—eighteen inches is better—in the lines. In this generation, called F 2, new forms will arise and it is possible the large scarlet, giving plenty of “fours,” which was the object in view when setting out, may appear. If it does, it must be carefully marked and the seed saved for sowing again next season to see if it is fixed, and will breed true to the improved type. Of course it may or it may not. If it does not, some other selection may give something of promise, and the process of growing to prove must be carried on the following season. It will be seen from this that the process of raising is a prolonged one, and after the new variety has proved to be fixed, a stock must be worked up for sale which may take other two or three years. The process of raising new Sweet Peas is very much like that of raising new Daffodils. It is the first years that are the trying ones. After persistently making crosses for four or five years, if one continues making a few each year, thereafter the reward

## Raising New Varieties

comes along every year, because new forms come into bloom for the first time every season. Another hint I may give. Do not throw away odd things—give them a trial, as they often are the carriers of real novelties which appear later. It is of course here that experience tells, because an expert can often see what is likely to come out of a peculiarly tinted flower, though at the moment of observation it gives little promise.

One of the most lovely Sweet Peas ever raised is Audrey Crier, a most charming salmon pink; but it is a heterozygote and will not breed true. Those who admire this flower could have it true every year if they would make a cross between Princess Victoria and Edrom Beauty. In the first generation the flowers would be Audrey Crier, but in the next it would break up and give the three forms, Princess Victoria, Edrom Beauty and Audrey Crier. If seed was saved from Audrey Crier in the second generation, in the following one it would break up and give the other two as well as itself, hence its being termed heterozygous. Edrom Beauty and Princess Victoria if saved would breed true and are consequently termed homozygous.

## CHAPTER IX

### DISEASES AND INSECT TROUBLES

QUITE recently I had a letter from a very noted gardener, in which he said Sweet Peas were going out of cultivation to a great extent in his part of the country, because so many growers had their plants destroyed by streak disease. He added that it was his conviction that the disease was chiefly caused by over-manuring. This statement brings to mind a discussion at one of the Conferences of the National Sweet Pea Society on this same subject. Mr. Andrew Ireland, formerly Messrs. Dobbie & Co.'s Sweet Pea grower, gave his experience in this wise. He was asked to go and inspect a lot of Sweet Peas which had streak trouble. Like the practical man he is, he got a spade and turned up some of the soil in which the plants were growing. After doing so, he turned to the grower and said, "My man, it is not a gardener you should have sent for, but a sanitary inspector!" Against this, we have to put a statement made at the same Conference by Mr.

## Diseases and Insect Troubles

Alexander Malcolm of Duns. Mr. Malcolm said that he knew of a lot of Sweet Peas in East Lothian which had gone off with streak disease, although planted out in perfectly fresh ground which had not been manured at all. Now I think it is just possible the cause of the trouble in both these instances was the same—the lack of the work of nodule-forming bacteria. In the first instance because the plants were overdone with nitrogenous manure; in the second because the bacteria were absent. My readers may not all be aware that plants of the order *Leguminosæ*, to which the Sweet Pea belongs, are able to absorb nitrogen prepared for them from the atmosphere by the bacteria contained in the nodules on the roots of the plants. These nodules are easily observed by the naked eye. It is thus that a crop of peas or clover is a good preparation for a crop of a different character, because the ground after them is left richer in nitrogen. Nothing is accurately known about streak disease, and no cure has been found for it. I have grown Sweet Peas in large and small quantities for twenty years at least, and I have never had any trouble with streak. I have seen a few plants here and there in a big plantation become sickly. Possibly they had streak disease

## Sweet Peas

but we never took time to consider that—out they came and went the most direct road to the boiler furnace. The National Sweet Pea Society appointed a committee to investigate “Streak,” and it also offered valuable prizes for a remedy, but nothing has come of either move. If I had a trench or a bed of Sweet Peas go off badly with streak or any other similar trouble, I should clear the lot off and burn them. Then I should dig the trench or bed at once, fifteen to eighteen inches deep, and work in a lot of freshly slaked lime and leave it at that till early next spring, when I should dig again, and in April plant out my Sweet Peas as usual. Not a drop of fresh manure would I give if it had been heavily manured for the crop which went off. I should conclude that the manuring had been overdone and what the land required was sweetening and resting. After the plants got to their flowering stage, I would then feed them with liquid manure.

Other leaf and stem diseases are mildew and spot disease—allied to mould or blight. These are seldom if ever seen in well-grown plants. If observed in the early stages they can be successfully combated on lines similar to those followed when attacking mildew in roses, *i.e.*—dusting with flowers of sulphur.

## Diseases and Insect Troubles

Insect troubles are not numerous. The most serious is green-fly. I once saw this pest attack a big lot of plants so seriously and rapidly as to destroy them. It is much more likely to occur in the south than in the north. If its beginnings are carefully watched for, it can be stopped, and there is nothing better than the old-fashioned solution of soft-soap and quassia. Two to three ounces of soap thoroughly dissolved in a gallon of water and a tablespoonful or two of strong quassia extract, the whole well worked together with a syringe before applying, is a sure preventive of the fly spreading. If weather is wet, two applications may have to be made. The soap should be dissolved first in a quart of hot water and the rest of the gallon made up with cold water. If it is too troublesome or inconvenient to use soap and quassia, then I recommend a nicotine insecticide such as one of the "XL All" preparations used as directed.

Other troublesome Sweet Pea visitors are mice, slugs and birds.

Mice get at the seed immediately it is sown if they can, either in boxes, in frames or greenhouse, or in the ground in the open. Under glass they can usually be kept off by putting a sheet of glass over the box or pot till germination takes

## Sweet Peas

place, after which the danger is past. Out of doors, if mice are about, the best safeguard is to coat the seeds with red-lead before sowing. Then neither mice nor birds will take them. The best way to apply the red lead is to wet the seed and then roll it among dry red-lead in a saucer or basin.

Birds of several kinds attack the young plants in spring, and pinch out the growing buds. They can be kept off by stretching several strands of black thread or thin dark coloured twine along the rows. Snails and slugs are fond of the soft young growths and in moist weather in spring feed on them with avidity. Dustings of soot and lime are temporary preventives; the only effective one being to catch the depredators at night with the aid of a lantern. In a wholesale way many may be killed by dusting the ground with freshly slaked lime on a mild night after dark, when the slugs are out feeding.

There is a tendency on the part of some writers to magnify troubles—the troubles that afflict Sweet Peas as well as other things, but I hope no one will be influenced against taking up the culture of the most charming of all annual flowers on that account. To me, and to my friends, the culture of the Sweet Pea has presented fewer difficulties than many another flower, and I am



## Diseases and Insect Troubles

sure our experience is that of the great majority who have taken, or will take up its culture. In conclusion let me quote a few lines I wrote in 1909 :

“ A charming American lady said of the great Sweet Pea Show which filled every corner of the Royal Horticultural Society's Hall in July last, ‘ It was an ocean of loveliness.’ And so it was. Those who have spent many years of their lives in touch with the ocean know that the bays and the creeks are quite the loveliest portions of the mighty deep. Into these small areas there seems to be poured twice a day the concentrated grandeur and beauty of the ocean. Here we might find a simile for our enthusiastic Sweet Pea growers. They cannot have an ocean of loveliness but they can have an estuary of loveliness all to themselves. In their confined little gardens they can have all the best things produced in the Sweet Pea world. They can garner into their small compounds the finest creations of the two hemispheres, and get more joy and pleasure out of them than if they had acres of them, or otherwise an ocean of them, which they could only inspect perfunctorily.”

“ Ask why God made the gem so small,  
An' why so huge the granite ?  
Because He meant mankind should set  
The higher value on it.”—*Burns.*

# ANTIRRHINUMS

## CHAPTER I

### INTRODUCTION—DIFFERENT CLASSES

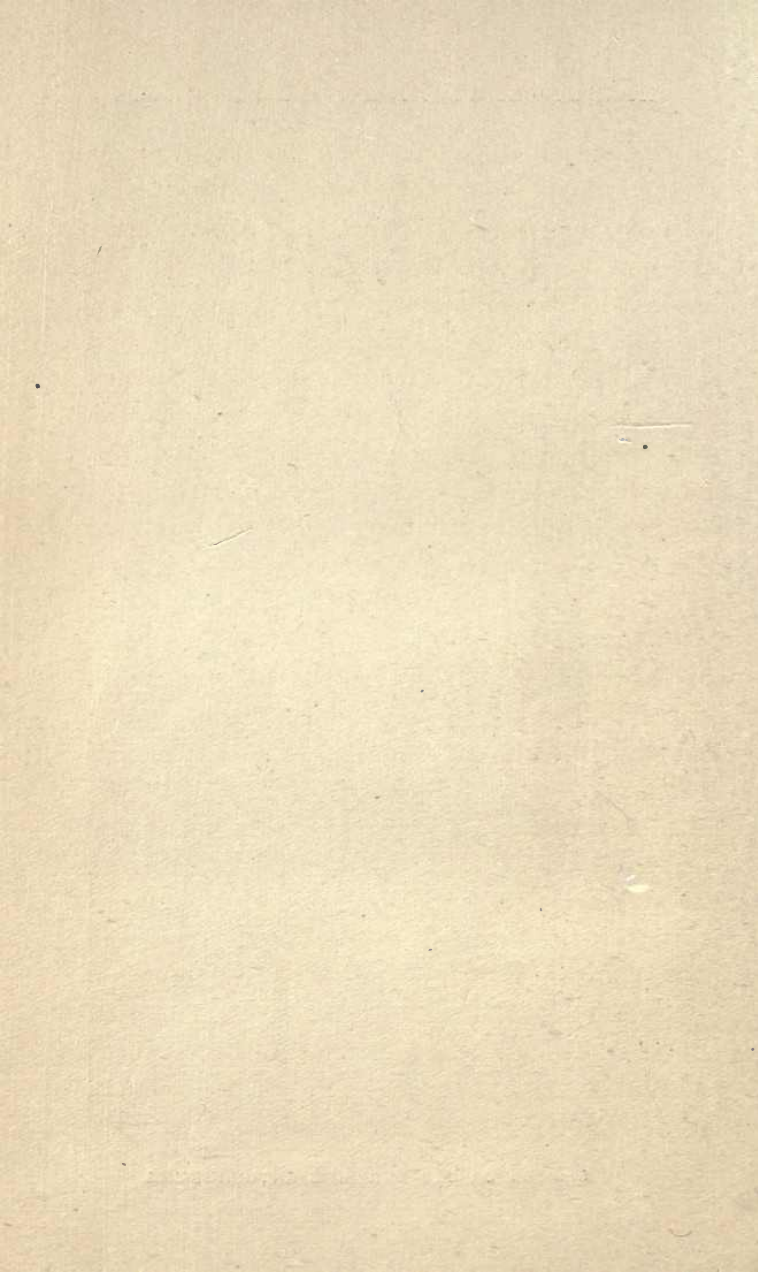
THE Antirrhinum attained to the dignity of a florist's flower last century, and many named varieties at one time existed which were all propagated by cuttings. Perhaps the most noted named Antirrhinum that ever existed was *Hendersonii*, sent out by Henderson & Son, London, in 1851. It was a well-formed white ground flower slightly shaded at the mouth with yellow and beautifully edged all round with rosy red.

Antirrhinums can still be propagated by cuttings, but the practice has fallen into disuse, the reason being that strains of different colours and heights have been so perfected that they breed almost true from seed.

When cuttings are put in it is usually those taken from some specially fine or distinct plant which it is desirable to form the basis of a seed selection with. It is undoubtedly the work of the seed expert in the direction just indicated, which is largely responsible for the extended



STRIPED OR OLD FLORIST'S ANTIRRHINUMS.



## Introduction—Different Classes

culture and great popularity of the *Antirrhinum* at the present time. One other influence also must be recognised. In our great public parks, and notably in the Royal Botanic Gardens at Kew, the *Antirrhinum* has in recent years been used in a masterly way. Glorious long continued effects have been obtained by the use of this simple, easily cultivated plant. In America, the *Antirrhinum* has attained a popularity as a cut flower for market, etc., that it has never obtained in Britain, but its day may possibly come here also. In America, special strains are grown and selected for under-glass culture. The same could be done in Britain if there was a demand for them. It is only within the last few years that *Antirrhinums* have been well shown in London, and my own firm has led the way, obtaining a gold medal from the Royal Horticultural Society for a very fine group in 1914. Those who know the standard of the Royal Horticultural Society will at once realize that a group of cut snapdragons must have been exceptionally good to obtain the highest award of that distinguished Society.

The Royal Horticultural Society has carried out several trials of *Antirrhinums* in their gardens at Wisley. One in 1913 was an exceedingly large and fine trial, over two hundred stocks being

## Antirrhinums

grown. The seeds were sown on March 13th, and when seedlings were large enough to handle they were pricked out into boxes, and according to the official report "later on planted out in an open, sunny situation, on soil moderately manured, and planted in rows eighteen inches apart each way. All made excellent growth, flowered profusely through the summer and autumn, and gave a glorious mass of colour, which was much admired by visitors."

Antirrhinums have hitherto, and are still, classified according to their heights and colours. As to height—it has been the practice to speak of them as tall, nanum and dwarf or Tom Thumb. I was to some extent responsible for getting the term "nanum" discarded by the Royal Horticultural Society, and the following decision was recorded, "The Floral Committee recommended that the Antirrhinum should be classed as Tall, Medium and Dwarf (or Tom Thumb). It was considered that the term 'nanum' often used for the medium section was misleading." Messrs. Sutton adopt the term "Intermediate," which is excellent—better even than "Medium," and I hope to see it generally adopted.

The heights of the different sections vary somewhat on different soils and in different situations,

## Introduction—Different Classes

but for the tall section thirty to thirty-six inches is about right ; for the medium section, eighteen to twenty-four inches, and for the dwarf or Tom Thumb section, nine to twelve inches. These heights are taken to the top of the average of



A FINE TYPE OF MEDIUM ANTIRRHINUM.

the flower spikes. The medium section is the most useful one, and embraces the widest colour range. The tall section is the one to which the florists' varieties belonged, and hence up till now has furnished the best formed individual flowers

## Antirrhinums

and, as was to be expected, the longest spikes. To this section belongs the famous strains of Striped Antirrhinums so popular with amateurs in the north of England and in Scotland. In a great show like that of Glasgow, twenty to thirty stands of these striped flowers are often seen, many of the spikes carrying twenty or more perfectly formed and beautifully marked flowers. To the close observer it is interesting to study the great variations in Antirrhinum foliage. As a youngster I was taught to select those plants which had the most beautifully marked, speckled and spotted bottom leaves, as they were the most likely to give the most beautifully speckled and striped flowers. In growing batches of seedlings for bedding, it is always wise at planting-out time to throw away those plants which are not true to type in foliage. Seed growers who attempt to grow Antirrhinum seed in separate colours find they must isolate the different varieties, *i.e.*, grow them a long way apart from each other, or the stocks would get hopelessly mixed by bees, which are very fond of visiting Antirrhinums. Who has not seen the big bee clinging to the under lip of the flowers and pushing for all he is worth till he gets his head right into the mouth of the flower, then two-thirds of his entire body



## Introduction—Different Classes

disappears into the cavity, to be withdrawn backwards covered with pollen. It is pointed out by Muller that the fast closure of the mouth of the *Antirrhinum* flower is most useful to the plant. Were it otherwise, small bees and other insects would enter the flower and use up the honey, thus withdrawing the attraction which brought about the visits of the larger bees which alone are useful in the accomplishment of cross-fertilization. These smaller bees are not however always done out of a share of the nectar, because they often bore small round holes at the base of the flower and get access to it in this way. If the visits of bees can be prevented, the flowers at the base of the spike remain longer in condition, and thus a longer spike of bloom is obtained for exhibition purposes. The amateurs in the west of Scotland achieve this by placing an oblong box over the spike, sometimes with a glass front half of the way down, and this prevents bees visiting the flowers. In this connection an interesting scientific fact emerges. Bees visiting spikes of *Antirrhinums* begin at the bottom flower and work upwards. Transferring their attention to the next spike they carry on their back masses of pollen from the topmost flower of the spike last visited to the bottom flower of the next one, and this pollen

## Antirrhinums

is exactly in position to come in contact with the stigma. This brings about cross-fertilization very effectively in many cases ; even if the stigma has recently been selfed, the pollen brought by the bee from another plant is likely to be pre-



DWARF OR TOM THUMB ANTIRRHINUM.

potent. I find the anthers and stigma of the Antirrhinum mature simultaneously.

It is the duty of every up-to-date seedsman and nurseryman to observe the signs of the times in the horticultural world, and if possible endeavour to anticipate floral fashions and fancies. The

## Introduction—Different Classes

history of many flowers—their rise to heights of popularity and their decline again—reads like romance. The Antirrhinum is undoubtedly on the up-grade at present. It is never likely to cause a furore like the Sweet Pea, but its great usefulness is certain to become more and more appreciated.

“ Beauties that from worth arise,  
Are like the grace of deities.”

## CHAPTER II

### CULTURE

THE culture of the *Antirrhinum* presents no real difficulties. It is by nature a perennial, but the best results are obtained by treating it as a biennial, or even as an annual. If only a comparatively few plants are required, they can be bought from a florist or nurseryman at planting time, in April or May, but as it adds a tenfold charm to one's plants to raise them from seed, I give instructions for doing so. First—treating the plant as an Annual, seed must be sown in January or early February in a heated greenhouse, and there is no better plan than sowing in a box, three or four inches deep, filled with a free compost. The seeds being very small must not be covered deeply—a sifting of fine soil one-sixteenth of an inch deep over them is enough. The boxes should be well-watered before the seeds are sown and a sheet of glass placed over them after sowing, and shaded till germination takes place. When the plants are large enough to handle, they should

## Culture

be transplanted into other boxes filled as before, grown on in same temperature for a week or two and then gradually hardened. About the first week of April transplant into cold frames into which has been worked some thoroughly old dung, leaf mould or spent hops. There the plants will form dense tufts of roots. Lift carefully and plant out where they are to bloom in May. Such plants will begin flowering in July and will often continue until November.

AS A BIENNIAL.—Sow the seeds in boxes or in a frame in July. When plants are large enough, transplant three inches apart into another frame in which they should be wintered and planted out in March. Two hints here may be helpful. When transplanting into frame, if weather is brilliant, careful shading will be required for a few days, as a few hours' brilliant sunshine through the glass will scorch or destroy the plants. As soon as the plants are established they will not require the sashes over them, and in winter they ought to get plenty of air always, the object being to rear hard, stubby plants. In many districts where the soil is free seedling *Antirrhinums* winter well out of doors. If this is the intention, the seeds should be sown at the end of May or early June, transplanted as already recommended and

## Antirrhinums

planted out into beds in September. If any of the plants show flower stems, these should be pinched out. In favourable districts all the plants will stand the winter and produce beautiful spikes of bloom from the end of May onwards. The July sown plants wintered in frames will bloom towards the end of June. To ensure in every case a continued bloom, it is necessary to remove the spikes when finished flowering, as the production of seed soon exhausts the plants. In all cases where Antirrhinums are required for bedding, it is a good plan to pinch off the top of the main shoot when three or four inches tall to induce a bushy branching habit. If long spikes of bloom are required for exhibition work, or conservatory decoration, the plants must not be pinched.

FOR CONSERVATORY.—Select from summer sowing nice plants, and pot them in September into small pots; grow on in a cold greenhouse; move into larger pots in January, and shift again in March into five or six inch pots, in which they will flower beautifully in April and May. Under glass, the spikes will be found to elongate more than they do out of doors, but the beauty is enhanced by the colours being so pure and clean.

It is hardly necessary to enlarge on the culture

## Culture

in the garden, because those who have seen snapdragons growing and flowering gaily on the top of old walls and in other out of the way places know how accommodating they are. In beds of all sizes and shapes they may be grown, in lines in borders, where they are most effective if the colours are nicely blended; in clumps of half-a-dozen plants of the same variety in mixed borders they are happy. A free, well-drained soil suits them best, if slightly calcareous so much the better and it should be firm. What *Antirrhinums* do not like is fresh manure, and where they are not happy is in a wet or boggy soil. They want the sunlight and they want their "feet" dry after they are established.

## CHAPTER III

### BEST VARIETIES

It is always an exceedingly difficult thing for one who is a raiser of new varieties of flowers to write about the best varieties in a quite unbiassed manner. One naturally has a predilection for one's own creations, and is apt to see points in their favour where the margin of justification is rather small. That being so I will put before my readers the findings of the Royal Horticultural Society. I have already alluded to the splendid trial of Antirrhinums which that Society had at Wisley in 1913. The best varieties in commerce were contributed by the leading wholesale and retail firms who specialize in Antirrhinums. Glancing through the list, I find such names as Messrs. Watkins & Simpson and Messrs. Hurst & Son, leading wholesale seed merchants, and among the better-known retail firms are Messrs. James Veitch & Son, Messrs. R. Veitch & Son, Messrs. Dickson & Robinson, Messrs. Barr & Sons, Messrs. Dobbie & Co., Messrs. Bath, Mr. F. C. Heinemann, Messrs. Daniels,



## Best Varieties

Messrs. Simpson, Messrs. Sydenham and Messrs. Carter. Out of the two hundred and seven stocks sent in for trial, which were carefully observed during the whole period of their growth, the following were selected as the best. The same variety was in many cases contributed by several different firms, and I suggest that the buyer should place himself to some extent in the hands of his seedsman—for all the leading seedsmen now offer collections of *Antirrhinums*—and order the varieties he fancies either from the following list or from the seedsman's catalogue, putting stress on the varieties being true to colour and type. It must be like all other transactions in the seed trade, a question of confidence and dependence on the firm one is dealing with.

Nothing is more disappointing and aggravating than to lose a season or spoil a bedding display with a wrong colour.

### ROYAL HORTICULTURAL SOCIETY'S LIST OF THE BEST ANTIRRHINUMS

(*Vide* Journal of the Royal Horticultural Society,  
Vol. xxxix., Part 3, April, 1914)

#### TALL SECTION

<i>Name</i>					<i>Colour</i>
Beauty	-	-	-	-	Crimson.
Moonlight	-	-	-	-	Reddish apricot.

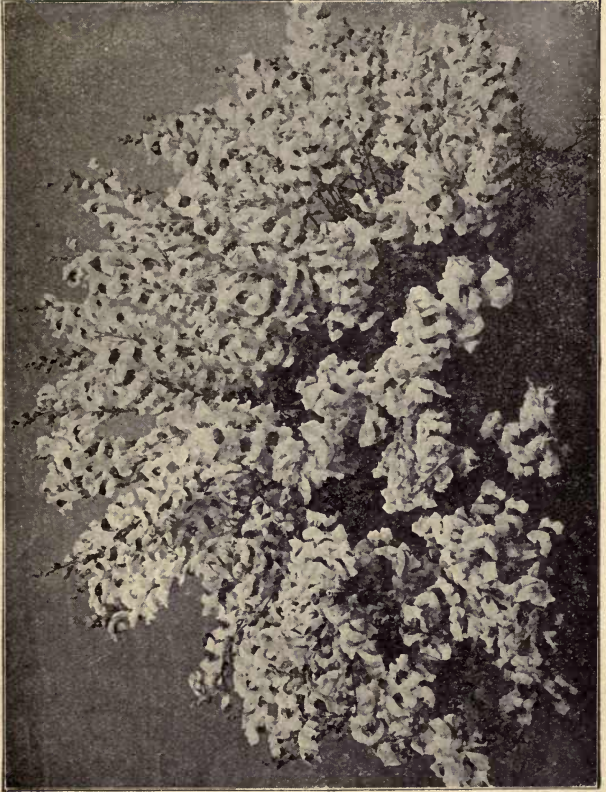
## Antirrhinums

<i>Name</i>	<i>Colour</i>
Queen Victoria - - -	White.
Salmon Pink - - -	Rose.
Yellow King - - -	Yellow.

### MEDIUM SECTION

Amber Queen - - -	Yellow and rose.
Beacon - - -	Vermilion red.
Bonfire - - -	Coral red and rose.
Carmine Queen - - -	Carmine.
Coccineum - - -	Fiery red.
Crimson King - - -	Crimson.
Daphne - - -	Rosy carmine.
Defiance - - -	Fire red.
Fire King - - -	Cherry red and orange.
Golden Morn - - -	Yellow and rose.
Golden Queen - - -	Yellow.
Maize Queen - - -	Yellow and rose.
Pink - - -	Rosy carmine.
Rosy Morn - - -	Rose pink.
Sunset - - -	Dull garnet and yellow.
White Beauty - - -	White.
White Queen - - -	White.
Yellow - - -	Yellow.
Yellow Queen - - -	Yellow.

Another most useful work done by the Royal Horticultural Society, although it was not set



A VASE OF ANTIRRHINUMS ("NOBILE").



## Best Varieties

forth in great prominence in its Journal, was the grouping together of varieties which were considered to be very much alike, thus :—

<ul style="list-style-type: none"> <li>{ Beacon.</li> <li>{ Daybreak.</li> <li>{ Fire King.</li> <li>{ Aurora.</li> <li>{ Firefly.</li> </ul>	<ul style="list-style-type: none"> <li>{ Defiance.</li> <li>{ Flame.</li> <li>{ Coccineum.</li> <li>{ Scarlet Flame.</li> <li>{ Vesuvius.</li> <li>{ Scarlet Beauty.</li> <li>{ Brilliant Vermil- ion Scarlet.</li> </ul>	<ul style="list-style-type: none"> <li>{ Buff Queen.</li> <li>{ Maize Queen.</li> <li>{ Golden Fairy.</li> <li>{ Dainty Queen.</li> </ul>
<ul style="list-style-type: none"> <li>{ Rosy Morn.</li> <li>{ Phyllis.</li> <li>{ Pink Queen.</li> <li>{ Rose Doré.</li> <li>{ Roseum Superbum.</li> </ul>	<ul style="list-style-type: none"> <li>{ Queen of the North.</li> <li>{ Mont Blanc.</li> <li>{ The Bride.</li> <li>{ White Beauty.</li> <li>{ White.</li> </ul>	<ul style="list-style-type: none"> <li>{ Avalanche.</li> <li>{ White Queen.</li> <li>{ Snowflake.</li> </ul> <ul style="list-style-type: none"> <li>{ Daphne.</li> <li>{ Perle d'Amour.</li> <li>{ Cottage Maid.</li> </ul>

Outside the clear self-colours such as white, yellow, primrose, carmine, pink and crimson, I am personally in favour of those varieties which bring tints of bronze, chamois and yellow into their composition. Amber Queen and Maize Queen are very charming, and so is Dainty Queen (salmon buff with yellow lip). The two former received awards of merit from the Royal Horticultural Society in 1913.

Another type of flower which fascinates many, is represented by Nobile. The flowers are white with dark crimson lip, and either on the plant, or cut and put in a vase, they are most distinct

## Antirrhinums

and effective. In *Daphne*, the colours are almost reversed, the flowers being pale carmine, and the lip white. Both *Nobile* and *Daphne* were honoured in the Royal Horticultural trials.

Outside the self-coloured varieties in the Tall Section, a note should be made of *Cottage Maid*, a beautiful combination of pink and white; *Fairy Queen*, orange suffused rose with white tube; *Moonlight*, apricot suffused rose with yellow lip, and *Coral Red*, deep rose-red with yellow-tipped lip.

### DWARF OR TOM THUMB VARIETIES

The Tom Thumb varieties are simply known by their colours, thus: *Tom Thumb White*—*Golden*—*Crimson*—*Rose*, and so on. It was formerly difficult and almost impossible to obtain these true to colour and type, but now most of the leading seed houses offer reliable strains.

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Notes *re* Culture

# NATIONAL SWEET PEA SOCIETY

President for 1920

Treasurer

MR. EDWARD SHERWOOD

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