CHRYSANTHEMUMS

FOR

GREENHOUSE

AND

GARDEN

W. H. & L.
COLLINGRIDGE

CHRYSANTHEMUMS FOR GREENHOUSE AND GARDEN.

EARLY-FLOWERING CHRYSANTHEMUMS.

Pink—"Ena Thorpe." White—Miss G. K. Thorpe." Old Gold—"Harry Thorpe."

CHRYSANTHEMUMS

FOR

GREENHOUSE AND GARDEN

A Practical Treatise on the Propagation and Culture of Exhibition, Early Flowering, and Decorative Kinds; including the Chief Pests and Diseases, and Selections of the most Popular Varieties.

BY

D. B. CRANE, F.R.H.S.

Chairman of the Floral Committee of the National Chrysanthemum Society.

EDITED BY

T. W. SANDERS, F.L.S., F.R.H.S.,

Editor of "Amateur Gardening."

ILLUSTRATED

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AN EDITORIAL FOREWORD.

In issuing a fourth edition of this work, which has hitherto met with a popular reception from lovers of the Chrysanthemum as an attractive greenhouse and garden autumn-flowering plant, it is quite unnecessary for us to eulogise its value as a sound practical guide to its successful cultivation.

The Author (Mr. D. B. Crane, F.R.H.S.) has made a life-long study of the Chrysanthemum, and, as a grower and exhibitor, proved his ability to deal thoroughly with all its phases. Moreover, as Chairman for many years of the Floral Committee of the National Chrysanthemum Society, he has had exceptional opportunities of making himself acquainted with all the merits and demerits of the hundreds of varieties in cultivation, and so his selections hereafter given, which, by the way, have been revised up to date, may be relied upon to be the cream of the respective types or classes.

All, therefore, that is necessary for us to say is, that the literary pages have been revised, new illustrations added, and the work generally brought into consonance with modern requirements. At the same time we need hardly allude to the fact that, in consequence of the late war, very few new varieties were raised or placed in commerce, and many old ones of merit were lost to cultivation, but now the world is once more at peace there will, no doubt, be a steady revival in the growth of the Chrysanthemum for garden and greenhouse decoration, also in the raising and introduction of new sorts.

1920. T. W. S.

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ATTRACTIVE NOVEMBER-FLOWERING CHRYSANTHEMUMS.
A collection of Japanese, Incurved and single-flowered varieties.

CHAPTER I.

HISTORY AND CLASSIFICATION.

The genus chrysanthemum contains a good many annual and perennial species, but the only ones we are concerned with in this volume are the varieties of indicum and sinense, originally natives of China and Japan. The generic name, chrysanthemum, by the way, is derived from two Greek words, " Chrysos " (gold) and " Anthos" (flower), the Golden Flower. The correct pronunciation of chrysanthemum is kris-an'-thē-mum.

History.—The varieties of Chrysanthemum indicum and sinense have been cultivated for ages, and held in profound veneration by the inhabitants of the Celestial Empire. It is recorded that the first plants which found their way to Europe were grown in Holland in 1689. The first evidence of its presence in England is a record of its being grown in the Apothecaries' Garden at Chelsea in 1764. A large-flowered variety is said to have been imported from China in 1789 by M. Blanchard, of Marseilles. Later, twelve varieties are recorded as being grown here in 1820; forty-eight in 1826; and fifty-three in 1834. A Mr. John Salter settled in Versailles in the third decade of the last century, and raised quite a number of new sorts, which became popular in this country. In 1843 Mr. Robert Fortune, a famous plant collector, went out to China and sent home what he termed the Chusan Daisy, which became eventually the parent of the miniature-flowered type known as Pompons. In 1860 to 1862 Mr. Fortune paid a second visit to the East and introduced the first Japanese varieties. From that time onwards the rearing of new sorts, and the cultivation

thereof, went forward by leaps and bounds, innumerable societies were formed specially devoted to the cult of the flower, and various treatises thereon written and published.

Classification.—The present race of chrysanthemums consists of the following distinct types: Large-flowered Japanese, Decorative, Incurved, Single-flowered, Pompons, Anemone-flowered, Feathery, Spidery, and Thread-like, Early-flowering, and the Hairy-flowered.

The Large-flowered Japanese type are noteworthy for the immense size of their flowers, which are grown one on a stem for exhibition purposes. Some have twisted petals, others flat, quilled, reflexed, curled, etc. These flower mainly in November, and, of course, have to be grown in pots, have their shoots specially "stopped," the flowers produced on "First Crown," "Second Crown," or "Terminal Buds," and be grown in a greenhouse whilst in bloom.

The Incurved type have large globular, regularly-formed flowers, with broad, smooth, and regularly arranged florets. They also flower chiefly in November, and are grown for producing exhibition blooms. "Stopping" the shoots, etc., has to be practised in their case, precisely as advised for the Japanese.

Decorative Chrysanthemums are varieties of the Japanese type, but with smaller flowers. They are usually grown as bush plants, with a number of shoots and many blooms. As plants they make attractive decorative subjects for greenhouse or conservatory decoration in autumn and winter. The flowers, moreover, are invaluable for cutting for indoor decoration.

The Single-flowered type embraces two classes, the Early-flowering, which produce their flowers from August to November, and may be grown outdoors, and the late-flowering, which bloom in November and December, and have to be grown in pots. They are suitable as greenhouse decorative plants, or for yielding flowers for cutting.

Pompons are a type of more or less dwarf growth, with small, flat, or nearly globular blooms, and short, flat, or quilled florets. Suitable for beds or margins of borders; taller sorts for pot culture. Flowering period, July to November.

The Anemone-flowered type consists of three distinct sections—the Large-flowered, the Japanese, and the Pompon-flowered. The first have large blooms with high, neatly-formed centres, and quilled or flat ray florets. The varieties are of dwarf to medium growth, and bloom from October to mid-November. The second section has a raised central disc, with twisted, curled, narrow, or broad florets, some of which are of a drooping character. Flowering period, October and November. Suitable for pot culture. The third section has small blooms, with a central disc of quilled florets and flat ray florets. Flowering period, October to December. Of dwarf to tall growth. Suitable for pot culture.

Early-flowering Chrysanthemums belong to the Japanese type. They have small to medium-sized blooms, which are produced in profusion from early August to November, and vary in growth from dwarf to medium or tall. Excellent plants for massing in beds or borders. Blooms may be allowed to develop naturally, or be disbudded in an early stage to produce larger flowers. Quite hardy.

Feathery, Spidery, and Thread-like Chrysanthemums are Japanese varieties with narrow, twisted, curled, or thread-like drooping florets. A quaintly-flowered type for pot culture in the greenhouse. Require to be grown like the Decorative kinds.

Hairy Chrysanthemums belong to the Japanese section; have very large blooms with incurving florets, furnished on the reverse side with short, glandular hairs. First introduced in 1890, and but seldom grown nowadays. Flowering period, November. Requires similar culture to the Large-flowered Japanese varieties.

CHAPTER II.

LARGE-FLOWERED JAPANESE, AND INCURVED.

In succeeding chapters the cultivation of the outdoor and decorative chrysanthemum are dealt with, but in the present instance we are devoting our remarks exclusively to those varieties (Japanese and Incurved) intended for exhibition. In the 'eighties and 'nineties, when chrysanthemum shows were at the zenith of their popularity, the pages of horticultural journals and most treatises at that time were almost exclusively devoted to the growing of chrysanthemums, with the object of producing large exhibition blooms of high quality. For the past twenty years the Japanese kinds have received undue preference, to the disadvantage of the incurved type of flower, as well as to many other dainty forms, which in earlier days were represented at shows in typical form and condition. We now appear to have arrived at a period when the claims of the grower of large exhibition chrysanthemums have been allocated to their proper place, and the less large and smaller flowers are receiving recognition; whereas, in the past, chrysanthemum shows were almost exclusively devoted to the very large exhibition blooms. Representative shows at the present time include all types of the flower, and these are exhibited in varying condition. Not only are the severely disbudded blooms represented in ideal form and condition, but chrysanthemums that are termed " market varieties " are exhibited in a condition that at one time seemed almost impossible of achievement. It appears to be the

aim of those responsible for maintaining the popularity of the "golden flower" to have exhibited at the shows throughout the country, blooms of small to medium size, as well as a number of the dainty pompons, and the beautiful singles. The single-flowered chrysanthemums were never shown in better form and condition than they are at the present time, and, although raisers do not appear to be devoting as much time to these smaller types of the Single as they have been giving to the large-flowered Singles, there are already indications that attention is being given to this type of the flower. Anemone-centred Singles, too, are already being raised by a few enthusiastic devotees, and the future seems pregnant with great possibiilties in regard to these delightful decorative flowers, which make a beautiful display when set up attractively in vases at the various chrysanthemum exhibitions.

Propagation.—We must assume that cuttings can be obtained from healthy stock plants, and if this is possible the grower of exhibition blooms may look forward to the future with confidence.

In the propagation of exhibition chrysanthemums, the grower should have in his mind the method of culture he proposes to follow with the resulting plants. Should he desire to produce blooms on second crown buds, it is a good plan to commence the propagation of the chrysanthemums during December. Cuttings inserted at this time should be given cool treatment, and be grown on subsequent to their rooting in quite cool fashion.

In the earlier days it was the custom to insert cuttings individually in "thumb" pots, and, as these became rooted, to transfer them successively into three-inch, four-and-a-half-inch, and six-inch pots, according to the vigour of the respective plants, and, finally, into eight, nine, and ten-inch pots respectively. Those who are still prepared to follow this method will find it advantageous so to do.

There has grown up in recent years a method of rooting cuttings in shallow boxes, and potting up the cuttings so soon as rooted, placing these in deep "thumb" pots, and treating them subsequently, as advised for those rooted individually in pots. Both methods are good, and the latter method is quite satisfactory, and very excellent plants may be raised in this way.

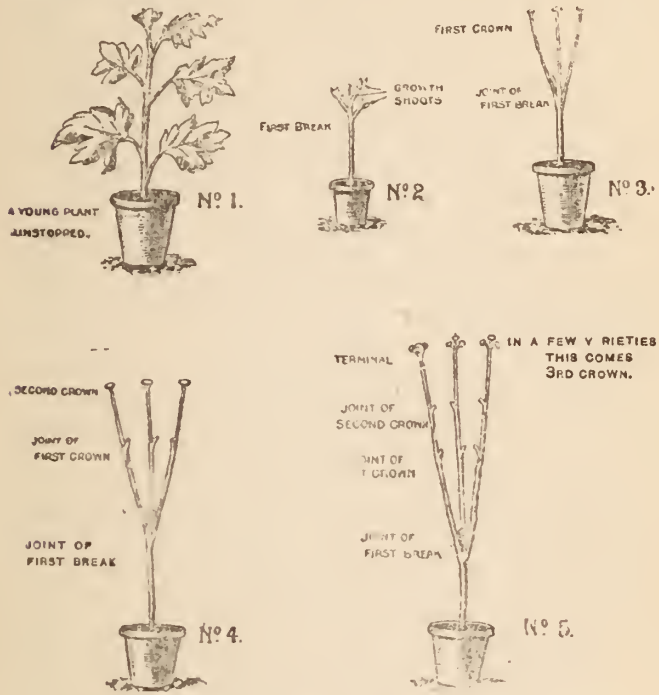
We cannot impress too strongly upon growers how important it is to keep their plants quite cool, and when the young ones are placed in the cold frames, air should be admitted freely on all favourable occasions, so as to encourage a sturdy form of growth. When the genial weather of spring comes along, abundance of air may be given with advantage until the period arrives when the sun attains considerable power; then it will be advantageous to remove the frame lights altogether.

Stopping and Timing.—Stopping the plants and timing the buds is an aspect of culture of exhibition blooms that has attained considerable prominence in recent years, but it is a practice that is considerably overdone. The object of stopping and timing is to bring all plants to flower within a given period, so as to have the largest number of flowers possible at the period when the shows take place. By stopping—i.e., pinching out the point of the growth of a plant—it may be possible to make an early variety flower late, and a late variety flower early, and in this way to bring the whole series of plants to perfection within the few weeks, during which the shows are held.

In this short treatise it is impossible to go very fully into details, but for the guidance of the inexperienced we would point out that there are a number of varieties that may be stopped during the latter part of March, and allowed to grow on from this point to the second crown buds, and these plants invariably produce their buds in good time in August so as to evolve handsome flowers for the November shows.

In other cases, by stopping plants in the first week in

April, and allowing the resulting shoots to grow on to the second crown buds, the method answers very well indeed, and there are a few instances where even a mid-April stopping of the plants, and second crown buds will



STOPPING AND TIMING CHRYSANTHEMUMS.

1. A young plant unstopped. 2. A plant stopped by the removal of the point of its shoot and showing subsequent new growths. 3. Plant with three shoots bearing first crown buds at their apices. 4. Showing first crown buds removed, and subsequent extension of shoots bearing second crown buds on their apices. 5. Plant with second crown buds removed and further growth of shoots bearing terminal buds.

produce equally good results. We know there are certain treatises issued in which the stopping of plants is recommended, and may vary from February to late April,

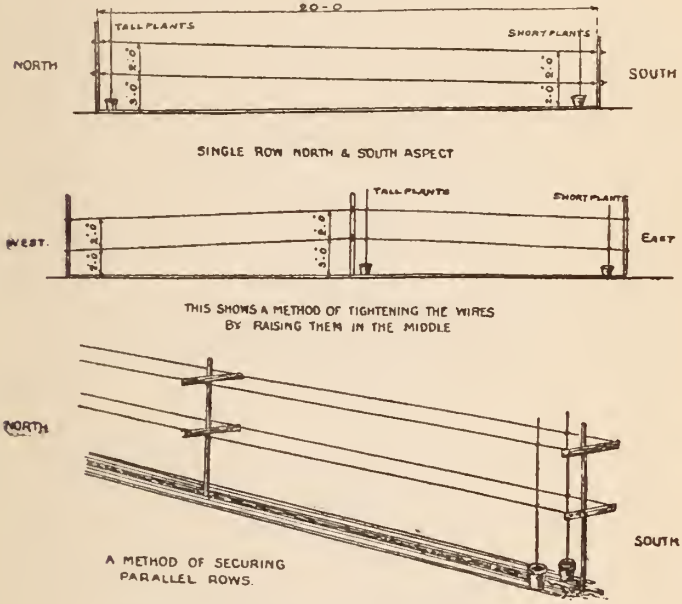
but with the majority of plants, where second crown buds are desired, we find the March and April stopping to answer quite satisfactorily.

The third method is that of stopping the plants once, and this is generally done about the middle or third week in May, and securing the first crown buds that subsequently evolve on such plants. A growing practice is that of inserting cuttings in the spring, and growing on the resulting plants and securing the first buds that develop. This, too, gives very excellent results. It is for the grower, as he obtains new sorts to experiment on the lines just suggested, and it is in this way thoughtful cultivators may produce results that should place his flowers in the premier position. The methods suggested should form the basis of the stopping and timing of exhibition chrysanthemums, and may be varied to suit the peculiarities of different sorts.

Although we have suggested methods by which the stopping and timing of plants may be observed, with advantage in many instances, growers have succeeded quite well with the large majority of plants when these are propagated either in December or spring, and the resulting plants allowed to develop their buds in quite natural fashion—i.e., December propagated plants will produce second crown buds quite satisfactorily in August without any manipulation, and their growth also is less difficult. Other varieties when propagated in the early spring and allowed to develop their first crown bud quite naturally also do well. What growers should always bear in mind is that in the majority of cases the buds of the Japanese varieties should be secured during August, say, any time after the first week in that month, but a good general time for the buds to evolve is about the third week in August. With many of the incurved varieties a slightly later period answers very well, although there are many instances where buds of the incurved varieties, secured in the latter half of August, do better. Generally speaking, the buds of the incurved

varieties that evolve during the earliest days of September produce flowers of beautifully even form that are excellent for exhibition.

Summer Quarters.—The summer quarters of these plants should be a good open, sunny position, protected from the south-west, where strong winds in the early days



SUMMER QUARTERS FOR CHRYSANTHEMUMS.

Plants stood outdoors during the summer require proper supports for their growing stems in order to avoid injury by rough winds. This is best accomplished by fixing stout stakes 5 ft. high and at intervals of 15 to 20 ft. To these attach two rows of galvanized wire 30 ins. apart and secure the ends to a nut and washer fixed in the end posts for the purpose of keeping the wires taut. The illustrations show the methods adopted for single and double rows. The stakes supporting the shoots are, of course, secured to the wires.

of August invariably give trouble. It is a great mistake to crowd the plants. There should be ample space between each individual plant, so that sun and air can

each play their beneficent part in the proper ripening of the wood. See page 50 for compost.

Autumn Treatment.—The housing of the plants should take place in the latter half of September, and no plants should be allowed to stand outside after the buds have shown colour. A great many growers grow their plants quite well until they are housed, and then, through the mistake of trying to crowd too many plants in the glass structure their good work of many months is largely undone. The plants must have plenty of room in the glass structure, so that their wants may be attended to, and that a healthy state of affairs may be ensured under glass.

The fast opening buds must be shielded from brilliant sunshine, and with this object in view, it is a good plan to erect a tiffany screen on the inside of the roof to run on rings sown on to the selvedge edge of the tiffany, so that this shading material can be drawn backwards and forwards as and when required. This is very important, as many dull days prevail in the autumn, and where permanent shading is placed on the glass, this is always to the detriment of the flowers.

Feeding should begin immediately the large final pots are filled with roots, and this is usually determined by the ready way in which the ball of soil and roots becomes dry. Never water an absolutely dry plant with manure water. First apply clear water, and let this be absorbed by the soil and roots, and follow with manure water subsequently. Manure water should never be given in strong doses. Weak liquid manure applied once or twice a week at the beginning, and increased gradually, until manure water may be applied regularly, is the better rule to observe. The character of the manure water should vary from time to time, as the plants like a change of diet, and readily respond to this consideration for their well-being. The application of liquid manures usually

begins in August, or earlier, and may be continued while the plants are under glass, and until the blooms are two-thirds expanded, but the doses at this time should be weaker in character. A properly cultivated plant will evolve numerous surface roots when under glass, and they are of great service at this juncture, and for this reason it is important that they should be protected against any check from an overdose of manure water, or that of too strong a character. All watering should be done by the early afternoon, and excessive moisture wiped from the floor when the flowers are opening. These details may appear to be small matters, but their recognition by the grower all tends to promote a successful issue. Always maintain the buds and flowers in an upright position, so that they may open evenly and in good form.

We should have mentioned earlier that it is not wise to grow more than three blooms on each plant, although there are a few exceptions to this rule. Some plants produce five or six blooms quite as well as they would three blooms, but there are other instances where two blooms will be ample.

Dwarf Plants.—The rooting of cuttings in March and April, and growing these on first in three-inch pots, and flowering same in six-inch or other rather larger pots is becoming an increasingly popular form of culture. These same plants should be grown on on single stems, and the first or second crown bud, according to variety, secured in each instance, and the resulting flowers in many cases will often exceed the most sanguine expectations of the grower. Many of the finest blooms exhibited at the leading shows are the result of blooms produced by this method of culture.

Hints to Exhibitors.—Some weeks before the shows take place, exhibitors should see that their exhibition boards, and cups, and tubes, are all in good working

order, and every arrangement made in good time, so that when the blooms are being cut and prepared for the shows, this work may be done quietly, and free from excitement. Always see that the entries are sent to the Secretaries of the shows within the proper period, and make a point of reaching the show quite early in the morning, in order that ample time may be allowed to set up the blooms under satisfactory conditions.

Carefully read the rules and regulations regarding the exhibition, and also pay particular attention to the terms of the various competitions in which the grower determines to enter. This has often saved much heart-burning, and avoided unpleasant experiences with many of our leading growers in the past.

CHAPTER III.

DECORATIVE VARIETIES.

Decorative chrysanthemums are Japanese varieties grown for producing a number of flowers of medium size, either as specimen plants for the embellishment of the greenhouse in autumn or winter, or for yielding flowers for cutting at those periods.

PROPAGATION.

Stock Plants.—We will assume the old stools are already developing their first crop of cuttings, after having been cut down as the plants went out of flower. The old stools should be placed in a cool and airy greenhouse, and as near to the glass as possible. By these means the fast-developing shoots, from which the supply

of cuttings is to be obtained, are kept short-jointed and stocky, and a healthy and vigorous constitution the better perpetuated. The grower should assure himself from the start that the ball of soil and roots which represent the old stool are thoroughly moistened. The soil should be moistened throughout, without which it is useless to anticipate a successful sequence in the way of a free development of cuttings. When watering the old stools, do not rest content with merely watering them once only, but repeat the dose until there is conclusive evidence that the soil is moistened throughout. The temperature of the cool greenhouse should be maintained at about forty-five to fifty degrees; this being quite warm enough to promote new growths of a desirable kind. Ventilate the glass structure on every favourable occasion, and take care that cold winds and draughts are guarded against.

The foregoing method of treating the old plants answers the purpose of those whose demands are somewhat limited. Most growers in private establishments may procure a sufficient supply of stock by leaving the old stools in their flowering pots as already advised, and in the case of most amateur cultivators the same rule holds good. There are many instances, however, where growers desire to work their stock plants very hard, and where it is difficult to provide a sufficient quantity of cuttings by the orthodox methods already laid down. Such growers should have recourse to a more drastic system of treating their stock plants, and for them there are two methods worth following. They should either shake the old stools out of their flowering pots, reduce the ball of soil and roots very considerably, and repot them in five-inch or six-inch pots, using any soil of a light and gritty character, potting rather lightly. Or, they should transplant, or, rather, plant out, the reduced stools in specially prepared beds of soil on the greenhouse benches.

The management of stock plants is a very simple matter, and the saving in time and labour is considerable.

Some growers do not hesitate to plant the old stools in soil that has been used previously for growing chrysanthemums, and results sometimes fully justify their so doing. But, to be absolutely sure, it is better to prepare a special heap of compost, of new and fresh ingredients, and this should be of a light and open kind. A good mixture should comprise three parts nice light loam, two parts flaky leaf-mould, and one part coarse silver sand or clean road grit. This well broken up and passed through a coarse sieve, and subsequently well mixed, will make an ideal compost for the purpose. The compost on the benches should be of sufficient depth to properly embed the old stools to their crown, and the soil should be drawn lightly over the latter. It is astonishing what a number of stock plants may be arranged in beds prepared in this way, and the results are extremely satisfactory. After a day or two has elapsed since the planting, the whole bed should be watered with clear water from a fine-rosed can, and the temperature of the water made as near to that of the glass structure as possible. In a comparatively short time the plants will be seen simply bristling with innumerable shoots of recent development, and immediately below the surface soil there will be found many others in embryo.

The claims of those growers who do not possess a glass house, and who are, or desire to be, enthusiastic devotees of the "golden flower," must not be forgotten. There are few gardens that are without a cold frame or a series of them, and with this adjunct of the garden, they may raise quite a large number of plants for the embellishment of their homes by the aid of a temporary structure to flower them in. With a frame-light or two, and canvas strained between stout upright posts, temporary structures, in which to flower the decorative chrysanthemums may easily be made. For such growers, the cold frame in the early days of the year will afford ample protection for a limited number of plants. They may be planted in prepared soil in the frames, and will succeed without a doubt. If left in their flowering pots, or the

roots be reduced and smaller pots utilised in their stead, they should be plunged in cocoanut-fibre refuse, spent hops, sifted ashes, or any equally suitable material. During periods of severe frost this plunging of the pots is a safe protection against any real harm being done to the roots. In circumstances such as these, the frame lights should be well matted up, and any available litter placed around the frame as a further protection. Old stools left in their flowering pots should have the surface soil slightly loosened, as this assists very materially in the development of subsequent growths.

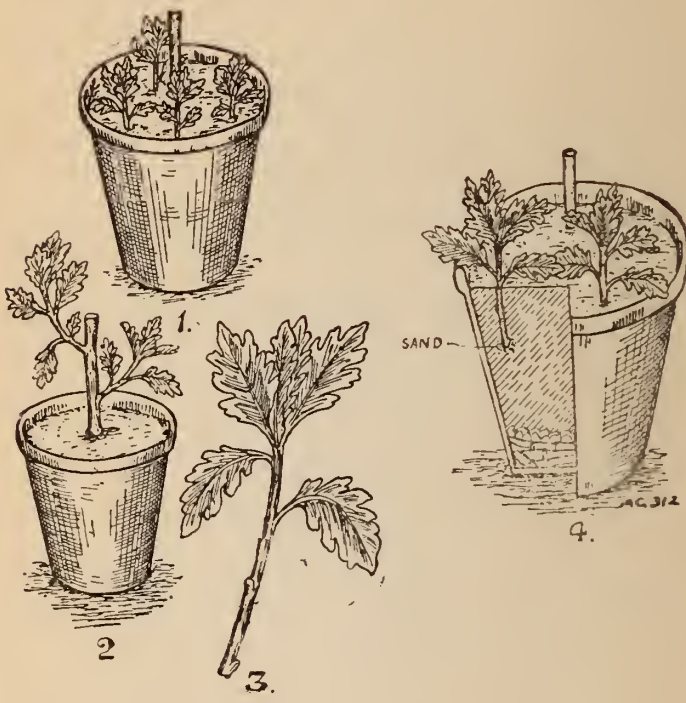
Types of Cuttings.—A great deal depends upon the choice of the cuttings, as there are both good and bad ones.

A good cutting is a recently developed shoot of free and easy growth that pushes its way through the soil a short distance removed from the old stem, and detached when about three inches long. Shoots of this kind are free from buds at their apex, and when made into cuttings, and inserted in a proper manner, seldom fail to root satisfactorily. Plants that produce the sucker-like, underground shoots, emit quite a large crop of growths from which cuttings of the best may be made, and within a fortnight of the first batch being detached, there should be another supply available from the same source. It is quite astonishing what a large supply of stock may be obtained from old stools treated in the way advocated in an earlier chapter.

Bad cuttings are those taken off too near the remnant of the old stem, and which are often disposed to develop buds in the point of the growths, and when this is so, their progress, when rooted, leaves much to be desired. Those taken from off the old stem are predisposed to cause trouble sooner or later, but where the variety is new and choice, or very scarce, stem cuttings are inserted, as the chances are no others will be available, and the best has to be made of them. Such cuttings, however, must

be placed under the category of "bad" cuttings, and when those of a better kind can be obtained, the former should be left severely alone.

It is a good plan with growths having buds on them



How to Propagate Chrysanthemums.

1. Showing sucker shoots furnished with roots growing from the roots. 2. Shoots growing on the stems; not so suitable as sucker shoots for cuttings. 3. Cutting properly prepared; base cut off close to a bud and two pairs of lower leaves removed. 4. Cuttings inserted several in a pot.

to pinch out the buds, and when a new series of growths develop, to use the latter for propagation purposes. Better still is it to remove the upper portion of the shoots

SINGLE CHRYSANTHEMUM, "SANDOWN RADIANCE."

A large-flowered, single variety with rich, chestnut-crimson flowers. A lovely colour, and a good variety for growing as a decorative plant or yielding flowers for cutting. Blooms in November and December. Requires to be disbudded to get good flowers.

RESULT OF "STOPPING" THE MAIN STEM.

SPRAY SHOWING TERMINAL BUDS PARTIALLY THINNED

altogether by pinching off at least an inch of the growth. This manipulation has the effect of inducing shoots of a stronger character to evolve, and with such sturdy material the grower's prospects are considerably brightened. A certain proportion of popular sorts of to-day have an inherent weakness in this respect. No matter how well the old stools may be cared for, they persistently develop growths with buds at their apex, and often not until quite late in the spring is it possible to procure cuttings of a satisfactory kind.

Preparing the Cuttings.—The making or preparation of a chrysanthemum cutting is a very simple affair, when one has detached a growth or shoot from a plant making free growth. The cutting should never be more than three inches in length, a better length being about two and a-half inches, or rather less. Do not be misled into taking large growths of a stout and sappy character, as continued experiment has proved most conclusively that they take longer to root and require more skilfully handling than do those cuttings of medium stoutness. To make a cutting, the grower should cut through the stem immediately below a joint, and the bottom leaf should also be trimmed off close to the stem to complete the operation.

Cuttings procured from a chrysanthemum specialist, although packed in damp moss before being despatched through the post, do not always arrive in the nice crisp condition that is so much to be desired. For this reason, it is a good plan to place them in moss in small pots on arrival, and see that they are arranged in an upright position. A sprinkling overhead with clear water will refresh and invigorate them, and if the pots be stood on the floor of the cool greenhouse for the night, they should be in a fit condition to take in hand the next morning. Should the cuttings arrive in the morning, a few hours' treatment in the manner just described will suffice to rehabilitate them.

When to Insert the Cuttings.—Opinions differ as to the period when cuttings should be inserted. It does not follow that because cuttings of exhibition varieties are propagated in late November and December it is necessary to take in hand the decorative and early-flowering garden varieties at the same time. Much depends upon what object the grower may have in view. Should his aim be the production of large plants of a bushy character or the development of bush plants for exhibition, an early start may be made. December may well be selected for commencing operations, and if all subsequent work be carried out at the proper period, there should be little difficulty in achieving his purpose. On the other hand, if ordinary decorative plants for greenhouse or conservatory embellishment be the one object of attainment, or a collection of plants for cut flower purposes be desired, January is an excellent time to take them in hand. Their propagation may begin in the early days of January, and cuttings may continue to be inserted during February, March, April, and May. Of course, the later the propagation is carried out, the smaller will be the plant, but charming plants, to flower in some of the smaller-sized pots, may be obtained from a late period of propagation.

Compost.—Having considered the questions of cuttings and the different methods of their propagation, we may now give a little thought to the preparation of a suitable compost. Absolutely fresh soil should be used at all times, and the best interests of the plants are served when really good soils are used in this early work. Equal parts of loam and leaf-mould are the chief ingredients of this compost, and to the foregoing should be added about one-eighth part of coarse silver sand. The loam should be of light texture, and the leaf-mould thoroughly well decayed. Pass the ingredients of the compost through a sieve with a half-inch mesh, and before mixing, add thereto a free sprinkling of crushed charcoal. Mix thoroughly, and, if possible, prepare the heap a few days

before it is actually required. Turn it over each day until the compost is filled into the different utensils, the interval elapsing being sufficient time for it to become quite sweet. Keep the rougher siftings under cover, as they will be wanted for covering the crocks, and for the drainage of the shallow boxes.

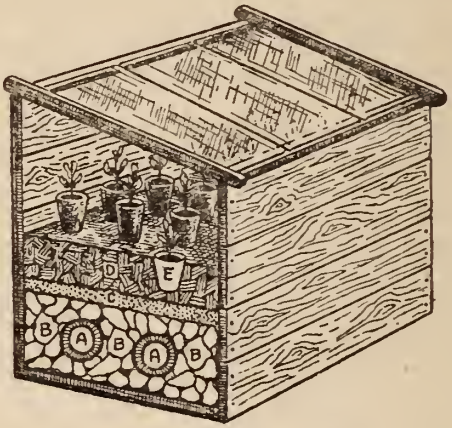
Inserting the Cuttings.—By means of a dibber, insert either singly in thumb pots or three or more close to the inside of a three-inch pot. Insert each cutting to the second joint, and make the soil quite firm, adding, of course, a label containing the name of the variety. Give each pot a gentle tap on the potting bench to settle the soil.

Treatment of the Cuttings.—When the whole of the cuttings for the day are inserted, they should be watered in with clear water that is slightly tepid. Use a fine-rosed can, of which there are now several very excellent examples, and give just a gentle "dewing" overhead. If the pots of cuttings be gone over two or three times in this way, the soil will be nicely moistened. They should then be left to drain for a time, after which they should be arranged in the quarters allocated to them. At this period a small glass structure, which may be kept fairly close, and in which the temperature can be maintained in the neighbourhood of fifty degrees, will answer admirably. The pots should be stood on a cool and moist bottom. Sifted ashes, cocoanut-fibre refuse, spent hops, or sea shells are each of service during the period of propagation. Arrange the pots, etc., evenly and quite level; this is important when watering subsequently. The cuttings will assuredly flag, but this need not give the grower cause for anxiety. So long as fairly close conditions prevail, and the temperature can be maintained at the figure already mentioned, rooting process will take place in a few weeks, and the flagging leaves will one by one pick up and regain their former vigour as a consequence.

A suitable propagator can be easily fixed over the hot-water pipes, as shown in accompanying sketch.

Cuttings rooted in this way seem to quickly assume the position of plants when the slightest indication of the rooting process is given by the more healthy and natural appearance of the leaves in the point of the shoot. Keep the glass of the frame wiped free of excessive condensed moisture, or many of the cuttings may damp off.

What to do with Rooted Cuttings.—Assuming the cuttings were inserted in pots, as previously described,



A Propagating Frame

A small frame constructed over hot-water pipes in the greenhouse. A, are the pipes; B, brickbats used as drainage; C, a layer of cinders; D, a layer of fibre refuse or sawdust; E, pot plunged to its rim in the fibre. The frame is covered with moveable panes of glass.

they should be, when rooted, either potted up singly into small pots, but in this case more space must be allowed to each one. It would be fatal to the best interests of the plants, were cuttings, when first rooted, allowed to remain any length of time without doing something with them. It is astonishing how quickly the roots get matted together, and when this is so, much damage to the tender young roots must follow as a consequence when dividing them. If the plants are to make the progress that one might reasonably expect them to do,

attention to the smallest details, however insignificant, must be rigidly observed. Therefore, proceed to pot up the young plants without delay.

Pots measuring three inches in diameter (which are also known as small sixties) are the best to select for this purpose. They should be washed scrupulously clean, and left to drain and become dry in a natural manner. The crocks, too, should also be cleaned, and be broken up into various sizes, to meet the needs of pots of this size. The soil for this purpose should be of slightly richer character than that in which the cuttings were inserted, and a good compost should comprise the following ingredients: Of good fibrous loam take two parts, leaf-mould and well-rotted manure, half a part each, together with a free admixture of coarse silver sand, sufficient in quantity to make the compost porous. This should be passed through a half-inch sieve, and the ingredients well mixed together. If it is possible, add thereto a free sprinkling of wood ashes, or, failing this, an equal quantity of crushed charcoal. Take particular pains to thoroughly blend the ingredients, and turn over repeatedly for two or three days previous to using. Such a mixture will supply all that the roots need in the way of plant food for some time to come. After potting give a good watering.

SPRING TREATMENT.

In the course of time the young plants that are grown in pots for decorative purposes will need a further repotting to that described in the preceding paragraph, but before this work be done the grower should be fully satisfied that each one is well rooted. There are several means of ascertaining whether the plants are well rooted, the more popular and certainly more satisfactory method being that of turning each one out of its pot. When it is seen that the ball of soil is thoroughly well rooted, a shift into a larger pot should be proceeded with without delay. Do not wait until the roots get matted and entangled at the bottom of the ball of soil, or considerable difficulty will

be experienced in removing the crocks, and the roots must of necessity be damaged in consequence. Pots for this shift should be either five-inches (forty-eights) or six-inches (thirty-twos) in diameter. As in the earlier instance, wash the pots quite clean before using, adopting similar methods in their cleansing.

Compost.—For repotting the decorative kinds the compost should be of a good and lasting character, and the heap prepared in readiness for use some few days before it is actually required. Make up a compost with the following ingredients: Four parts good fibrous loam, one part leaf-mould, half a part of well-decayed horse manure, and liberal dustings each of wood ashes, bone-meal, and any reliable and approved fertiliser. Broken oyster-shells may also be added with advantage. Coarse silver-sand or clean road grit must be added in sufficient quantity to make the compost porous, but as so much depends upon the texture of the loam, no hard and fast rule can be observed. The loam and other ingredients should be broken up into small pieces, and the whole mixed in no uncertain manner. It is absolutely essential that there be an even distribution of the different soils, etc.; and for this reason the heap should be turned over repeatedly. Keep the compost under cover in case of rain, and turn over occasionally to sweeten before using. The five-inch pots should be used for plants of moderate or fairly robust growth, giving those plants with vigorous root action the larger size—six-inch pots.

Potting.—One cannot state definitely at what period this potting should be done; so much depends upon the condition of each plant. An earlier propagation would naturally result in each subsequent detail of culture being earlier also. The first batch to become rooted must be regarded as the first to be potted up, assuming they are well rooted at the time. During late April and May the earliest batches will probably need this attention, and

immediately they are ready, see to them at once. Subsequent batches of plants should be constantly overlooked, and taken in hand from time to time, when ready for their shift into pots of larger size.

Crock with potsherds or crushed oyster shells; the latter are to be preferred in all cases. One flat shell over the hole in the bottom, and a layer of the crushed shells or potsherds arranged neatly over it, answers very well. A piece of turfy loam to cover the crocks, or some of the rougher portions of the soil, will effectually prevent the compost from working down into the drainage. A handful of compost placed in turn over the last-mentioned will find everything ready to receive the plant to be repotted. Turn out the plant with care, removing the crocks without damaging the tender roots, and place in position on its base in the larger pot. Fill in all round with the compost, working this down by the aid of a wooden label or wedge-shaped rammer to answer the same purpose. Pot with increasing firmness, consolidating the soil with the rammer just referred to. Finish off neatly on the surface, label, and stand in a cold frame, on sifted ashes, and keep close for a day or two. For a time at least, the plants may stand close together, after which they must have more room. A day or so after the repotting, give the plants a thorough watering, using a fine-rosed can, moistening the ball of soil throughout.

This is a simple detail, yet so much depends upon it being carried out at the proper time. From the earliest stages, after the young plants are potted up and subsequently established, spacing out should be observed. It is customary, in the first instance to stand the plants pot to pot in their respective batches. In a little while, when they begin to grow, their prospects are improved by giving them more room, technically known as "spacing out." As a result of this treatment, air is made to circulate between both pots and plants, drying the former and encouraging the latter into healthy growth; the two functions combined also encouraging healthy root action.

At a later date again, plants of the earlier batches may be spaced out advantageously, so that when the time comes for their repotting they should be in prime condition for the shift. The same rule may be observed with the plants soon after they are placed outdoors, and with equally good results. As a consequence, the growths attain a vigour rarely seen under less satisfactory conditions; the foliage stands out well beyond the edge of the pots, and finely developed plants soon become ready for the final potting.

At the time the plants are transferred to five-inch or six-inch pots, they should each receive the support of a stake of suitable length. Small stakes only are needed at this comparatively early period, and there are no better stakes than those cut from the hazel. They are very cheap, may be purchased in bundles that will make a large number of both small and large stakes, and their natural colour does not render them unsightly, as are many others now on the market. See that the end inserted in the soil is nicely sharpened to a point, and do not insert the stake too near the base of the stem of the plant. For want of care in this respect, plants are not infrequently partially denuded of their roots, and such specimens must suffer in consequence. Make one tie near the base, and another just at that point in the stem of the plant that denotes it is ripening and getting fairly hard. Never tie where the stem is soft and brittle.

SUMMER TREATMENT.

The summer quarters or standing ground for plants of the decorative kinds in pots is a position that should be allocated with careful forethought. A good open position, at the same time sheltered from the east and north, is one that should be selected if possible. One also has to remember the boisterous winds from the south-west which usually prevail from August onwards, while the plants are outdoors. For this reason, therefore, if the

plants can be screened effectually from the full force of the south-westerly gales, it is better. Full advantage should be taken of a southern aspect, as in this position the good and ripening influence of the sun is undoubted, and without it the plants can never attain that splendid healthy character which all decorative plants should possess. If possible, stand them evenly in rows running north and south.

Where more convenient a special part of the garden should be allocated to them, and rows some four to six feet apart should be mapped out. The rows should have two lengths of strong galvanised wire securely strained to stout upright posts, the lower row of wire being some two and a-half feet from the ground, and the upper one about two feet above this. If more convenient, paths of the kitchen or flower garden may be used for the same purpose, but that no damage may happen to the plants it is important that only wide paths be utilised in this way.

The plants should be stood some fifteen inches apart, taking the measurement between the pots; this will give ample space for the growths to develop during the growing season. On no account must the plants be crowded. It would be a fatal mistake for a grower to attempt to stand more plants in a given area in the hope that by so doing he would make a better display under glass subsequently. Sun and air must play their important parts in good culture, and the latter must circulate freely between the plants. In this way, growth of a consolidated and satisfactory character will evolve, and from such, one may safely anticipate a successful issue.

See that the pots are stood on boards, slates, tiles, sifted ashes, or coke-breeze. If the two latter substances can be made of sufficient depth to prevent the ingress of worms through the hole in the bottom of the pot, by all means use them in preference to any other material. The ashes or coke breeze also maintain a cool bottom, and this during the summer time, is much appreciated by the roots.

Some growers have a weakness for plunging their pots several inches in the ground, and while it must be admitted this saves the more frequent use of the water pot, it cannot be denied that when the time comes for housing, it has its disadvantages. Invariably, when lifting the pots, which have been plunged in the manner above described, the roots have found their way through the hole in the bottom of the pot, and have worked into the adjoining soil. As a consequence, when the plants are lifted, these roots have to be ruthlessly torn away, thus causing a very severe check to the plants, and at a time when they are least prepared to experience the same.

See that the pots are stood perfectly level, as this is of much importance when water has to be applied. If they are not absolutely level, the latter cannot percolate evenly through the soil in the pots, one side getting a larger proportion of water than the other, and progress under such conditions cannot be made. The stakes in the pots should be securely tied to the cross rows of wire, otherwise, as the growths become cumbersome and strong winds prevail, they will shift their position and may break off, and also cause a strain on the surface roots to the detriment of the plants.

Final Potting.—The final potting of decorative chrysanthemums, no matter what their character may be, should be carefully carried out. There is one consolation regarding the culture of decorative varieties, and that is, there is not the anxious concern with such plants as there is with those grown for exhibition purposes. Nevertheless, the old adage says, "What is worth doing at all is worth doing well," and for this reason, therefore, the first concern of the grower should be the compost.

Loam of a good and lasting character is an essential factor in the successful culture of these plants, and care should be taken to secure a sufficient quantiy of this ingredient; keep it in a cool shed or under cover, so that

whatever the weather may be, it may be used at any time. This loam should be full of fibre, if the best interests of the plants are to be served, and of this material take four parts. The loam should be broken up into small nodules about the size of a walnut, and the quantity of fine soil as small as possible. Leaf-mould and horse manure, the latter as prepared for a mushroom bed, should be added to the compost, one part of each of these being sufficient. A liberal dusting of wood-ashes or crushed charcoal should also be added, and to serve the same purpose, crushed oyster shells may be used with advantage. To each bushel of soil add a five-inch potful of any well-known and approved fertiliser, but take particular care that this is well distributed by mixing thoroughly. Coarse silver-sand or clean road grit should be added in a sufficient quantity to make the compost porous. This is very important, as proper drainage of the soil must be provided if the well-being of the plants is to be assured. In this case, none of the ingredients should be passed through a sieve, but simply broken up into small pieces, as already recommended. It will be apparent to the grower how necessary it is that the heap of these ingredients should be thoroughly well mixed; and if prepared a week beforehand, well blended at the time, and two or three times in the interval also turned over, the different ingredients will be well and evenly distributed and the heap of soil sweetened.

Much depends upon the object the grower may have in view, with regard to his decorative plants, as to the size of pots he should use. The earlier propagated plants will, by the time the final potting has to be done, be well rooted in either five-inch or six-inch pots, according to their respective vigour. Plants in five-inch pots should be transferred to those measuring nine inches in diameter, and those in six-inch pots into others a size larger, namely ten-inch pots. The grower must determine for himself, to some extent, the needs of individual plants, placing the more vigorous growing varieties into pots of

the larger size, those less vigorous being content with pots nine inches in diameter.

There are also the claims of smaller plants which are the result of a later period of propagation. Plants that were propagated rather late in the spring will not need pots so large in size as their earlier rivals. Many of the late February and March propagated plants may be flowered satisfactorily in pots eight inches in diameter, while those rooted still later will make very pretty plants if transferred from three-inch pots to those measuring six inches in diameter. The last to be propagated with the intention of making window or table plants of them, when in flower, will make pretty plants if transferred into pots five inches in diameter. Plants of this description are usually rooted in the late spring or early summer, and if care be observed in their culture, and they be stopped once or twice during the growing season, they should make bushy little specimens for the purpose just indicated.

Take particular care to wash the pots thoroughly clean, leaving them to drain in a natural manner, and keep them in a cool condition. By this means a certain amount of moisture is retained by the pots, which, after all, are very porous, and this more natural way of drying them, too, will certainly serve the plants better. Crocks, too, have their value, and these should be scrupulously clean. Where oyster shells can be obtained (and, as a rule, they may be easily acquired from a local fishmonger), by all means use them in preference to other methods of making drainage. A flat one should be placed over the hole in the bottom of the pot, and the others arranged in regular order over this.

Over the crocks arranged in the careful manner already advocated, place pieces of turfy loam, or any of the rougher portions of the soil, thus preventing any of the smaller particles of compost, subsequently placed in the pot, from working down into them and interfering with the drainage. A handful of soil should be placed over

this, and rendered firm in the usual manner. The plant then to be repotted should be taken in hand, shaken out of its pot with care, and the crocks removed from its base without injuring the tender roots. This done, the plant should be placed in position in the larger pot, spreading out the roots at the base. Proceed then to fill in the

FIG. 1.

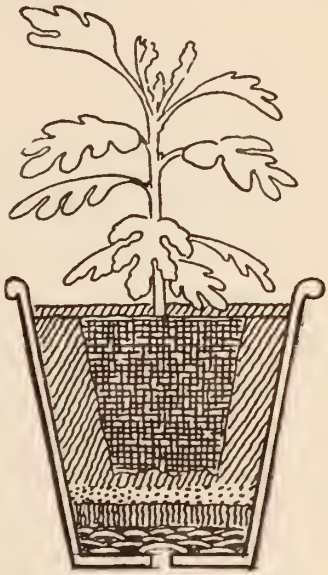


FIG. 2.

HOW TO RE-POT CHRYSANTHEMUMS.

The pot (Fig. 2) is first provided with drainage as shown, this covered with a layer of rough soil, fibre or moss, then with a layer of coarse compost. Sufficient compost is then added to bring the top of the ball of soil and roots to within an inch of the rim of the pot. Compost is then gradually added and pressed down firmly by means of a rammer (Fig. 1), the surface being finally finished off with a layer of fine soil.

compost all round the ball of soil of the repotted plant, ramming this in firmly by the aid of the wedge-shaped rammer described earlier in these pages. Continue to fill in all round, rendering each layer in succession firm, in the same manner as before. Finally, fill in to the surface

level of the ball of the repotted plant, which should be an inch and a-half below the rim of the pot.

At this stage be particularly careful when ramming in the soil that the tender surface roots of the plants be not damaged thereby. A light layer of soil over the surface should then be applied, and this pressed firm with the hand. Label at once, and if not already done, a stake of suitable length, nicely sharpened, should be inserted for the plant's support. Insert the point of the stick an inch or two from the base of the stem of the plant, otherwise much damage may be done to the roots. Lightly but securely loop the growth to the stake. Stand the plants in a sheltered position on boards or sifted ashes outdoors, in squares of twenty or thirty plants in each, until they have recovered from the check experienced in the repotting, and have become established.

Pinching or Stopping.—These two terms are very much misunderstood by the general run of amateur horticulturists, and that there may be no mistake in the interpretation of the terms, a few words here in explanation may be advisable. Pinching and stopping may be regarded as synonymous terms, and are meant to imply that the plants should have the point of their growths pinched out, thus "stopping" the growth; hence the terms applied to this operation. When the plants are pinched in the manner described, it has the effect of inducing new shoots to develop in the axils of the leaves, immediately below that point of the growth manipulated. Some kinds are more free than others in emitting new shoots in the way indicated; when this is so, the foundation of a nice bushy plant is assured.

Immediately subsequent to the pinching of a plant, the soil should be kept rather dry for a time, as this assists in the quicker development of new growths, which is the chief desire of the grower at this time. Pinching may begin when the young plants are some six inches in height, but they must be well rooted at the time, and on

no account should the operation take place at the same time that any repotting is done. There should be an interval of at least a week or ten days, either before or after the repotting, and then one may manipulate the plants with every prospect of success. When the new growths attain a length of six inches they in turn should be pinched in like manner, and the same rule regarding the withholding of water for a time, should be respected. Each succeeding six or eight inches of growth should be treated in a similar manner during the growing period, but there is a limit to the time when this may be done.

For ordinary mid-season displays, pinching should be done for the last time during the closing days of June, but in the case of late-flowering varieties, especially when the flowers are wanted at Christmas time, this final pinching should be deferred until three weeks later, namely, the third week in July.

From the last pinching the plants should be grown on to the terminal buds, i.e., those buds marking the termination of the plant's growth. Should the grower prefer the plants to develop some twelve to eighteen, or rather more, really good flowers, he must not take up so many shoots from the different pinchings, and ultimately, when they are grown on to the terminal buds, one bud only should be left on each shoot. It will, therefore, be seen that from the last pinching some eighteen shoots, more or less, must be grown on.

Cut-back Plants.—Cut-back plants are treated altogether differently to those that are pinched or stopped, and this method is far more drastic than that of any other system. Cut-back plants are usually grown for grouping purposes, and this system is followed by those whose glass structures, in which the plants have to be housed, are somewhat low-pitched. The effect of cutting back a plant is seen in specimens of a dwarf character, but the operation should be done before the growths get hard through the sun's ripening influence.

As a rule, cut-back plants develop comparatively few growths. Any number between three and nine flowers on each plant is enough, but even here there is some uncertainty, as the shoots do not always break away kindly subsequent to the cutting back. To cut back a plant, the stem of the plant is usually cut down to within four to eight inches—more or less—of its base, according to its normal height, but in no case should it be shortened to the hard wood. When cut back into the hard wood the shoots subsequently evolving are varied in character, some being very strong, while others are equally weak, and it is owing to this uncertainty that cut-back plants have disadvantages. For this reason, therefore, about the middle of May, or rather later, the plants should be pruned in the manner just described.

Observe the same rule with regard to keeping the soil dry for a time as was recommended for those pinched or stopped. The first buds subsequently developing in the apex of the new shoots are those that should be retained, and that this may be successfully accomplished, the small shoots surrounding the bud should be broken out while they are quite brittle, leaving the bud absolutely alone. These buds should appear in the point of the shoots during August, and if secured during the very hot weather and slightly shaded for a time, they will develop kindly, and ultimately produce large and handsome flowers.

Staking and Tying.—This must be done regularly and systematically, and must commence when the young plants begin to attain fairly large proportions. It is astonishing how quickly a plant picks up when it has the support of a stake in its early history. Small stakes, nicely sharpened at all times, should be used in the first instance; and these of a length that will enable the grower to keep his plants in the cold frame until they may bear exposure to the open.

In tying the young plants securely to the stakes use raffia, making the tie first to the stake, and then bring

YOUNG PLANT IN FIT CONDITION TO STOP OR PINCH.

PLANT AFTER PINCHING.

DECORATIVE CHRYSANTHEMUM. "CAPRICE DU PRINTEMPS."
An attractive October and November flowering decorative variety. Does well grown as a dwarf in a 5-inch pot. The parent of many fine sports.

within the loop-like tie the stem of the plant itself. Never tie too near the top of the shoot, as this, during the growing season, is always very brittle, and when strong winds prevail, if tied too near its apex, may snap off and upset one's calculations. When the plants are in the larger pots, they should have stakes of a stronger character, and also of a height to suit each individual variety. Most decorative plants of a bushy character will need the support of three or four stakes, in order that their ample growths may be encompassed, and also securely looped. At all times insert the point of the stakes some little distance from the base of the main stem of the plants, that damage to the young roots may be avoided.

As the plants increase in size, it is very important that the tying or looping be securely done. It is a mistake to tie up the growths too tightly, as they cannot in this way properly mature, and the even contour of the plants will also be destroyed. Looping the growths has been referred to on several occasions; by it the grower should understand that, in the first instance, the ties to the stake must be made absolutely secure. Then, by bringing the raffia round, and the shoot brought within the loop and tied in such a manner that no great strain is brought to bear on either, the more natural development of the plant will be brought about.

Watering must be very carefully observed, and on no account should the plants be watered unless the roots be almost dry. There are growers who apply periodical waterings during the day, and seem to think it is necessary to water each plant in the collection whether it wants it or not. On no account should this foolish want of method be tolerated. Each plant, if there is any doubt about it, should have its pot rapped with the knuckles or something answering the same purpose, and in response to a distinct ring, water should be supplied. Should a dull sound be given off in response to the rapping, pass on to the next plant, as no water will be needed till the

next visit. It is so easy to be deceived, and to water a plant when it does not require it is to court failure.

Do not be satisfied with just once watering a dry plant. It may be so dry that just one application may only moisten the surface soil, as the space between it and the rim of the pot is often very small. Therefore, to plants that are dry, give two or three waterings that the whole of the soil in the pots may be thoroughly moistened. Late afternoon, if possible, should be selected as the period when the plants should be well syringed. The benefit of this work is incalculable. A fine-rosed can will answer the same purpose, but is less handy to work with.

For hints on feeding, see Chapter IV.

Bud Selection.—This matter has already been touched upon under other headings, but it is a question that need not worry the grower as do the same remarks when applied to exhibition plants. The bud selection of decorative plants is a very simple matter, as in most instances the grower would serve the interests of his plants better if he were to grow on the shoots to the terminal buds, i.e., the termination of their growth. But there are many who wish to produce plants that will develop some twelve to twenty or more blooms of a rather larger size than one ordinarily meets with in plants grown for decorative purposes. Secure what are known as "crown buds" on such plants. In the ordinary course of a plant's life the first bud to develop is described as the "break bud," from which several growths are taken up, and these in turn produce "crown buds."

The first series of crown buds are usually described as "first crown buds," but, as a rule, especially in the case of decorative plants, their selection would be rather too early. For this reason, therefore, the first crown buds are pinched out, and the surrounding growths on each shoot, to the number of two, three, or four, are again taken up, and these subsequently develop another series of crown buds, which are known as "second crown buds."

Second crown buds, as a rule, develop quickly and evenly, and blooms from such buds usually partake of high colour and charming form. This type of bud is the one that should be selected, where the grower desires his plants to develop the larger blooms just referred to. As a rule, these buds are developed in late August; sometimes they are rather earlier, and in other cases they are a little later, but, generally speaking, late August is the period when they are produced. To secure buds of this description, the small shoots surrounding them are gradually removed, not all at one time, but one, say, each day, until the bud is left quite alone at the apex of the shoot. The growths should always be tied out, that sun and air may exercise their ripening influences, as in this way the flowers, when they develop, promise to be of a higher order of merit.

Where a freer display is desired, and where bushy plants are preferred to all others, buds of a terminal kind are the only ones that should be selected. As before explained, terminal buds mark the termination of the plant's growth, and if the second crown buds be pinched out, and the growths that surround them be grown on, these same shoots, in most instances, will ultimately develop terminal buds. When the terminal buds are produced, the grower must determine for himself how many of the buds he will permit to remain on the plant. If the whole of them be retained, the plants will develop handsome sprays, but rather too densely flowered. It is better, therefore, to reduce the number of buds in the cluster, so that each flower may develop without unduly crowding its neighbour. This is entirely a matter of choice for the grower, and he must determine for himself how many buds shall be retained, forming his conclusions by the number of blooms he desires ultimately to evolve.

There is one charm about the blooms developing from the terminal buds, that is, they seldom damp, and the resulting flowers are known to remain in a fresh condition a very long time. If the plants be housed in a cool

glass structure, the colour of the blossoms will be of the best, and their form all that one could desire.

AUTUMN TREATMENT.

The mid-season sorts in pots should be placed under glass during the closing days of September, or the early days of October. Previous to this, however, the glass structure should be carefully overhauled, and, if needs be, a coat of paint given both inside and outside, to prevent drip from the roof. This should be done previous to the housing, as it is impossible to do it afterwards, and not a season should pass without these precautions being taken in good time. Not only should the glass structure be painted when that already on the woodwork is impoverished, but the glass should also be cleaned as a work of preparation.

It is an excellent thing to arrange some system of shading on the inside of the glass structure. This is much better than putting any shading of a permanent character on the glass, as the latter cannot very well be removed when the weather is dull and unpleasant. A simple means of shading may be erected by running a few lines of galvanised or other wire from one end of the greenhouse to the other, and stretching on this tiffany or muslin, arranged to run on brass rings. This may be pulled across at will during periods of bright sunshine, and by its use the display may be prolonged, and the colours of the flowers, some of which are very susceptible to the influence of the sun, be saved from scalding or burning. If under cover, the shading material is so well controlled, and has the advantage in the dull weather of exposing the blooms to the whole of the light available.

When arranging the plants in the glass structure, see that they are brought up well under the glass, not too near, certainly, but leaving sufficient space overhead to control and inspect them as desired. Each plant, previous to being taken indoors, should have the surface soil

cleaned of weeds, and any unpleasant excrescence removed. The pots should be brushed clean, and seared and decaying leaves also removed. Plants affected with mildew should be dusted with flowers of sulphur, and if this be applied when the fungoid disease is first seen, the trouble may be checked, if not entirely removed. Do not crowd the plants in any circumstances, as this is a sure cause of disaster. See that sufficient space is given to each one, that air may pass through with ease, and that the whole of its growth may reap the advantage of light and air while under glass.

Fumigation.—As soon as the decorative plants are arranged in position under glass, they should be thoroughly fumigated, in order to destroy lurking insect pests which invariably are to be found somewhere or other on them.

Any well-known fumigating material may be used for this purpose; the old method of fumigating with tobacco-paper will be found to answer the purpose as well as any other. The special compounds, each of which claims for itself some particular attribute, should in every case be used in the manner prescribed in the directions issued with them. Tobacco-paper is recommended in this instance, as the plants may be fumigated with this simple material at all times without injury to the plants or flowers. Exception may be taken to recommending such an old remedy, but it is cheap and effectual, and for small glass structures more likely to meet the needs of those possessing them. The tobacco-paper should be torn up into shreds and placed in a five or six-inch pot, and this stood on other inverted pots, or bricks, etc., so that an undercurrent of air will assist the paper to burn. A hot cinder or two placed among the tobacco-paper will cause it to smoulder, and achieve the purpose desired, and if the house be left for, say, thirty minutes, the plants should be ridded of the insects with which they were infested.

It is a good plan to do this on two consecutive evenings, in case any of the insects may have recovered sufficiently to repeat their attacks.

By continuing the fumigation for two nights, there is no doubt at all about the effectual character of this operation. Subsequently, some two or three weeks hence, when the plants are in full blossom, should traces of green-fly and other troubles of this sort be seen in the flowers, again repeat the operation.

Watering, etc.—Keep the surface soil in the pots free from weeds, and should this at any time assume a slime-like appearance, gently remove the accumulation, so that the proper aeration of the soil may be possible at all times. Continue to apply liquid manure until the blooms are about two-thirds developed, but on no account should this be given in a strong condition. It is a good plan to alternately water with clear water, in this way clearing the air passages of the soil. The water at all times should be as nearly as possible of the same temperature as that of the greenhouse itself, and this may be easily brought about by adding warm water to that stored for the purpose of watering in the ordinary way. There is more in this little detail than may appear on the surface, as chills and checks to the progress of the plants not seldom take place when this detail is ignored.

Ventilation, Shading, etc.—Ventilate with care, always leaving the top ventilators open. At all times avoid draughts, and for this reason shut off top air on the side of the glass house in which the wind is blowing. Side ventilators also should be opened, when this may be done without causing draught also, regulating this according to the position of the wind from time to time. A free circulation of air among the lower portions of the plants is at all times desirable; this keeping the atmospheric conditions in a buoyant state, and rendering the plants

and flowers less liable to damp in consequence. Pick off decaying foliage, remove spent blossoms when these are seen, and, as far as possible, maintain a sweet condition of the air under glass.

Do not forget to make full use of the blinds inside of the glass house. By their use the display of blossoms may be prolonged, and those flowers with high and rich colours may be preserved for a greater length of time thereby. The blinds should be drawn across as occasion needs, and during bright sunshine, it is well to take full advantage of this means of protecting the flowers. Keep all superfluous side shoots rubbed out, thus concentrating all the energy of the roots on the development of the buds and blossoms of the plants.

Do not permit moisture to accumulate on the floor of the greenhouse, should this be of a permanent character, such as concrete or tiles, etc. When water is seen in pools on the floor, it should be wiped up by the aid of a house flannel, etc.

Temperature.—On warm days the greenhouse door should also be left open, and on no account should the temperature of the glass structure be allowed to exceed, say, 50 deg. With the approach of autumn and muggy weather, with mists and fogs also as an accompaniment, the hot-water pipes should be just nicely warmed. This will have the effect of dispelling dampness and moisture, and also assist in the opening of the fast evolving buds. On no account let the hot-water pipes become too hot. Only during severe frosts will it be found necessary to heat these to any great extent. Under conditions such as the foregoing, there is no reason why the plants should not be maintained in a thoroughly healthy condition, and their foliage retained till the end. Seeing that this adds so very much to the beauty of their display, every means should be taken to maintain a nice even temperature while the plants are arranged in the glass structure.

CULTURE IN THE GARDEN.

Decorative plants may also be planted outdoors with an almost certain prospect of success, and lifted and potted in early autumn. They need not be potted up in their early stages in the manner that those grown in pots usually are. As a matter of fact, they may be treated in the manner prescribed for the early and semi-early garden varieties. It will be remembered that the garden sorts, soon after rooting, were planted out in prepared soil in cold frames, and by a hardy system of culture were ready for planting out in their flowering quarters towards the end of May. It is a good plan to treat a batch of the decorative varieties in this manner, with the object in view of lifting the plants later on in the season. The smallest pieces rooted in the early summer, treated in this way, will make magnificent plants for lifting by the middle to the end of October, and the saving in labour is incredible. As the plants are lifted from the open border, they should be transferred to pots of convenient size; boxes also may be used for the same purpose.

The plants should be embedded firmly in the soil about two feet apart, in rows of a convenient length to suit the circumstances of each individual grower. In this case, too, plant in rows about three feet apart, label each variety with care, staking at the same time, and looping the growths rather than tying them tightly together. This should save one all the bother and trouble of potting up the young plants in their early stages, and the subsequent work of finally potting them. This method of treating the decorative sorts will be found a great boon.

Some of the pompon sorts answer to this method of culture exceedingly well. We have lifted plants in this way, to follow the usual mid-season display of decorative varieties under glass, and they have kept the greenhouse and conservatory gay right throughout December. There is no doubt this simple method of culture will commend

itself to many, and any surplus plants treated in this way will be much appreciated at the time mentioned.

Single-flowered varieties answer well to this treatment, and there is no reason why all the different types, each of which has a charm of its own, should not be treated in like manner. Why confine our selection to the Japanese? All the types should be represented, and in this connection, it may be well to refer to plants of the quaint and curious flowers of the Spidery chrysanthemums. When planted outdoors in the early summer, and lifted towards the end of October, they make a display for Christmas-time that growers seldom meet with.

LATE-FLOWERING VARIETIES.

These have a value that increases as the season advances. Those that come into flower during November are generally recognised as mid-season kinds, and of these, there is an immense number. But, as the November kinds go out of flower, the display made by the late-flowering section, coming into flower as they do, in beautifully fresh condition in December, their value for decorative uses, is most pronounced. By making a wise selection, late chrysanthemums may be had in flower from December until the end of January, and even later in some instances. At Christmas-tide, the late-flowering chrysanthemums have much to commend them.

There is no other subject then in flower so well suited for making large and bold displays with disbudded blooms; while those plants grown in a freer manner, in graceful sprays, serve the purpose of filling the smaller receptacles in the house admirably. As plants for greenhouse and conservatory decoration, the late sorts are much appreciated during the same period. They keep in a fresh condition so much longer than the early-flowering and mid-season kinds, and in a cut state in a cool room, the flowers last from three weeks to fully a month. Pro-

pagation should, of necessity, begin at a later period than that laid down for the earlier kinds.

Cuttings should not be inserted until February at the earliest, and from this time forth until May, their period of propagation may be considered well served. Cuttings inserted in May, after rooting, and twice pinched or stopped in their early days, will make plants of a very pretty and useful character. These plants may be flowered in six-inch pots, and if well tended during the growing period, and not allowed to suffer for want of water, will develop a dozen really useful blooms. For ordinary purposes, cuttings may be inserted even later than May, and so long as suitable growths are available, there is no reason why during June and early July, a batch of cuttings should not be inserted. Of course, from so late a propapagation, large plants must not be expected, but, with ordinary care, nice little bushy plants, for room or table decoration, may be evolved. Referring back to the February and subsequent months' propagation, only recognised late varieties should be taken in hand. A selection is given at the end of this book, which includes the best of those worth growing.

Their treatment subsequent to the rooting should be of the coolest description always. The growths must ripen, of course, and for this reason, the plants must have plenty of room for air to freely pass through them. They must be potted up from time to time, as the plants fill the smaller pots with roots, and not until this is an accomplished fact should this operation be carried out. Nine-inch pots are large enough for most varieties for their final potting. To induce a bushy growth to develop, the plants should be pinched three or four times during the growing period, the last pinching or stopping taking place about the middle of July. In very cold and frosty weather, the plants should be placed in a sheltered situation, where, if necessary, canvas may be stretched across them for protection. Do not house the plants until late October or November; in fact, keep them outdoors as long as pos-

sible, or until such time as they are required for successional displays. Ventilate the glass house freely for some time after housing. As the plants come into flower slightly warm the hot-water pipes, in this way dispelling excessive moisture and allowing the flowers to develop.

CHAPTER IV.

MANURES AND FERTILISERS.

The question of feeding the chrysanthemum, whether grown in pots or in the open air, is of such considerable importance, that we propose to deal with it in a special chapter. It is pretty generally agreed that the chrysanthemum is a gross feeder, and so it is, as a matter of fact; but, at the same time, it must be fed with discretion, otherwise more harm than good will result. The novice frequently makes the mistake of commencing to feed the plants too early, hence he encourages the development of a soft, sappy, and gross growth, which experience has shown is fatal to the production of really fine blooms. The primary point to study in successful chrysanthemum culture is to ensure a sturdy firm growth up to the time of bud development, and then to begin to feed in a judicious manner. But a firm, sturdy growth cannot be obtained unless the compost is carefully and intelligently prepared beforehand. A chemical analysis of the chrysanthemum shows very clearly that it contains a large proportion of nitrogen, phosphoric acid, potash, lime, and magnesia, and hence care must be taken to see that the plants are provided with these essential elements from the start, so that the subsequent growth, which has to give birth to the flowers, is properly nourished.

Manures in the Potting Compost.—Assuming that the grower is able to secure for the final potting compost some good, well-decayed, fibrous loam, neither too light nor too heavy, also some well-rotted stable manure, good oak or beech leaf-mould, and some coarse silver sand, he will have secured the ideal foundation for a good potting compost. The proportions of each should be: Loam, eight parts; leaf-mould and manure, one part each; and sand, say, half a part. To every three barrowloads of this mixture should be added 2lb. of bone-meal, to supply phosphoric acid; 1lb. of hoof and horn parings from a smithy, to supply nitrogen; ½lb. of sulphate of potash, or 8lb. of wood ashes, to supply potash; and 3½lb. of ground lime, to act as a soil sweetener. The whole should be thoroughly mixed together, and turned over about twice at intervals of a week for three weeks before potting-time. It has previously been pointed out that magnesia is an essential fertiliser, but as loamy soils usually contain all that is needful, it is not necessary to apply this element in the compost. Now a compost so prepared contains all the food essential for the production of a healthy, firm, and sturdy growth. As soon as the roots begin to ramify in this compost they will absorb the food gradually and supply all the nourishment the plant needs until the flower buds begin to form, and so no liquid or other fertilisers will be needed in the interim.

Subsequent Feeding. — So soon as the buds can be detected forming, then the process of feeding may commence. By that time the plant has developed an abundance of healthy roots, and these are able to absorb and send forth to the stems and leaves, and, finally, the buds, just the kind of essential additional food that they require to enable them to develop to a large size, and attain the acme of perfection in the substance and colour of petal. Here again, nitrogen, phosphates, and potash are essential feeding factors. A complete feeding fertiliser, therefore, should consist of two parts of sulphate of ammonia, one

part of dried blood, four parts of superphosphate, and one part of sulphate of potash. If the latter fertiliser be unobtainable, then add eight parts of wood ashes. Mix all together and keep in a dry place, adding one ounce of the mixture to every three gallons of water. Apply this twice a week. A month before the flowers become fully open, give one ounce to every two gallons of water. Once they are fully developed no fertilisers should be given; the soil will then contain all the nutriment needed.

Other Fertilisers.—So far we have dealt with the ideal complete food that chemists and experience tell us is essential for the production of perfect growth and flowers. Not everyone, however, may be able to get the ingredients readily. In such a case, recourse must be had to the specially-prepared chrysanthemum fertilisers advertised, or to one of the general fertilisers sold in tins, etc. These are all good in their way, but, of course, not quite so complete in their ingredients as the one described in the previous paragraph.

Guano is a very good general fertiliser because it contains nitrogen, phosphoric acid, and potash. Use it at the rate of half-an-ounce per gallon of water twice a week from the time the buds begin to form until the flowers are fully developed. Soot, too, is a good nitrogenous fertiliser which may be given occasionally in liquid form. Place a peck of it in a coarse sack, and immerse it for a week or so in thirty gallons of water, then apply the liquor undiluted. Soot intensifies the colour of the leaves and flowers.

Sulphate of ammonia is a very powerful nitrogenous fertiliser, which must be used with caution. It is of a forcing nature, and hence, when applied to plants with slow developing buds, will accelerate their increase in size, and give greater substance to the petals, as well as increase the brilliancy of the colour of the flowers. Use it at the rate of half-an-ounce per gallon of water, and apply it at intervals of a week from the time the buds form

until they begin to burst. Always moisten the soil with water before applying the ammonia, otherwise there would be a risk of the roots being injured.

Fowl and pigeon droppings, steeped for a week in water, then diluted with half water, make a good liquid fertiliser. Put a peck in a coarse bag, and soak it in thirty gallons of water. If given alternately with the soot water good results will follow its use.

Magnesia has been mentioned as being beneficial to the chrysanthemum. While it is not necessary to add it to the potting compost, it is desirable to give the plants two doses of it from the time the pots are filled with roots until the buds become fairly fully developed. Add one ounce, therefore, of carbonate of magnesia to two gallons of water. Bear in mind that two doses only are necessary.

Liquid drainings from a stable, or from horse, cow, or sheep dung, placed in tubs of water, are good for promoting a healthy growth of the foliage, but as they contain nitrogen and potash only, it is essential, if these are relied upon, to add superphosphate also to provide phosphoric acid. A teaspoonful of this should be sprinkled over the surface of the soil at every alternate application of the liquid manure. A peck of manure is sufficient for every thirty gallons of water. Fresh manure must be added every time the cask is refilled with water.

Special Precaution.—No matter what liquid manure be used, always take especial care that the soil is moist at the time of application. If at all dry, moisten first with water. This precaution not only avoids any risk of injuring the roots, but also ensures the speedy assimilation of the food by the roots. Cease feeding when the blooms are fully developed, otherwise the petals may become too soft and flabby and easily susceptible to injury by damping.

Topdressing.—Some growers make a point of not filling the pots too full with compost at the time of the final

potting, leaving one to two inches of space to receive a topdressing of compost and manure so soon as buds begin to form. This is not at all a bad practice for the beginner to pursue, because it avoids the risk of a greater body of soil becoming waterlogged and sour before the roots can penetrate it. The topdressing should consist of two parts of good decayed turfy loam and one of finely-sifted old rotted manure. To every bushel of this add one pound of bone-meal, a quarter of a pound of sulphate of ammonia, and half a pound of sulphate of potash, or about four pounds of wood ashes. Mix all thoroughly together. Slightly loosen the surface of the soil in the pots by means of a pointed stick, then put in enough of the mixture to fill the pot to within half-an-inch of its rim, and ram it down firmly. The surface roots will soon ramify into this, and derive considerable benefit from the additional food. About a month after topdressing begin to feed with liquid manures as previously advised.

Feeding Outdoor Grown Plants.—All the early-flowering Japanese and pompon varieties grown in beds or borders for garden decoration will be greatly benefited by occasional applications of liquid manures as advised for pot plants. Apply once a week, and in dry weather always see that the soil is first moistened with water. Each plant should be given about a gallon of the manure, and this applied over an area of not less than two feet around each plant, because the feeding roots are generally distributed about that distance. Soot water, liquid stable manure, and fowl droppings, also guano, are suitable simple fertilisers for border chrysanthemums.

CHAPTER V.

SINGLE-FLOWERED VARIETIES.

In Chapter I. only a very brief reference is made to the single-flowered varieties. As they now embrace so many really beautiful flowers and are represented by several distinct types, a duty is imposed on the writer of calling especial attention to their excellent qualities. It is only in more recent years that real interest has been evinced in the single-flowered chrysanthemums. At one time, in earlier days, chrysanthemum enthusiasts came to regard late November and December as the period of flowering of the singles, as they were only exhibited at that period of the year. When growers began to appreciate their true decorative worth, new varieties of improved quality quickly came into notice, so that in the course of a few years we found quite a large number of pretty single flowers available for our decorations indoors from early November onwards. Now, we have an abundant supply of beautiful flowers, borne on dainty sprays, in colours and forms that are charmingly diverse. Immense improvement has taken place, in consequence of which fact the singles bid fair to out-rival the Japanese blooms for many of the less imposing decorations of both a private and public nature. This is good cause for congratulation, and should be a further inducement to those who know but little of these single-flowered kinds to take in hand the cultivation of just a few plants as a beginning.

We have now what are known as Semi-early-flowering Singles, that flower throughout October. They are at their best after about the first week in that month, and are very welcome for conservatory displays. They bridge over

DECORATIVE ARRANGEMENT OF SINGLE CHRYSANTHEMUMS.

The value of the Chrysanthemum for cut flower decorative purposes is here well shown. The variety is "Mensa," white with large yellow centre—the type of a refined group of large-flowered singles.

ANEMONE-FLOWERED CHRYSANTHEMUM, "GODFREY'S PERFECTION."

A free-flowering variety. Flowers valuable for cutting purposes in December. Colour, pure white.

the period from the early-flowering series until the November-flowering kinds succeed them. When the weather is open and the elements kind these semi-early singles are a welcome feature in the outdoor garden. The most remarkable development in the single-flowered type, however, is to be seen in the true early-flowering kinds. Within a period covered by three to four years the character of these plants and their display have altered in astonishing fashion. Acres of these early singles are now grown, and we are sanguine enough to believe that market growers who will be enterprising enough to take them in hand, and do them well, will find a ready sale for the flowers at remunerative prices. Private gardens will be made brighter and more beautiful by their use; the range of colours having extended in a remarkable degree and the habit of the plant and the freedom of its flowering improved beyond our expectations. These singles are of the easiest possible culture, sheaves of blossoms being developed throughout late August, September, and early October, on most plants when planted in soil in fairly good condition. An open sunny position suits them best, but they will grow very satisfactorily indeed in the small gardens attached to most villa residences. Avoid crowding the plants, however. Have the soil deeply dug and made fairly rich; plant each piece about two and a-half feet from its nearest neighbour, and keep the soil between the plants freely stirred throughout the growing period, and good results are sure to follow. Generally speaking, do not disbud the plants, as they are better left alone in this respect. Only in the case of the more crowded cluster-sprays is it necessary to slightly thin out the more crowded buds.

Types.—The small-flowered singles embrace all flowers two inches and less in diameter, and the large-flowered kinds include all blossoms exceeding two inches in breadth. Most of the better singles are of medium size., viz., about three inches in diameter. There is an endeavour to create

a new type, known as the Japanese Singles. The ray florets in this instance may be curled, twisted, and drooping, and may partake of any other quaint and interesting form, that can be regarded as curious, and opposed to the more even and regular form of the other types. We are disposed to believe there is a good future for this Japanese type of the singles, as new and choice sorts are being exhibited each successive season.

Culture.—Cultural details as laid down for other decorative chrysanthemums in Chapter II. will apply equally to these.

CHAPTER VI.

THE ANEMONE-FLOWERED TYPES.

The Anemone-flowered type deserve especial recognition, however, because of their undoubted value as decorative plants for the greenhouse and conservatory, as well as for their charm as cut flowers for indoor decoration. These quaint and curious flowers represent one of the neglected types of the chrysanthemum, which the writer has endeavoured of late to call attention to, in the hope that the beauty and grace of the flowers may be appreciated by a larger number of growers.

We seldom see the Anemone-flowered Chrysanthemums at the numerous shows held during the autumn months, and not even at the great autumn festival of the leading society are they catered for in any satisfactory degree. The mistake made by Chrysanthemum Societies is that of making provision for the exhibition of large blooms of high culture, and of these not more than three or four flowers are usually grown on each plant. These types are

never seen in better form and condition than when they are grown in quite a free manner. Instead of growing but three or four blooms on each plant, at least twenty, and possibly double that number, should be encouraged to develop. Such specimens disposed here and there in the greenhouse or conservatory create a very pleasing diversion to the all too common practice of growers of filling their glass structures with the Japanese kinds only. Freely-flowered plants of the anemone kinds may be brought into effect by adopting the system of pinching or stopping the plants, as advised in the case of decorative chrysanthemums. The more drastic system of cutting-back the plants may also be followed with advantage. This matter is also treated fully in Chapter II.

Types.—There are what are termed by the expert Large-flowered Anemones and Japanese or Long-Tasselled Anemones. Both types have a beauty peculiarly their own, although the Japanese Anemones are the more quaint and fascinating. The former have a high, neatly-formed centre, or disc, with regularly arranged ray florets surrounding the same. The disc or centre of the Japanese Anemones is less regular in outline, and the ray florets vary considerably in length, breadth, and arrangement; in some blooms the florets are narrow and much twisted, or they are broad and curled, or, in others, the ray florets droop and form a beautiful fringe-like finish. Readers can imagine what freely-flowered plants of such interesting types of the " Autumn Queen " look like when at their best. Growers of decorative chrysanthemums would be well advised to grow a lesser number of the Japanese varieties, and make up the difference with the types under notice.

The Pompon Anemones, as the name suggests, are miniature editions of their larger-flowered rivals. The plants when under good culture evolve a charming series of dainty blossoms, the inflorescence being defined well down the stems on which the sprays are produced. In

some varieties blossoms are developed in the axil of each leaf.

Culture.—These plants are not difficult to grow, and if the varieties mentioned in the selections given elsewhere be taken in hand, we have little concern for the result. Try just a few as an experiment, but grow them in bush form, so that a good crop of blossoms may be ensured. Commence in good time, if possible, preferably in the early spring, and grow on the plants to the terminal buds, thinning these out sufficiently to ensure each flower opening without being crowded by its neighbour. The instructions given in Chapter II. for Decorative sorts apply also to the Anemone-flowered types.

CHAPTER VII.

BORDER VARIETIES.

In this chapter we propose to deal with the hardy free-flowering Japanese and single-flowered varieties that have become so popular for growing in beds and borders, and producing a wealth of gay flowers from early August to late October. They are indispensable plants for yielding flowers for cutting for indoor decoration, and are, moreover, of easy cultivation.

PROPAGATION.

The first question to consider is the provision of stock plants for affording a supply of cuttings.

The early-flowering and semi-early or late October flowering garden chrysanthemums are not infrequently described as "hardy," and such an appellation may justly

be claimed for fully eighty per cent. of the recently introduced varieties. The newer race of plants, in most instances, stand the winter better than the older kinds. This happy state of affairs is largely the result of working upon the stock of some of the better early-flowering kinds of Continental origin. A careful inspection of a large area or bed of early-flowering varieties that have been left in their flowering quarters all through the winter, will, in the spring, reveal many of their crowns studded with sturdy growths, simply waiting for more genial weather to encourage them into further development. With such material it is an easy matter to perpetuate the different varieties, either by cuttings or rooted suckers, or by the process of division so familiar to many.

Stock Plants for Cuttings.—Growers, however, who do not wish to wait so long before commencing operations, had better adopt a practical and more satisfactory method of increasing the supply of cuttings. With new and choice sorts, it is in the highest degree essential not to run any risks with the plants by leaving them outdoors in the beds and borders during the winter season. Not only is there the possibility of loss of tender sorts by exposure, but much valuable time is lost in the earlier days of the year. Of course, small growers need not be anxious to begin so early as those who require to raise a big stock of young plants, as their needs may be easily satisfied when the more genial weather of spring is with us. But, in the case of those who wish to procure a plentiful supply of cuttings, it is advisable to lift the plants before the hard weather sets in.

Plants, after flowering, should be cut down, and during November and December, as opportunity offers, be lifted and replanted on the greenhouse bench, as advised for the decorative kinds; cold frames may be utilised for the same purpose. After lifting the plants, they should be shaken free from much of the soddened soil that invariably adheres to the roots, otherwise their condition under glass will be

less satisfactory. As a rule, the plants lift very well, and the whole root will be found intact. There may be instances in which the plants will break up more than the grower cares to see, and those with long, sucker-like, underground shoots, are more prone to behave in this way than others.

The old stools should be constantly overlooked, that they do not suffer for want of water. A sprinkling overhead occasionally with clear water from a fine-rosed can has the effect of promoting growth when the atmospheric conditions are genial. The paths, too, should be slightly damped down, so that the conditions may be fairly humid, but on no account should the temperature exceed fifty degrees. This temperature is quite warm enough to raise satisfactory stock of the chrysanthemum, and warmer conditions are calculated to promote growths of a weak and elongated character. Varieties shy in producing cuttings, and those also that develop their growths chiefly on the old stem, are better when placed in the warmest corner of the greenhouse, and the old stems constantly moistened. This has the effect of inducing them to make new shoots.

When to Propagate.—The early-flowering garden varieties are better served when they are propagated from the middle of January onwards. Each succeeding month, until the early days of June, cuttings may be inserted with the sure prospect of success. However, from January until the closing days of March may be regarded as distinctly the better period in which to carry out the propagation of the hardy garden kinds. These plants are most accommodating, and cuttings of some of the more popular varieties inserted in June will develop into dainty plants by the middle of September, and during the latter month will make quite an interesting display.

Methods of Propagation.—Several methods of propagation suggest themselves, but for ordinary purposes, where

a goodly number of plants are wanted, cuttings inserted in shallow boxes of prepared soil is a system to be preferred to all others. The advantages of utilising shallow boxes is that a lesser quantity of compost is required, the soil rarely becomes soured, and a greater number of plants may be raised within a limited area than by any other means. Boxes not more than two inches deep are quite deep enough for the purpose, and they are easily made, or may be purchased for a very small figure. Those that one is accustomed to see in the gardens of nurserymen are very familiar to most growers, and their value will be readily appreciated. The boxes usually have a half-inch opening running the whole length of their bottom; this ensures proper and adequate drainage. The bottom of the box should have a few crocks arranged thereon, and these covered with some of the rougher siftings of the soils comprising the compost. The latter should be filled in level with the upper edge of the box, and be slightly firmed. A sprinkling of silver sand over the surface soil is also requisite as a finish, as this will be carried down to the bottom of each hole, as it is made to receive the cutting.

Growers of a limited number of plants may find the use of small pots answer their purpose better. Pots, three inches and five inches in diameter are both most convenient sizes, and if one variety be confined to each pot, confusion will be avoided. If more convenient, they may, of course, use boxes also, but special care should be taken with the labelling as the different varieties are dealt with.

A method of propagation that may commend itself to growers whose demands are very large, is that of making up a cutting bed on the greenhouse bench. This is better when made up on the edge of the bench, behind which are the stock plants developing their growths during the continuation of the propagating period. An ideal cutting-bed of this description should be about fifteen to eighteen inches in width, and may run the whole length of the staging, or of a length to suit the convenience of individual growers.

The making of it is a very simple matter. Pieces of quartering are fixed at the back and front of the cutting-bed to keep the soil in position, and with two pieces of board to block up both ends of the bed, the erection is completed. Rough soil—siftings of prepared compost preferably—is filled in, in the bottom, and this makes capital drainage. Compost to the depth of about two inches is placed in the cutting-bed also, this neatly levelled, and a layer of sand distributed over the surface to complete the operation.

If the cutting-bed can be arranged over the hot-water pipes (as illustrated in Chap. I.) it is a distinct advantage, as the process of rooting takes place so much quicker in consequence. Such a means of propagation will enable a grower to raise thousands of plants, and the same quarters, with a slight renewal of the compost from time to time, may be used for several months.

How to Insert the Cuttings.—This, after all, is a very simple matter. In the case of cuttings inserted in boxes, and those, too, in the cutting-bed, they should be arranged in rows. Commence at the left corner of the box or cutting-bed by inserting a label with the name legibly written thereon. Follow with cuttings of the variety denoted, and keep these quite distinct from the next set. It is a good plan to place the cuttings in empty pots in moss, if a large quantity is prepared beforehand, and to place a label in each pot at the time they are prepared. With a small dibber about the size of an ordinary lead pencil in diameter, make a hole in the soil of sufficient depth to embed the cutting to the second joint, or rather less. The dibber will carry a small quantity of sand to the bottom of the hole, and on this base the cutting must rest. Press the soil rather firmly at the base of each cutting, finishing off neatly as the work proceeds, and continue in this way until the box or cutting-bed is filled. When cuttings of a number of varieties are inserted in one box, as each new set is taken in hand, always see that the

label is first placed in position, and this will denote that those cuttings immediately following are represented by it.

Cuttings in pots should be inserted around the inside edge of them, and the soil at all times pressed firmly around the base of each one. Neglect in this particular may cause the cutting to what is called "hang," and this is meant to indicate that they may wither and fail subsequently because they are suspended and not acting upon their base. As a finale, it is well to give both boxes and pots a slight rap on the potting bench, to settle the soil satisfactorily.

What to do after Repotting, etc.—The young plants in boxes and pots should, as soon as rooted and repotted, be placed on shelves as near to the glass roof as possible. In this way they are kept steadily progressing, and if the glass structure be carefully ventilated, so that no draught or cutting winds may interfere with them, their progress, with the approach of more genial weather, will be in every way satisfactory. Pay particular attention to the question of watering, especially in the case of plants in small pots. The increasing length of days, together with sharp bursts of sunshine, quickly dries up the moisture in the soil in these small pots, and unless one specially guards against such a catastrophe, many of the plants in the late afternoon may be found suffering for want of water. It is well to look through the collection two or three times a day in warm weather, watering those that are dry, and noting those that will need attention on the occasion of the next visit.

Keep a sharp look-out for attacks of green-fly, as this is wont to affect the plants in more genial weather. It is easily eradicated, however; a slight dusting with tobacco powder will quickly rid the plants of this pest, but on no account should the plants be neglected, or serious trouble and disfigurement will be subsequently noted.

The soil in the boxes sometimes gets soured through

a too generous supply of water, when done too persistently. It is well in such circumstances to stir the soil between the rows of plants. With a label or anything of that kind this may be done easily and quickly, of which, as a consequence, the soil becomes sweetened, and the plants develop as well as one can desire.

Cuttings in a Cold Frame.—Few gardens are without a cold frame; by the aid of this very useful structure, it should be a comparatively simple matter to raise a goodly stock of plants. The grower must not begin too early in the season, and would be well advised to defer inserting cuttings of his chrysanthemums until the end of January. Severe frosts and bad weather are usually less trying as the sun gains more power, and for this reason one's chances of success are better when the work is begun at the time just mentioned. A little preparation of the frame is first necessary. As far as possible the cold frame should be embedded in litter of a kind that will exclude frosts. Straw, hay, leaves, bracken, and any material of somewhat similar character, packed well round the frame and level with the frame-light itself, should afford adequate protection against the severest frosts. Mats—two or three layers, if needs be—should always be in readiness for the hard weather, and each day in the late afternoon the frame-light should be carefully matted down.

In some gardens it is the rule to make a kind of thatch, with hurdles and straw or bracken interwoven, for the purpose of covering the frame-lights in frosty weather. Soil should be filled in the frame to within eight or ten inches, more or less, of the frame-light at the lowest end of the frame. A layer of cocoanut-fibre refuse, spent hops, or sifted ashes, to the depth of several inches, should then follow, for the purpose of plunging the pots or boxes when the cuttings are inserted in them. In this way, cuttings may be propagated with ease, and be kept in a sturdy condition when rooted, or until the warmer weather permits the grower to deal with them.

Rooted Cuttings in Cold Frames.—Another method of dealing with the young plants when they have been propagated in boxes and pots, as advised earlier, and one in which a great saving of labour is effected, and the best interests of the plant considered, is that of dibbling them out in prepared beds in a cold frame, or in any such erection from which the frost can be excluded.

The soil should be of the same character as that prepared for the young plants in pots and boxes, and should be filled in the cold frame to the depth of, say, three inches, more or less. It is important that the subsoil, or the bottom of the frame, should be raised as high as possible, so that the dressing of prepared compost may enable the grower to arrange his plants as near to the glass as possible. By these means weak and attenuated growth may be avoided. Transplant the young plants about three inches apart in rows, taking care that this is done firmly, otherwise soft and sappy growths will develop subsequently. A few of the stronger growing plants should have more space allocated to them. Commence by first inserting the label, following with all the plants bearing that name, until the batch is completed. Then insert another label, following with others in the same order.

By this means quite a large number of plants may be quickly dealt with, and there is no other method to equal this where a large number of plants are required. They may remain in this position until the spring is well advanced, and by the admission of air on all favourable ocasions, a sturdy character of growth may be developed, and ideal plants, ready for planting out in their flowering quarters in late April or May, perfected. This is a somewhat new method of treating the plants of the garden decorative kinds, but it must be distinctly understood that it refers only to those of the early-flowering varieties that are intended for border culture.

Propagation by Division.—This more particularly refers to old plants of the early sorts for border culture, and,

in the case of growers whose demands are limited, is a simple and ready means of increasing their stock of plants. In the spring, right away until the early summer, many of the old plants are bristling with growths of a most desirable kind, and if left to develop the whole of them, they would make tremendous bushes, but the quality of the flowers and the character of their growths would leave much to be desired. If not divided, the growths should be rigorously thinned out.

These plants may be lifted quite easily, and may be divided into numerous pieces. A good sharp knife, or any other equally serviceable implement (which must be strong) must be used for the purpose of dividing up the growths.

Some plants are more easily divided than others, and may be broken into pieces of different sizes with little or no trouble. Others, however, are equally difficult of division, emitting their growths so close to the base of the old stem, thus making their division a matter of considerable difficulty. It is possible, however, with this kind of plant to take off the lower growths, which, in many instances, have a few roots adhering. They may be broken off individually, or in small pieces of two or three growths, and such pieces will subsequently develop into beautiful plants for autumn flowering. There is still a third class of plants which rarely, if ever, make any sucker-like growths, but develop shoots only on the portion of the old stem retained. Unfortunately, this type of plant produces flowers of the very best. It is a matter for regret to those who have to follow this method of increasing their stock of plants that they can do little or nothing with them.

Any time from the middle of March onwards may be chosen for carrying out the division of these plants. The earlier the better, as they divide more readily, and when transplanted without delay, get well established before the warm weather is with us. If left until the late spring or early summer they will need more watching and encouragement to get them into good condition, and never go away with that free growth that this work, when done earlier, invariably sees. The divided pieces, when transplanted, should be given plenty of room. It is a great mistake to crowd them, as they invariably make larger plants than the smaller plants from rooted cuttings, and their

ample growths must have plenty of room in which to develop. On all occasions plant firmly. Never hesitate to tread in well, all round the plants. Choose a fine day for this operation, when the soil is not sticky or pasty, but nice and friable. Carried out under conditions such as these, the divided plants quickly re-establish themselves, and afford great pleasure to those who watch their development.

CULTURE.

Preparation of the Borders.—Everything depends upon the preparation of the soil and the character of the same. These plants do not want too rich a soil, as this promotes growth of too rank a kind; or they will attain almost unwieldy proportions, and not infrequently develop quite out of character. Any soil of a fairly good kind will grow the garden crysanthemums quite satisfactorily, but the grower should bear in mind that to see the early or semi-early kinds at their best, growth of a sturdy and consolidated character should be produced. This is best developed by planting in soil that has been deeply dug, and manure of a thoroughly well-rotted kind incorporated at the time. New manure has the effect of promoting a coarse growth, and as we wish to avoid plants of this character, see to it that the manure has been stacked for some time, and has become well rotted.

The preparation of the flowering quarters cannot well be begun at too early a period. There is nothing like commencing in the late autumn or early winter in preparing the flowering quarters, and this is specially valuable in the case of small gardens, where the soil often is very sour, and for all plants, is of a most undesirable kind. The advantage of turning up the soil in the winter is that the frosts are able to get well into it, killing insect pests, and sweetening and pulverising it. Frost is an important factor in the successful preparation of the soil, and if taken in hand at the period recommended, it cannot be denied that the grower has an immense advantage. In many cases, of course, this is not possible, especially in the case of those whose garden accommodation is limited, and who also want to make the most of it at all seasons.

Too frequently the ground available for the chrysanthemums

cannot be treated until spring. In many cases, too, the grower has to wait until his bulbs have finished flowering, in which case full justice cannot be done to the soil. Notwithstanding these disadvantages, the garden should be deeply dug as early as possible subsequent to the flowering period of the bulbs already referred to. Observe the same rule with regard to deep culture and the incorporation of well-rotted manure in this case, as was generally recommended at the beginning of this note. In all cases, where digging has been done some time previous to planting, the surface soil should be left in a rough condition. In this way, however limited the time may be in which the soil is exposed to the weather, really beneficent work by atmospheric conditions, is being carried on. There is more in the preparation of the garden soil than many persons are aware, and for this reason, if it be possible, let the work be done in the winter time.

With reference to the manure incorporated at the time of digging, consideration of the soil one has to deal with should be observed. In soils of a light and sandy or peaty character, well-rotted cow manure should be added. This is cooler and heavier in its character, and is better calculated to meet the need of such gardens than any other. By the same rule, soil of a heavy and retentive kind needs the incorporation of manure of a lighter character, and for this reason horse manure, with plenty of litter, should be used, rather than that of any other kind. About a week before the planting is done, it is a good plan to fork over the surface soil, breaking it up and levelling it down, so that the planting may be done expeditiously.

Planting.—Opinions differ respecting the time when planting should be done. This diverse opinion is generally traced to the difference of opinions held by the trade and the private grower. The writer unhesitatingly states that no planting should be done until about the middle to the third week in May. This has been his practice for some score years, and during that period he has never felt safe in planting earlier. This, of course, refers to stock raised in the early spring, and subsequently hardened off, and in no case does it refer to old stools that are divided in the spring.

Planting at the time advocated meets the requirements of growers in the South of England, but in the Midlands and North, greater care is necessary, and it is to be doubted whether it is wise to commence planting in these more northerly positions until a rather later date. In the Midlands, planting should not begin until the last week in May, and in the North, and Scotland in particular, the early days of June should be quite early enough. From close observation extending over many years, it has been found that cold and cutting winds not infrequently prevail during the greater part of April, and all too frequently in May.

As an experiment plants have been put out in their flowering quarters in April, as recommended by certain trade growers, but the bedraggled character of such plants when placed out thus early, fully justifies one in keeping them under some slight cover until the date recommended, namely, the third week in May.

If they are planted, in the first instance, in frames, and accorded a fairly hardy system of culture in these through the spring and early part of May, and the frame lights removed on every possible occasion, entirely removed during the last fortnight, they should be in a nice, hard condition for planting, in which case the risk run is very small. The cutting winds in the spring, before referred to, frequently break off the somewhat tender and brittle leaves, and all too often the lower portion of the plant is denuded of its foliage. This is a matter that is easily avoided when the later period of planting is observed. Undue haste generally leads to an unsatisfactory sequence of events.

How to Plant.—Plenty of space should be given to the plants, otherwise their proper development will be unsatisfactory. The Japanese varieties are the stronger growing, and in consequence they should be given a larger space than those of the Pompon type. The Japanese sorts of more recent introduction possess a somewhat vigorous character of growth, and a splendid branching habit. For this reason it will be easily understood that such plants need plenty of room that their ample growths may be seen at their best.

If the plants be grouped or arranged in a quarter of the garden by themselves, as dahlias are frequently treated, it is a good rule to plant in rows. The rows should be at least three feet apart, and the plants placed in position three feet apart in the rows also. Generally speaking this is sufficient space to allow, but there are cases where rather less space is needed, and also those in which another six inches might be given with advantage. Pompons are satisfied with rather less space. In some of the smaller garden kinds two feet between the plants and the rows is sufficient, but more often a space of two feet six inches would be better. Even here we should be disposed to allow quite three feet between the rows, as one has to remember that during their growing period the plants have to be attended to, and many little details of culture carried out. With limited space this is difficult of accomplishment.

To plant satisfactorily, make a good hole, removing the soil by the aid of a small spade or trowel, the plant taken in hand should have the ball of soil and roots well embedded and also well trodden in. Firm planting is absolutely essential, otherwise weak and unsatisfactory growths develop as a consequence. Assuming the plants are in the frames, each one should be lifted with a good ball of soil adhering. This should be transferred straight away, and not placed in the garden basket for the roots to wither by exposure to the sun and air. Transfer straight from the frame to the flowering quarters, and in this way save a serious check. If the plants be in pots shake them out, removing the crocks with care. Spread out the roots, and see that the crown of the plant is well below the surface soil with which the ball of soil and roots is to be covered.

No water will be required when first planted, and only in the case of a long period of dry weather will it be found necessary to water the plants in. We always avoid watering in at the time of planting, having proved that this is quite unnecessary. Label each plant as it is put in position, so that for future purposes, such as the perpetuation of the sorts, the work may be carried on with certainty.

Planting for Effect.—It is well, in all cases where

HARDY BORDER CHRYSANTHEMUM, "LESLIE."

A variety of the Japanese section of the outdoor early-flowering border Chrysanthemum. Colour, a rich buttercup yellow. August and September flowering. Height, 18 inches

DECORATIVE CHRYSANTHEMUM, "RED CAP."

A red-flowered sport from Caprice du Printemps. An old, free-flowering variety suitable for greenhouse decoration or yielding flowers for cutting. Flowers in October and November.

planting is done, to give some little consideration to the question of the disposition of the plants, that the best colour effects may be produced in the garden. In many instances this question is ignored, and as a result the colours are not seldom jumbled together, and anything but a pleasant picture created. The value of these autumn plants may be considerably enhanced by the judicious association of colours, and in this connection it is well to remember that delightful harmonies or blends of colour may be brought into effect, or, if preferred, a pleasing or striking contrast may be created. We need only have the least knowledge respecting the primary colours and their association to achieve this worthy object. It should be the aim of the grower to make the most of his plants and his garden too, no matter how limited the space may be. He should determine at the time of planting what course he will follow. It cannot be denied that a blending of colours has advantages over contrasts, more generally speaking, although, in the latter case, some delightful effects may be obtained.

In planting for a harmonious association of colour, therefore, it is well to remember that three or four shades of colour, in proper sequence, may produce the effect desired. As an instance, take the colour of the Iceland poppies, in which we have primrose, yellow, orange, and scarlet or crimson. These four colours in themselves create a picture that it is difficult to improve upon, especially with flowers of the "Autumn Queen." This warm blend of colours is one of the most striking that can be used in the garden for autumn displays, and, as there are many early and semi-early garden chrysanthemums of these colours, the wealth of material available renders the task an easy one.

A good rule to follow in the case of a pleasing association of colours, is to take two or three colours in sequence. In most instances this will produce whatever effect one may have in their mind; as, for instance, we may take white, rose, and amaranth; or yellow. orange, and crimson; white, yellow, and orange; rose, purple, and amaranth, and so on, and each series will make an artistic display. An idea in the selection of colours will be better understood when the foregoing method is followed.

Of course, there are many intermediate shades of the

colours already enumerated, each of which may be used in conjunction with some of the more distinct and definite tones of colour. In the case of contrasts, pleasing contrasts may be effected by using two colours of close association in their sequence, such as yellow and orange, crimson and scarlet, rose and amaranth, purple and amaranth, white and yellow, white and primrose, primrose and orange, and other shades which it will be easy for the grower to determine for himself if a little thought be given to the matter. Striking or violent contrasts are more often produced by taking two extremes of colour. They are not always pleasing, yet they have their use in the garden. Instances of the latter contrasts may be better understood if illustrated as follows: White and crimson, yellow and crimson, white and amaranth, and any extremes of colour such as these are calculated to produce violent contrasts, which have the effect of pleasing some who desire to make distinct colour effects in the garden.

No matter whether the garden be large or small, this rule of planting is worthy of emulation. What the grower has to bear in mind is that he should make the best of his opportunities and space, and by giving a little thought to so important a matter as the question of colour association, the result in the flowering season is more likely to be gratifying to him. Isolated plants in the border always look well, but those of a branching habit should be selected for these conspicuous positions. In large gardens these plants have an especial value. Groups of a number of plants of a given colour should be disposed in the manner already described, and the effect in the landscape will be striking and beautiful. Such careful work brings its own reward in the pleasure derived by the grower and those who visit his garden, and who are seldom without a word of praise for the novel and delightful character of the display, if this be properly thought out and brought into effect.

No Stopping Required.—The early and semi-early garden varieties should not be pinched or stopped, as this race of plants develop branching growths in sufficient quantity to make a free display without any artificial manipulation. Growers are often advised to pinch and stop this type of plant,

but no heed should be given to such advice. It should be remembered that the growths which develop as a consequence of the pinching are easily broken out by the strong winds of late summer and early autumn, and for this reason it will be apparent to all that for garden decoration such pinching of the shoots is most ill-advised. In most instances the plants commence to branch out into growth when they are some six to ten inches in height, and this in a perfectly natural manner. The sequence of branching growths continue to develop right away until the points of the shoots are covered with terminal buds. The garden sorts, as generally understood, never look better than when they are left to develop their growths and buds quite naturally. It is a mistake to disbud the plants at all, except in the case of those that form too dense a cluster at the termination of their growths. Even in these instances only the slightest disbudding is necessary, just sufficient, in fact, to ensure the even and proper development of the flowers subsequently, without being crowded.

Weeding and Hoeing.—Right away from May until the flowering season, which may be said to begin towards the closing days of August, little else than the looping of the growths is really necessary, in so far as the actual requirements of the plants are concerned. What is needed, however, is a constant stirring of the soil, and where time can be spared it is advisable to hoe between the plants once a week, or, at the longest, once a fortnight. By this means weeds are kept under, the soil aerated, and the result of this well-timed work is seen in the development of plants that leave nothing to be desired. Readers will see now why so much space was recommended to be allowed between the rows and between the plants when grouped in the border. The grower can get among them with ease, and hoe and weed the ground, and also tie his plants in comfort.

Feeding.—It will be remembered that, earlier in these pages, the free use of potent manures was strongly deprecated, as this was pointed out as being likely to produce growth of too vigorous a character. For the same reason, plants in pots and in the borders should not be fed with liquid

or other manures during their growing period. These plants should not be fed until the buds are formed and well set. When this is so, periodical applications may be given. In dry weather, first give the roots a watering with clear water, following this with manure water, varied in its character from time to time. (See Chapter IV. for general hints on feeding.)

Staking and Tying.—When plants are first placed outdoors they should have the support of a short stake, and the tying and looping, as recommended for pot plants, observed also in this case. In a very little while they will need stakes of a stronger character, and taller also.

Bamboo canes are more often used than any others, although stout hazel stakes, as used for dahlias, are to be preferred. What are really wanted are hazel stakes, rather less in substance than those ordinarily used for dahlias, and about one foot less in length. They may be purchased from any horticultural sundriesman, and if lifted after their season's work and placed under cover, will last for several years. These stouter stakes should be inserted as soon as the garden plants begin to branch out into new growths; and continuously from this point, until they are in full blossom, they should be overlooked each week, and their requirements in respect to tying carefully carried out. If this be not observed, many fine branching shoots will most assuredly break out, and spoil the beauty of the appearance of the collection, and also the loss of many blooms, when the flowering season comes round.

Under no circumstances should the growths be tied too tightly, as this is fatal to a really pretty display in the outdoor garden. Plants must have a free space in which to develop their numerous shoots, and, as the majority of them are possessed of a delightful branching habit, the grower should see to it that the natural characteristics of the plant are preserved.

Treatment when in Flower.—The labours of the year are almost over when the garden varieties come into flower, the only concern of the grower at this time being to maintain the display as long as possible. Seeing that some varieties come into flower so early as August, and the same

plants frequently continue in blossom until quite late in October, every means that is possible should be taken to prolong their display. For this reason, spent blossoms should be cut out from time to time, otherwise, with the moister weather, and the heavy dews that prevail in the late summer and early autumn, the fast fading blooms will become one mass of decaying florets, and other blooms developing round them will, in consequence, be contaminated. Remove such spent blossoms before they get into this state, that those remaining on the sprays may be preserved as long as possible. When the whole of the spray has finished its period of flowering, it should be cut out altogether, thus permitting other growths of more recent development to continue their progress, and produce their display in turn. Some of the earliest kinds are better cut down when almost the whole of their flowers are past their best.

Not infrequently, new growths develop from the base of the old plants, and from their earliest history have a bud at their apex. These later series of growths will often make a delightful display quite late in the season, and of this particular type there is a now goodly number. Take particular care before the plants finish their display that each one has its label securely tied to the old stem, or, failing this, a label of goodly proportions inserted in such a way that there can be no mistake as to which plant it refers to. In this way one may safely rely upon the perpetuation of the different kinds without running any risks. When gathering the blossoms, it is a good rule to cut out the more crowded blooms from among the freely-flowered sprays. In some instances, it may be better to cut the spray as a whole, such pieces making delightful decorative material for vases and other large receptacles.

Culture against Walls, etc.—The garden sorts, in many instances, are specially well suited to cover walls and fences, but so far little appears to have been done in this direction. The freer growing kinds are better suited for this particular purpose, as their ample growths should quickly cover unsightly walls and fences, and make them plants of beauty during the flowering season. The stronger growing kinds are eminently well suited for this purpose, and that growths of a

robust kind may be developed it is well to enrich the soil with some good lasting manure. The idea in planting against walls and fences is to cover them as far as possible, and by promoting a freer style of growth, our object is all the more likely to be achieved. Those of a branching character, too, may be utilised in this way, and no better plants could well be selected for this admirable purpose.

If it be possible, plant against walls and fences having a warm aspect. We must not forget that the growths should be well ripened, and this may be brought about, the plants should be arranged in a southern or western position. Here the plants will revel, and one does not exaggerate when one says that in such a situation the display of a choice selection, as given at the end of this book, should exceed the most sanguine expectations of those disposed to try the experiment. Even here it is possible to make a pleasing disposition of the colours, and on no account should an incongruous arrangement of such be seen. That this unpleasant feature may be avoided, plant with a proper regard for the natural sequence of colours.

Plant firmly, treading in the soil well round the plants, inserting at the same time a short stake, to which the young plants should be tied. When the plants branch out into growth, and the branches are sufficiently long, they should be fastened by the aid of shreds and nails. Do not fix them too tightly to the wall, but give the growths a little play. That this may be satisfactorily done, see that the shreds are rather longer than one ordinarily finds in use. Better still if a trellis-work of wire can be fixed up against the wall, and the growths tied to this; their appearance at all times will be interesting. They may also be staked against the wall, and bamboo canes brought into requisition; in fact, any known contrivance to give them an espalier-like arrangement should be used, and the ultimate effect of this simple contrivance will well repay one for the trouble taken.

CHAPTER VIII.

HINTS ON EXHIBITING.

We will first deal with the early-flowering varieties and the methods of exhibiting them. It is interesting to know that the exhibition of these comparatively hardy sorts has been encouraged from time to time, the National Chrysanthemum Society, as becomes its exalted position, being the first to take the matter in hand. For something like twenty years there have been cases in which the early-flowering varieties have been exhibited, and, although in the first instance the display was not of a very high order of merit, except in so far as regards the Pompon sorts, that always looked well. It was certainly encouraging to those who had the best interests of this flower at heart to persevere in their efforts, the consummation of which we are now participating in. With the advance in the number and quality of the different sorts and types the character of the displays has changed, and instead of an early September exhibition, as was the custom in the earlier days, shows are now more frequently held in the closing days of September or during the early days of October.

Exhibiting Border Varieties.—At the present time competitions are almost exclusively devoted to flowers cut from plants growing in the open border, and the sprays of blossoms are not disbudded, but shown in their natural state. In this way the charming characteristics and the undoubted decorative value of the flower is beautifully exemplified, and only those who have grown and exhibited them are able to fully appreciate the value of undisbudded sprays for decorative uses.

Some societies stipulate that the flowers shall be exhibited

in vases supplied by themselves, and the bunches must not exceed a diameter of eighteen inches. While this will make a most useful display, it must be admitted that it hampers the exhibitor, and not infrequently has the effect of producing a display of a smaller character than many growers are prepared to put up. It were much better to leave the grower and exhibitor absolutely unfettered, permitting him to make up his bunches of a size to suit his own ideas, and in this way give encouragement to those who are of an enterprising nature.

To limit the size of a bunch seems absolutely fatal to the proper exhibition of these flowers. Just one plant, if properly grown, will make two to three very handsome bunches, assuming that the more branching sorts are cultivated, and this being so, it is certainly a great pity to insist upon the exhibit being confined to a certain diameter of certain proportions.

Societies who feel an interest in this flower might well encourage the exhibition of varieties of certain colours, and as we now have so many to select from, it should be possible to put up six bunches of white or yellow, and so on, that the best varieties of a given colour may attain prominence, and be appreciated by the public for what they are actually worth. Where six bunches may be too many, and especially in the case of growers of a small number of plants, the number of bunches might be reduced to three, and if this also be too many, let classes be created for one bunch only of the different colours, which may now be found represented in these plants.

How to Arrange the Flowers. — In arranging flowers in the vases, at all times avoid crowding Let each spray of blossoms, so to speak, speak for itself, and adjust it in position, that all its blooms and the upper part of the foliage shall contrast pleasantly, one lending effect to the other. That the blooms may be kept in a fresh condition longer, the foliage on the lower portion of the stem should be rubbed off, leaving foliage only on the upper portion of the flower stems. There is a tendency when adjusting disbudded sprays in the vases to crowd them together in a

lumpy form; and, unfortunately, at some shows this method of staging the blooms is encouraged, to the disadvantage of an artistic display. It is to be hoped, as men grow wiser and appreciate the true value of the flowers, that due regard will be paid to their more pleasing disposition in the vases.

Arranging Disbudded Blooms. — Such flowers need to be arranged with greater care, or their appearance in the vase may be somewhat heavy. They should be so arranged as to stand out distinctly, one from the other, and that they may not be too formal, just one here and there should be raised slightly above its neighbour in the vase; in this way removing a too rigid outline, and giving a finish which would be impossible otherwise.

In defining a class of this kind, care should be taken to stipulate how many blooms should be set up in each vase of disbudded flowers, otherwise this method of staging them may lead to some disagreement. It is also stipulated in some of these competitions that chrysanthemum foliage only may be used as an embellishment. In all cases where this is so, additional foliage should be added by cutting sprays from some of the outdoor sorts, on which the buds have not developed satisfactorily or fully. When setting up disbudded flowers, almost the whole of the foliage on the lower portion of the stem should be removed, otherwise the strain upon the resources of the flower will cause it to collapse much quicker than is the case where the foliage is removed.

Staging the Exhibits.—When the flowers are set up on the tables, etc., at the exhibition, the vases should be arranged in rows two or three deep, and the back and middle rows raised sufficiently high that the whole of the flowers may be seen. If this be done a very pleasing display will be made, but if exhibited as a whole on one level the exhibit will lose much of its charm. The great need, after all, is to exhibit these flowers in such a way that their value in the outdoor garden may be properly illustrated, and by arranging them loosely and artistically in the vases, as we have endeavoured to lay down, there is every prospect of this ideal being achieved. Also, when finally determining the

respective positions that each vase is to take on the exhibition table, the exhibitor should give proper consideration to the association of colours, so that pleasing harmonies or equally pleasing contrasts may be created. It is astonishing how much the exhibit may be improved when consideration is given to this important matter.

By a proper disposition of the colours of the different varieties one may be made to lend advantage to another, and where consideration has to be given to the decorative effect of the display, the exhibitor should blend the colours or create pleasing contrasts, both of which have distinct advantages. This question of colour association has already been considered under another heading earlier in this book, and the reader will be well advised to refer to the methods therein laid down. Exhibits of the early flowering garden varieties, as well as those of a decorative character, are occasionally met with at local and other shows, and where provision is made for such displays it cannot be denied that they are usually distinctly charming.

Groups of Plants.—Free-flowering and partially disbudded plants lend themselves very effectively to arrangement in groups. They should never be rigidly tied, as are the formal flowers of the florist's ideal, but should be left to develop their terminal buds; and the latter, to be seen at their best, and their decorative qualities amply illustrated, should have grace and ease observed in the system of tying finally. Such exhibits well illustrate the value of these plants for greenhouse and conservatory embellishment, and it cannot be denied that the thousands who admire these flowers for their beauty and their profuse display would be led to take up the cultivation of these plants where the larger blooms fail to encourage them to do so. The early sorts require plenty of root room, so that any grower desiring to cultivate them in pots, etc., in the hope of exhibiting them, should give the plants plenty of root room. Two or three plants in a large tub make a very handsome display, and not long ago, at one of the fortnightly meetings of the Royal Horticultural Society in London, an exhibit was made in which several plants of that splendid early sort, "Horace

Martin," with its bushy character of growth, made a most remarkable display.

Exhibiting Single and Pompon Flowers. — The single-flowered sorts and the Pompons, too, are particularly charming when exhibited in partially disbudded sprays. These pretty flowers when too rigidly disbudded are somewhat formal, and less likely to please one with their display than when only partially disbudded. At all times observe the same rule of setting them up loosely in bunches, that their decorative traits may be amply illustrated, and their value for decorative uses clearly exemplified.

Always make a rule to gather the sprays with long flower stems, so that a dumpy arrangement may be avoided, and that grace and elegance in their display may be better brought about. Long stems invariably help one in making an artistic disposition of the flowers; it is astonishing what an effect the seemingly careless adjustment of such flowers will bring about in a decorative exhibit. Always see that the flowers are true to colour, and never put in one vase pale flowers and well-coloured flowers of the same variety. There should be absolute consistency, otherwise the exhibit will most assuredly lose points in competition with those where this rule is observed.

With the foregoing remarks it is hoped that exhibitors may gain some information as to how exhibits of the outdoor and the decorative kinds may be represented at their best. Much, however, must be left to individual initiative.

CHAPTER IX.

FLORAL ARRANGEMENTS.

BOTH the early and semi-early garden sorts, as well as the decorative varieties in pots, lend themselves especially well for the purposes of indoor decoration in a cut state. This is an aspect of the question which is too frequently ignored, and as so much depends upon the proper disposition of the sprays and individual blooms a little advice respecting this matter may not be out of place.

How to Cut the Flowers.—Sprays of the naturally-grown sorts obtained from plants in the open border are specially well adapted for large vases, and any large receptacle where a bold and handsome display is desired. They should always be cut with a good length of stem or foot stalk, and that the flowers may last as long as possible in a cut state, it is a good plan to largely denude the stem of its foliage, and also to split the stem at the bottom. By these means the flowers may be maintained in a fresh condition for several weeks, and if a portion of the stem be cut off from the bottom at intervals of a few days, and this, if possible, done while in the water, their period of freshness will be considerably lengthened thereby. That a graceful and elegant arrangement of flowers may be brought into effect, select sprays in which the buds are not too crowded. For this purpose, the clusters which are less densely flowered answer better, and those blooms of a starry kind certainly have a value which others, less attractive, do not possess.

How to Arrange Them. — In arranging flowers in vases or bowls and other receptacles of a somewhat similar nature, their adjustment or disposition in the vases is so much more easily effected by having a wire netting fixed

upon the top. This may be purchased from the horticultural sundriesman and others, and if there is a difficulty in acquiring it or a sufficient number, the operator may easily make them out of a piece of wire netting with a small mesh. It should be made in shape to suit the receptacle for which it is intended, and may be held in position by fixing lengths of wire equi-distant on the sides of the netting, bringing these down, and fastening round the stem of the vase itself. With this simple contrivance as a base, one may speedily make a most delightful floral picture, covering the wire with greenery or trailing material. The "Corona" wire arrangement is excellent for this purpose.

Colour Harmonies and Contrasts. — As far as possible, arrange the flowers with full consideration for their artistic association. See that either a pleasing or striking contrast be made, and give special thought to the harmonious association of colours in blends. Observe the same rules in deciding this matter, as was suggested in the planting out for effect of the early kinds, in the open border, dealt with in another chapter. It cannot be too strongly emphasized how necessary it is to use colours of the very best. The tinted flowers and "washy" colours, and those of less distinct shades, seldom lend themselves to really beautiful and artistic displays. The more decided colours always make a more effective picture, and for this reason, in the selection of the different colours, see that they are represented by distinct shades.

Sometimes a decoration of one colour only may be made distinctly attractive and novel, or different shades of one particular colour, such as yellow; using primrose, canary yellow, and rich yellow in association, and so on through the different shades of colour. This same rule may be observed, and the arrangement of the decorations indoors varied from time to time. It is a great mistake to confine one's self to just one or two colours throughout the season, as by these means the display is likely to become somewhat monotonous. But, by varying the colours from time to time, for one period using a contrast, succeeding this with a blend of colours, and

following this in turn with a self-coloured decoration, the flowering season may be made to bring to the home delights in this respect which few persons are capable of appreciating.

Before leaving this subject it may be well to point out what may be considered one of the richest and brightest associations of colour with the decorative chrysanthemums, that is, yellow, orange, and crimson, using the last-mentioned colour less freely than the others. At all times avoid crowding in the vases, etc., and see that each spray of blossoms, so to say, speaks for itself, and on no account add an additional spray of blossoms just because there is plenty of material available.

Grasses and Additional Foliage. — The use of grasses and foliage from the hedgerows and the greenhouse will assist to enhance the value of the display, and in this connection it is well to remember that some of the pleasing autumn-tinted foliage, which is so easily acquired in the autumn months, affords appropriate decorative material without an equal elsewhere. Do not use too much greenery, especially in some of the smaller receptacles, and when foliage of a green kind is used, see that is of the brightest tint of green possible. Yellowish-green, as a matter of fact, is the colour most to be desired, as this assists to give a light artistic finish as well as covering some of the defects which bare stems, etc., always create.

Arranging Large Blooms.—With reference to the disbudded blooms for decorative uses, these being rather more formal in appearance, and consequently less artistic than the freely-flowered sprays, need to be arranged with a greater amount of care. It is so easy when fixing these up in vases, bowls, epergnes, and the numberless utensils which are found in the house, to readily fall into the error of creating too formal an outline. This is specially noticeable where large vases are filled with these disbudded blooms. The decorator should try and break away from this inherent failing, and instead of making up a decoration that looks as if it had come out of a blanc-mange mould, to make the outline less even, arranging some of the more conspicuous blooms to give relief to the others, by slightly raising them, not all to the same

extent, but varying them in such a way that, viewed from any quarter, the floral picture is a creation that is pleasing and interesting. The large, fine spikes of beautiful grasses which may be gathered from field and hedgerow, should be fixed up in the vase in such a way that they stand out well above the flowers, in this way also assisting in relieving the somewhat large and formal blooms of any heaviness or dumpiness that they may appear to possess.

Trailing Foliage.—To overhang the sides of vases or entwine around the handles of baskets and to trail across the table-cloth in the table decorations, the richly-coloured sprays of Ampelopsis—which is not confined to one variety only, but of which there are several varieties that may be had in various tints of colour—will give a finish that nothing else seems capable of doing.

Autumn-tinted Foliage. — The brambles, too, in the autumn, are very richly coloured, and they may be used for the same purpose; in fact, there is a wealth of material available at this season which may be acquired at little or no cost by taking a walk through the country lanes, where oak, beech, and numberless richly-coloured pieces of beautiful foliage may be gathered to enrich the table at home. Berries, too, are invaluable. Crowding should at all times be avoided, and every flower should be so arranged that its beauty of form and colour may be seen in its adjustment in the vase, etc.

Hand-Baskets. — Hand-baskets filled with moss and blooms wired and stuck into this are quickly and easily arranged, and there are now to be had sharply-pointed zinc cones which may be placed in an inverted position in the moss, and those filled with water. Flowers arranged in them will keep the decoration fresh for quite a long time. It is somewhat difficult to express in words all that one feels regarding this matter, an ocular demonstration being so much more convincing than a lot of advice.

Hints to Exhibitors.—When setting up bunches of the garden or decorative kinds in competitions, do not

bunch them up too tightly. Arrange the sprays of flowers loosely, that grace and elegance may characterise their adjustment, and that the public may be able to form a correct idea of their value in the garden as well as their usefulness for the embellishment of the greenhouse or conservatory.

CHAPTER X.

PESTS AND DISEASES.

As the chrysanthemum grower is only too well aware, there are a few pests and diseases which occasion him no small amount of anxiety in the cultivation of his favourite plants. There are, for instance, the aphides which infest the shoots, the Mining Maggot which tunnels channels in the leaves, the crafty earwig which feasts on the unfolding petals at night, to say nothing of mildew and rust, which are ever on the alert to establish themselves on the leafage. These alone are sufficiently formidable to do considerable injury, but, alas! there are others of a minor character that must not be despised, and so we must, for the benefit of the beginner in chrysanthemum culture, give a brief description of each, with remedies for their eradication.

Ants.—Various species of the highly intelligent family of Formicidæ occasionally prove a nuisance to growers by running over the plants and carrying aphides about. The aphides secrete a honey-like substance on their bodies, and the ants feed on this, hence the trouble and care they take of the former. When their food supply is short ants will eat their way into the buds and opening blossoms, and thus do harm in that way.

Remedies.—Ants may be easily trapped by suspended bits of sponge soaked in treacle among the stems. When the

A DECORATIVE CHRYSANTHEMUM PLANT.

A typical well-grown plant of one of the decorative varieties. The plant is grown in an 8-inch pot, and allowed to develop 10 to 12 shoots, each carrying a flower. Such plants are suitable for exhibition groups or for greenhouse decoration.

CUCKOO SPIT OR FROGHOPPER FLIES.

CHRYSANTHEMUM LEAF RUST (PUCCINIA HIERACII).

sponge contains a lot of these pests, dip it in boiling water. In the event of the roots of outdoor plants being infested sprinkle guano thinly on the soil around each plant.

Aphides.—The forms of aphides known as Greenfly (Rhophalosiphon Dianthi) and the Black Fly (Aphis Rumicis) infest the points of the shoots and also the leaves, damaging the cell structure by piercing the epidermis and sucking out the sap. These repeated punctures cripple the growth of the shoot and leaves, as well as prevent the stomata or leaf pores from carrying out their proper functions, owing to the surface being coated with the honeydew secretion left by the insects. As the flies multiply very rapidly it naturally follows that a great deal of mischief will be done in a short time if the pests are not destroyed.

Remedies.—In the case of the shoots being infested dust them with tobacco powder, leave it for a day, then syringe it off with water. Syringing with one of the many excellent insecticides advertised in "Amateur Gardening," or with the following home-made solution, will also be effectual. Boil two ounces of soft soap in a gallon of water for ten minutes, then add an egg-cupful of paraffin oil. Pour this into a two-gallon bucket, fill up with water, stir thoroughly, and apply in a fine spray to the foliage during the evening. Other good and simple remedies are an ounce of carbonate of ammonia dissolved in a gallon of soft water; or 2lb. of soda and 1oz. of aloes, dissolved in a gallon of hot water. All insecticides are best applied in the evening of a warm day. Fumigation with one of the many preparations sold for the purpose in the manner advised in Chapter II. may also be practised under glass.

Black Fly.—See Aphides.

Bugs.—Several kinds of these are hurtful to the buds of the chrysanthemum. The one we shall specially mention here is Anthocoris memorum. The perfect insect measures one-eighth of an inch in length; head and fore-part of body shiny black; feelers yellow, with black tips; legs yellow, with a black band round the hindermost thigh; feet black; wings brownish-yellow. It punctures the buds and prevents

them opening properly. Occasionally it does good, however, by feeding on greenfly, but it is doubtful if its good qualities outweigh the injury done to the buds. It is a very active insect, jumping off with alacrity when disturbed. Another species of Plant Bug, Calacoris bipunctata, frequently does much harm to the buds and leaves of chrysanthemums. This insect is like a large greenfly in shape and colour, and measures just under a quarter of an inch in length. It punctures the epidermis of the young leaves, and the points of the shoots, causing them to turn brown and shrivel. Yet another species, Phytocoris campestris, is reputed to injure chrysanthemum buds, points of the shoots and young foliage, the parts attacked having the appearance of having been poisoned. Wherever the shoots wither, turn black, or curl up very much, it may be taken for granted that one of the foregoing pests is the culprit.

Remedies.—To catch the bugs hold a butterfly net or a cloth in front of the plant and suddenly, but carefully, shake the shoots over this. The bugs will fall off immediately. Syringing with one of the remedies advised for aphides will also prove effectual.

Cockroaches.—The cockroach is very partial to the flower buds of the chrysanthemum, especially after the plants have been housed in autumn. They nibble away at the surface of the buds, and spoil the shape of the future blooms.

Remedies.—Use the special remedies sold by all chemists and druggists.

Cuckoo Spit or Froghopper (Philænus spumarius). —This pest is closely related to the aphides, only larger. The perfect insects are most abundant in the autumn, and the male may be easily distinguished by its habit of leaping from plant to plant if disturbed. The female lays its eggs on the plant, and these hatch in due course into six-legged greenish grubs, with yellow bellies. They at once commence to feed on the shoots, sucking the juices by means of a powerful trunk with which they pierce the epidermis. As the sucking proceeds, they gradually exude a frothy substance through their bodies, which completely hides them from view. On removing the covering the larva will dart away to the

opposite side of the shoot to escape observation, and as soon as all is quiet again it will start in a fresh spot, and re-cover itself with froth. If allowed to remain long on the plants, the larvæ will cripple the shoots considerably; therefore, take prompt steps for their removal. In some seasons they are very partial to outdoor chrysanthemums, and dozens of frothy lumps will be seen on the shoots.

Remedies.—The most effective mode of eradication is to grasp the larva between the finger and thumb, and crush it. To make sure of seizing it, blow off the froth first. If you do not care to do it with your fingers, remove the larva with an aphis brush. Syringing with one of the liquid insecticides recommended for aphides will be beneficial also.

Greenfly.—See Aphides.

Leaf-mining Maggot. — The larvæ of the Marguerite Leaf-mining Fly (Phytomyza affinis) frequently do considerable injury to the leaves of the chrysanthemum by boring small channels between the two surfaces. The maggots feed on the soft tissues, cause blisters and whitish zig-zag tunnels to form on the surface. When very numerous, the functions of the leaves are seriously disorganised, and the health of the plant badly affected. The fly is like the Common House Fly in shape, and of a dark slaty black or ash colour. It measures one-fifth of an inch in the spread of its wing, and about one-twelfth of an inch in length. The flies appear in May and June and deposit their eggs, by means of an ovipositor, in the cuticle of the leaf. When fully grown the maggots do not quit the leaves, but form chestnut-brown coloured pupæ in the mines, and eventually emerge therefrom as perfect flies.

Remedies.—When the maggots are seen in the leaves it is useless applying insecticides, as anything powerful enough to reach them would at the same time kill the leaves. The only remedy in such a case is either to pinch off and burn the infested leaf, or to crush the maggot between the finger and thumb in the leaf, or to pick out each grub with the point of a penknife or darning needle. As a preventive, syringing the foliage frequently during May and June, when the flies are on the wing, with a paraffin solution

is a first-rate plan. The solution should be prepared as follows: Place a piece of bath brick in a wooden pail and pour as much paraffin oil thereon as it will soak up. Fill the pail with water, and leave it for three or four days, then remove the scum from the surface, and syringe, or, better still, spray

LEAF-MINING MAGGOT.

Much damage is often done to the leaves of the chrysanthemum and the marguerite by the maggots of a small fly scientifically known as Phytomyza affinis. The fly (*a*) makes an incision in the leaf (*c*) and deposits an egg therein, which eventually hatches into a small maggot (*b*) that feeds on the soft tissues and causes blisters to form thereon.

the foliage thoroughly with it in the evening. Prepared thus, the essence of the oil is thoroughly communicated to the water, and no injury will be done to the foliage. The oiled surface acts as a deterrent to the fly depositing its eggs.

Leaf Rust.—This is a pest which has only manifested itself of recent years. At one time it threatened to practically exterminate the chrysanthemum, so virulent did it become all over the country. Thanks, however, to the united and vigorous efforts of growers, the Rust was greatly checked in its course, and now we only hear of it occasionally. It is scientifically known as Puccinia hieracii, and is a near relative of the Hollyhock Fungus. This fungus is not confined to the chrysanthemum only; it is prevalent on our native hawkweeds, thistles, groundsels, burdock, and knapweeds, consequently wherever these weeds abound there is always risk of the fungus finding its way, either by the agency of winds, birds, insects, or human beings, to the chrysanthemums.

The life history of this pest is, briefly, as follows: It is propagated by what are known as summer or winter spores. The former, technically called uredo-spores, consist of the brownish or snuff-coloured spots found on leaves infected with the fungus. The spots may be dispersed singly about the surface of the leaf, or congregated in masses thereon. In any case, there are myriads of them, and these are distributed about by one or more of the agencies previously mentioned. When a spore alights on a leaf, and the conditions are congenial, it develops in eight to ten days and gradually takes possession of the leaf, finally causing its ill-health and ultimate death. The winter spore, technically called the telutospore, differs from the summer spore in not germinating the same season. It either remains on the leaves or falls on the soil, and remains inactive till the following spring, when it develops and begins to again spread the disease among the plants. It will thus be seen that the Leaf Rust may make its appearance on plants in early summer through the summer spores being conveyed to the foliage by insects, birds, winds, or the clothing of persons who have previously been in contact with weeds or with chrysanthemums infected with the disease. Or some of the winter spores may be present in the soil used for striking the cuttings, or on the leaves of the cuttings, and these have given birth to the Rust. The worst of pests of this kind is, their presence is not discovered until too late to prevent them injuring the foliage. The spores, when germinating, penetrate the delicate leaf tissues with their mycelium, rupture the cells,

and put a stop to the development of the leaf. The brown spots really indicate the fungus in its full stage of development; they are the fruit of the fungus.

Remedies.—As to remedies, it is obviously useless to apply them when the leaves are covered with the brown spots, as the mischief has then been wrought. All that can be done then is to promptly pick off and burn every infected leaf. Directly afterwards spray the foliage with a solution of sulphide of potassium at the rate of an ounce to two-and-a-half gallons of tepid water. The liquid should be applied to the under and upper sides of the foliage, and allowed also to fall on the soil in the pots and on the ground, to make sure of destroying fallen spores. This may prevent the fungus spreading. To guard against an attack, the plants should be regularly sprayed every ten days throughout the season. If this plan be adopted, and all infected leaves, or very badly attacked plants, be promptly burnt, the much-dreaded Leaf Rust may be kept at bay. Great care should also be taken not to propagate from infected plants.

Leaf-Spot.—Occasionally the leaves of the chrysanthemum are infected by dark brown spots, which seriously disfigure and weaken the growth of the plants This particular disease is caused by a fungus called Septoria chrysanthemi. But little is known of its life history at present. Other species of the genus, however, inflict similar injury upon the currant, parsley, and tomato.

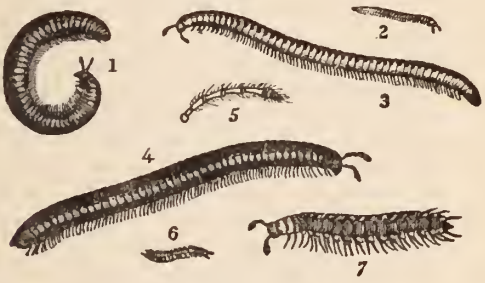
Remedies.—One thing is certain, it is wise, wherever leaves are found with dark brown spots on them, to at once remove and burn them, afterwards spraying the foliage thoroughly with the potassium solution advised in preceding paragraph, as a preventive against a second attack.

Mildew.—A form of mildew peculiar to the chrysanthemum, and scientifically known as Oidium chrysanthemi, also does much damage to the foliage in some seasons. This mildew spreads over the leaves and also the petals of the blooms, sending its slender tubes into the cells, and speedily disorganising the functions of the plant. It is easily recognised by the greyish-white film of growth spread over the surface of

the leaf. Plants that are much crowded and do not get sufficient light and air, are specially liable to an attack.

Remedies.—Spraying with the sulphide solution advised for Leaf Rust will destroy the mildew, and also prevent it again infecting the foliage. Dustings with flowers of sulphur will also prove effectual. Extremes of temperature, when the plants are housed, should also be avoided.

Millepedes.—These small, active little animals, commonly known as Thousand Feet, are sometimes a source of trouble to growers of pot plants. Although their natural food is supposed to be decaying matter, they are known to attack the roots of plants grown in pots and outdoors, and thus in a



Millepedes or False Wireworms.

1, London Snake Millepede; 2 and 3, Spotted Snake Millepede: 4, Common Snake Millepede; 5, Antenna magnified; 6 and 7, Flat Millepede. Nos. 3 and 7 are magnified, others natural size.

measure cripple root action. There are at least three kinds that are hurtful—namely, Julus guttatus, an inch long, very slender, with an ochreous-coloured body, spotted with crimson; Julus terrestris, which is about an inch long, leaden or pitchy in colour, and more or less cylindrical in shape; and Polydesmus complanatus, a flat kind with a lilac-tinted body. All are furnished with a large number of legs. The Spotted Millepede (J. guttatus) may be found in clusters near roots that have started to decay. The millepedes are active creatures and curl up when disturbed.

Remedies.—For outdoor plants well lime the soil before planting. It they invest pot plants to any serious extent immerse the pots in water for an hour and so drown the pests. (See also remedy under Wireworms.)

Sclerotinia Disease.—This fungoid disease, scientifically called Sclerotinia sclerotiorum, attacks a number of plants, including the chrysanthemum. It first appears in the form of a white mould on the stem, just above the soil. As the fungus develops it penetrates the stem, causing it to become brittle and to split, when the interior will be found more or less full of black sclerotia.

Remedies.—Fortunately it is not a very common enemy of the chrysanthemum, but whenever a plant is found to be attacked it should at once be cremated. Should the white mould stage of the fungus be found on the stem, dust freely with slaked lime.

Slugs and Snails.—Both are partial to the young shoots of the chrysanthemum, and consequently must be reckoned with, especially in regard to plants just planted out in beds or borders. They either eat off the young shoots entirely or half way through. They often find their way into greenhouses and cold frames, and browse on the cuttings.

Remedies.—Trapping is the best remedy. Lay some lettuce or cabbage leaves, or heaps of brewers' grains or bran about the house or frame, and surround the stem of each plant in the open with a cordon of soot or lime.

Springtails.—These are lively little insects, which have been noted of late years as frequently investing the roots of pot plants, including chrysanthemums. When present in large numbers, they undoubtedly do a great deal of harm to the roots of plants. The commonest kind is known as Podura terrestris. It varies in length from 1-30th to $\frac{1}{2}$ in., is of a whitish colour, and more or less hairy. When disturbed, it jumps or runs away with alacrity. This species frequents damp and sour soils mainly. Other kinds of springtails which are equally harmful are Achorutes purpurescens, a browish insect of similar size to the preceding one, and Lipura ambulans, a milky-white kind. They are easily recognised by their habit of jumping or springing when disturbed.

REMEDIES.—Immersing the pot and roots in lime water, as advised for worms; watering the soil with a solution of nitrate of soda, at the rate of an ounce per gallon, or with a weak solution of permanganate of potash and water, will destroy these creatures.

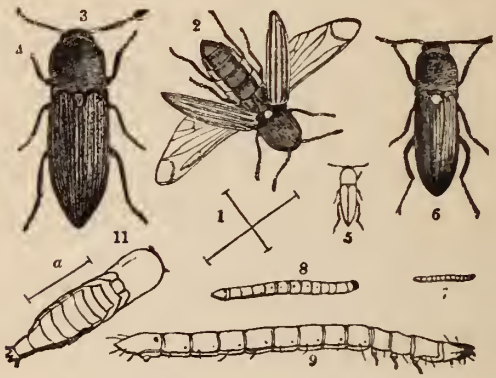
Thrips.—There are few insects more destructive than these. The one which attacks the chrysanthemum and other greenhouse plants is T. adonidum, a dark brown four-winged insect, with a reddish tipped body, pale yellow eyes and limbs, and measuring 1-20 in. in length. It is wonderfully agile in its habits, jumping away directly the leaf it is on is touched. The larvæ, small, whitish or yellowish maggots, are also fairly active, but they cannot jump. Both feed on the surfaces of the leaves and shoots, sucking out the juices and causing them to assume a yellowish tinge and die. Not only do they injure the leaves, but also the young shoots and flowers. They are especially destructive to the young and tender foliage of orchids and vines. As a rule, they never get very numerous in greenhouses that have a fairly moist atmosphere.

REMEDIES.—Sponging the foliage, or syringing or spraying with a solution of one of the advertised insecticides, are the usual remedies. Fumigation with tobacco on three successive evenings generally proves successful.

Wireworms.—Although these rarely do any serious harm to the chrysanthemum, still, in case they should, it will be as well to give a description of them in order that they may be distinguished from millepedes. The wireworm is the larva of a greyish-brown beetle known as the Skip Jack or Click Beetle (Agriotes obscurus). The beetles deposit their eggs on the herbage or roots of plants, and these in due course hatch into slightly flattened cylindrical grubs of a yellowish hue. Each of these grubs is furnished with three pairs of short legs, situate just behind the head, with a sucker-like foot below the tail. Their bodies are exceedingly tough and wire-like, hence their name; in fact, so rigid that they may be readily snapped through the middle. The first step of the larvæ is to eat its way into the heart or stem of the plant, and work upwards until it reaches the surface. It then quits this plant for another, beginning at the roots as before. Wireworms are voracious

feeders, and therefore will attack a large number of plants in one season. This, taken into consideration with the fact that they live from three to five years in the larval state before turning into the perfect beetle, will afford some idea of the injury likely to be done by a single grub if allowed to attain its full development.

Remedies.—To guard against the presence of these grubs in pots, the compost should be carefully searched over before using. Old decayed turf is especially liable to contain wire-



Click Beetles and Wireworms.

Fig. 1, Lines showing natural size of Click Beetle; 2, Elater lineatus; 3, another Click Beetle (Elater obscurus); 5, a third Click Beetle (Elater sputator), natural size; 6, the same magnified; 7, 8, and 9, larvæ or wireworms of above beetles; 11, pupa or chrysalis.

worms, hence in pulling this to pieces, keep a sharp look out for wireworms. With regard to outdoor plants, it is only during the first month they are placed in the ground that wireworms are likely to be troublesome. If any plant be found drooping, lift and examine the base of the stem, and the culprit will generally be discovered. Burying pieces of carrot in the soil will attract wireworms, and enable them to be easily caught. Dressing the soil before planting with a mixture of one part of naphthalene and fifteen parts of fresh lime (4 ozs. per square yard) will thoroughly rid it of soil pests.

Woodlice.—Several kinds of Woodlice or Slaters are partial to the buds of the chrysanthemum. The Common

Woodlouse (Armadilla vulgaris) is the chief kind. This is of a leaden hue, and rolls itself up when disturbed. Another kind, Oniscus asellus, is greyish brown, with yellow-coloured spots on its sides and back. Yet another, Porcellio scaber, is of a slaty colour, with a rough dotted back. Being nocturnal feeders, they are not often seen at their mischievous occupation, and their handiwork is often attributed to other pests. During the day they hide under dry rubbish or in crevices. It is evident, therefore, that all rubbish should be removed from the neighbourhood of the plants, and that any crevices likely to form a harbour for them should occasionally be treated with boiling water.

Remedies.—Traps in the form of dirty flower pots filled with hay or moss, or with their insides smeared with treacle, should be laid about to entice the woodlice to enter. Examine these daily, and kill all found therein. Potatoes, swedes, or turnips cut in halves, and their insides scooped out, also form excellent traps. Beetle poisons placed near their haunts will be equally effective.

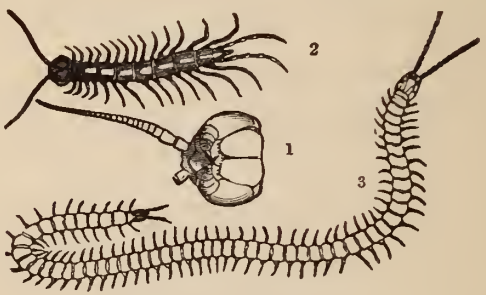
Worms.—These unquestionably do a large amount of mischief if allowed to remain long in the soil of a pot plant. They not only damage the roots, but render the soil spongy, stagnant, and sour, and speedily bring the plant into ill-health.

Remedies.—Put a lump of unslaked lime the size of your fist in a pail of water. Allow the solution to stand twenty-four hours, then skim off any film on the surface and quietly stand the pot invested with worms in the pail. In a few seconds the worms will come to the surface and may be caught. Watering the soil with a solution of carbonate of ammonia, half a teaspoonful to a gallon of water, will effect the same object. Plants in pots should never be stood on the bare soil, but on tiles, slates, boards, or cinder ashes, otherwise worms will readily gain ingress to the roots.

CHAPTER XI.

A FEW FRIENDS.

SINCE we have described the enemies of the chrysanthemum, it is only just that we should also draw the grower's attention to a few of the friendly insects and animals that may occasionally, if not frequently, be seen on the plants or in the garden, in order that they may be spared to help him in reducing the number of the former. It would be wrong to treat every living creature found on plants or in the garden as a foe. One must learn to discriminate between the two, so as to spare those who render the gardener a lasting service in reducing the pests that conspire to do so much injury to his plants.



FRIENDLY CENTIPEDES.

These are somewhat similar to the Millipedes, but much more active. They frequent the soil and drainage of pot plants in search of other creatures as food. 1. Enlarged view of head of a centipede. 2 is the Common Centipede (Lithobius farficatus), and 3 the Snake Centipede (Geophilus longicornis).

Centipedes.—First of all, there are the centipedes. The most familiar of these is Lithobius forcipatus, an active, agile little creature, with a shining, horny, ochreous-coloured body, and fifteen pairs of bristly, spiny legs and a couple of longish horns. It measures about an inch in length, and is furnished with very powerful jaws. This creature may frequently be met with in the drainage of pots and in

the garden. As often as not it is regarded as a foe, and killed forthwith. Now, the centipede does no harm to plants ; it feeds entirely on grubs, worms, and small animals, and is therefore a real friend of the gardener. It is easily distinguished from the millepedes by its shorter body, longer legs, and its greater activity. Spare him. Another creature, often seen in competition with the Centipede, is Geophilus longicornis. This measures $2\frac{1}{2}$ to 3 in. in length, has a very slender, ochreous-coloured body, furnished with fifty-one to fifty-five pairs of legs. The animal moves with a waving motion from right to left, and leaves behind a thin line of phosphoric fluid which can be clearly seen in the dark. This creature is one of Nature's scavengers, feeding on decayed roots and seeds, and never at any time does any harm to plants. We have often met with it in the soil and drainage of pot plants. Spare him likewise.

Frogs and Toads.—These should be encouraged in every garden, as they are really valuable allies. Both feed on slugs, beetles, and grubs, and will devour an immense number of these pests if unmolested. The Common Frog is scientifically known as Rana temporaria, and the toad as Bubo vulgaris.

Garden Spider (Epeira diadematа). — This spider spins large webs over bushes, etc., and is particularly abundant during September. By means of its web it traps small moths and flies, and devours them at leisure. It should not be destroyed, but left unmolested.

Hawk Flies (Scæva).—Three species of Hawk flies, namely, Scæva balteata, S. Pyrastri, and S. Ribesii, are friends of the gardener. The insects are of a wasp-like nature, though they are not capable of stinging. They are exceedingly active, and may be seen darting about here and there in the sunshine with great alacrity. These insects are also called "Hoverers," on account of their hoverlng over the plants. The flies lay their eggs among colonies of aphides, and when the larvæ appear, these at once begin to feast upon the aphides. The larvæ are so voracious that they will literally destroy hundreds of aphides in the space of an hour. The larvæ are whitish or yellowish-green in colour,

narrow at the head, and gradually widening at the tail. As soon as they are fully fed they attach themselves to a leaf,

FRIENDLY HOVERER FLIES.

Active wasp-like flies which hover over plants and deposit their eggs amid colonies of greenflies. Their larvæ when hatched devour the greenflies voraciously. Fig. 1, Scæva balteata; 2, its larva or grub; 3, its pupa or chrysalis; 4, Scæva Pyrastri; 5, its larva or grub; 6, its pupa or chrysalis; 7, Scæva Ribesii.

enter into the pupal stage, and finally emerge as perfect flies in a very few days.

Ichneumon Fly (Pimpla instigator).—There are several kinds of Ichneumon flies, but all are alike in their general

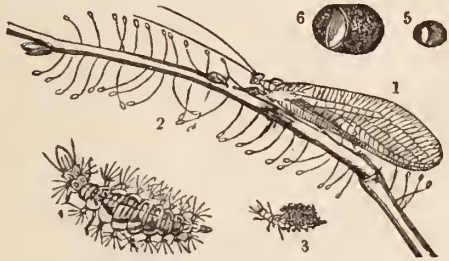
FRIENDLY ICHNEUMON FLIES.

The flies alight on the bodies of caterpillars, pierce them and lay eggs therein. The grubs in due course feed on the caterpillars and destroy them. A, insect flying; B, insect at rest.

habits. They vary in size from an inch long to that of a midge. All have more or less slender bodies furnished with an ovipositor similar to the sting in the wasp. These insects alight on the bodies of caterpillars, pierce them with their ovipositor, and then deposit an egg, which, in due course,

hatches, and produces a grub that feeds on the body of its host. These insects, therefore, do good in preying upon caterpillars which infest plants generally in the garden. It may be taken as a general rule that all insects which are seen hovering over plants are either Ichneumon flies or Hawk flies, and friends of the gardener worth taking care of.

Lacewing Fly (Chrysola perla). — Doubtless, many readers have noticed on their plants in the summer time, a number of very fine white hairs, with little knobs at the end, and have come to the conclusion that they were some minute form of fungus. Nothing of the kind. The little filaments are simply appendages with an egg at the end.



THE FRIENDLY LACEWING FLY.

A most beautiful insect, which lays its eggs on the ends of tender filaments as shown. The larvæ, which are curious-looking creatures, set to work at once to devour green flies on plants. Fig. 1, Lacewing Fly depositing its eggs; 2, tiny eggs attached to filaments; 3, larva covered with the dead skins of aphides it has eaten; 4, larva magnified; 5 and 6, coccons in which larvæ pupate.

In a short time the tiny knobs at the ends of the filaments, or eggs, give birth to dirty-white or pale-brown coloured larvæ, marked with brown or orange spots, and with tufts of hair on each side of their body, like specimen (Fig. 4), which is greatly magnified. The parent insect seen nestling on the shoot has a slender body, and pale green, gauze-like wings, with golden eyes. The Lacewing fly is really a most beautiful insect, and cannot fail to be recognised when once seen. The larva, which will be easily recognised by reference to Fig. 4, is like that of the Hawk fly. The larvæ are very voracious creatures, and will devour thousands of green-flies in a remarkably short space of time if not interfered with. Chrysanthemum growers should therefore be careful not to kill the perfect insects, which will be recognised

by their golden eyes and gauze-like wings; nor yet to destroy the pretty little thread-like filaments with the eggs perched on the top, which may be found on the shoots of plants.

Ladybird Beetles (Coccinella). — We figure one species of the pretty little Ladybird Beetles. These active little creatures with their scarlet coats and black spots will be found running freely over chrysanthemums and many other plants during the summer, and if they are carefully watched will be observed attacking any hapless green-fly that may come in their way. The Seven-Spotted Ladybird (see below) is the most commonly met with. All, however, may be easily distinguished by their brilliant colour, and wherever seen they should certainly not be interfered with, as they

THE FRIENDLY LADYBIRD BEETLES.

A genus of small beetles with scarlet coats and black spots. Their larvæ, known as "crocodiles," feed ravenously on greenflies. Fig. 1, leaf containing a cluster of eggs; 2, egg magnified; 3, larva or crocodile magnified; 4, line showing its natural length; 5 and 6, pupæ; 7, Two-Spotted Ladybird (Coccinella bipunctata); 8, Coccinella dispar; 9, Seven-Spotted Ladybird (Coccinella septempunctata).

help to clear plants generally of one of the gardener's worst pests—the green fly. Still more useful and still more voracious than the parents are the larvæ, commonly known as "Crocodiles" or "Alligators." These creatures are hatched from buff-coloured eggs, which are laid underneath the leaves by the Ladybird Beetles. As soon as the little "Crocodiles" begin to move about they at once devour the aphides, a single specimen being able to clear off hundreds of these pests in a remarkably short space of time. They live for about three weeks in the larval stage, then turn to pupæ, and in three weeks emerge as perfect beetles, ready to lay their clusters of buff-coloured eggs underneath the leaves.

JAPANESE CHRYSANTHEMUM. "MRS. G. LLOYD WIGG."

A good yellow-flowered variety, suitable for exhibition or greenhouse decoration.

INCURVED CHRYSANTHEMUM, "ROMANCE."

A rich yellow variety, showing the correct globular form of the Incurved section. A fine exhibition flower. Height, 4½ feet.

CHAPTER XII.

SELECTIONS OF GREENHOUSE VARIETIES.

JAPANESE.

Bob Pulling.—Deep yellow; natural first crown buds.
Charlotte E. Soer.—Rich yellow; suffused amber; natural first crown buds.
Edith Cavell.—Chestnut-bronze; natural first crown buds.
Francis Jolliffe.—Creamy-yellow, edged pink; natural first crown buds.
F. S. Vallis.—Canary yellow; stop early April and again end May.
General French.—Terra-cotta red; stop second week in April; secure first crown buds.
H. E. Converse.—Reddish-bronze, golden reverse; natural first crown buds.
His Majesty.—Deep velvety crimson; natural first crown buds.
Majestic.—Chestnut-bronze; good any bud.
Mary Poulton.—Shell-pink; natural break; second crown buds.
Miss A. E. Roope.—Golden-yellow; stop second week in April; secure first crown buds.
Miss Amy Poulton.—Flesh-pink; natural first crown buds.
Mrs. Algernon Davis.—Lovely mauve-pink; natural first crown buds.
Mrs. A. T. Miller.—Pure white; natural second crown buds.
Mrs. E. A. Tickle.—Mauve-pink; natural second crown buds.
Mrs. G. Drabble.—Marble white; natural first crown buds.
Mrs. George Mileham.—Silvery-mauve and rose; natural first crown buds.
Mrs. G. Lloyd Wigg.—Distinct yellow; stop early April and again end May.
Mrs. H. E. Dixon.—Bronze over yellow; natural first crown buds.
Mrs. James Gibson.—Mauve-pink; natural first crown buds.
Mrs. M. Sargent.—Pale green to deep green; natural first crown buds.
Queen Mary.—Pure white; natural first crown buds.
Reginald Vallis.—Purple-amaranth; natural first crown buds.
Shirley Golden.—Rich yellow; natural first crown buds.
Sir Edward Letchworth.—Purple, silvery reverse; natural first crown buds.
Sir W. H. Dunn.—Terra-cotta on gold ground; natural first crown buds.
Undaunted.—Bright purple; stop early April and again end May.
Viscountess Chinda.—Rich purple, silvery reverse; stop in March for first crown buds.
W. Rigby.—Deep yellow sport from Mrs. G. Drabble; natural first crown buds.

GREENHOUSE VARIETIES—continued.

INCURVED.

Buttercup.—Yellow ; natural first-crown buds.
Calypso.—Reddish-bronze ; stop early in April ; secure second crown buds.
C. H. Curtis.—Yellow ; natural first crown buds.
Clara Wells.—Cream ; natural second crown buds.
Doris Raynor.—Stop early in April, again in May.
Duchess of Fife.—White and blush ; stop early in April, again in May.
Edwin Thorp.—Pure white ; natural first crown buds.
Godfrey's Eclipse.—Clear canary-yellow ; natural first crown buds.
H. Hearn.—Deep orange ; natural first crown buds.
H. W. Thorp.—White, very consistent ; stop early April and again end May.
J. W. Streater.—Primrose ; stop early in April, again in May.
Madam Vrembly.—Pink ; natural second crown buds.
Miss Cora Stoop.—Mauve-pink ; natural second crown buds.
Miss Nellie Southam.—Purple-lilac ; stop early in April ; secure second crown buds.
Miss Thelma Hartmann.—Blush-pink ; stop early in April ; secure second crown buds.
Mrs. F. Ashworth.—Buff ; natural first crown buds.
Mrs. G. Denyer.—Silvery-pink ; stop third week in April ; secure second crown buds.
Mrs. J. Wynn.—White, flushed pink ; natural first crown buds.
Mr. E. Dove.—Rich old-rose ; natural break ; first crown buds.
Pantia Ralli.—Bronzy-buff ; stop early in April ; secure second crown buds.
Percy A. Dove.—White, very fine ; natural first crown buds.
Pink Perfection.—Mauve-pink ; natural second crown buds.
Queen Mab.—Pearl-pink ; natural first crown buds.
Romance.—Rich golden-yellow ; stop early April and secure second crown buds.
Shirley Democrat.—Terra-cotta shade ; natural first crown buds.
The Giant.—Salmon-buff ; natural first crown buds.
William Biddle.—Golden-bronze, tipped with green ; stop early in April ; secure second early crown buds.
W. Pascoe.—Lilac-pink ; stop middle of April ; secure first crown buds.

HAIRY-PETALLED VARIETIES.

Beauty of Truro.—This is a useful sort ; bronzy-yellow, shaded rose ; sport from Louis Boehmer.
Belle des Gordes.—This variety will be valued for its bright rosy-red flowers.
Enfant des deux Mondes.—A white sport from the once popular Louis Boehmer ; the flowers open primrose, but fade off to a pure white ; dwarf ; vigorous habit.

GREENHOUSE VARIETIES—continued.

Hairy Wonder.—The best of the series; large, of good form; colour, bright reddish-bronze; medium height; in its day received the F.C.C. of the N.C.S.

Louis Boehmer.—This is a large flower of good form; good habit; colour, lilac-pink.

Madame M. Marchand.—Large and well-shaped flower; colour, rosy blush; good habit.

Mrs. C. B. Freeman.—This variety is especially valued for its deep good yellow flowers.

FEATHERY-PETALLED VARIETIES.

Cheveux d'Or.—Golden-yellow; late; 3 feet.

Jitsujetui.—Silvery-pink; very quaint; November; 3 feet.

King of the Plumes.—Golden-yellow; December; 3 feet.

Mrs. W. Filkins.—Bright golden-yellow; December; Dwarf.

Sam Caswell.—Deep pink; December; Dwarf.

White Thread.—White thread-like petals; November; 3 feet.

DECORATIVE VARIETIES.

Amber.—Bronzy-amber, another excellent sort; November.

Armistice.—Pure white, reflexing florets; mid-November.

Baldock's Crimson.—A December flowering crimson sort; good for sprays.

Barbara Field.—Pure white; free flowering; November.

Batchelor's White.—Large white flower for November.

Bertha Lachaux.—Distinct, and free flowering at Christmas; colour, pink with golden centre.

Black Prince.—Striking deep crimson flower, with gold reverse; November.

Bronze Cheer.—Identical in all but colour with Winter Cheer; colour, lovely bronze.

Bronze Fabre.—Pretty bronze sport from Mdlle. M. Fabre

Bronze McNiece.—Soft reddish bronze sport from Mr. F. McNiece.

Bronze Mrs. Jos. Thompson.—A useful bronze sport from Mrs. Jos. Thompson; December.

Bronze Soleil d'Octobre.—Lovely bronzy-fawn sport from Soleil d'Octobre; October.

Cannell's Late Prolific.—Free-flowering pure white variety; lifts well; December.

Caprice du Printemps.—Pretty rosy amaranth, tipped white; October-November.

Charles Davis.—Rich rosy bronze; easy grower; November.

Christmas Gift.—Another free-flowering bronzy-yellow, for Christmas cutting.

Christmas Rose.—Charming pink flower with long stems, for Christmas displays.

GREENHOUSE VARIETIES—continued.

Cranfordia.—Grand October flowering variety ; colour, golden yellow.
Crimson King.—Large velvety crimson flower for November, sometimes earlier.
Crimson Quintus.—Syn. with Tokio, a small, bright crimson flower ; December.
Crimson Source d'Or.—Rich chestnut red ; sport from Source d'Or ; November.
David Ingamells.—A reliable rich yellow flower ; comes good on any bud ; November.
December Bronze.—Terra-cotta bronze ; beautiful in December.
December Gold.—A very handsome full flower of drooping form ; colour, rich golden-yellow ; late November.
Docteur Enguehard.—A good deep rose-colour flower ; useful for cutting in December.
Embleme Poitevene.—A large incurved flower of good form ; colour, yellow.
Ethel Thorpe.—Another silvery-pink flower of incurved form ; heavy cropper ; on stiff stems.
Evelyn Boldox.—Rich chestnut of medium size ; late November and December.
Exmouth Crimson.—A well-known deep red sort for late displays.
Felton's Favourite.—One of the finest November-flowering white market kinds extant ; free-flowering ; beautiful sprays ; lifts well ; of easy culture ; certificated by the N.C.S.
Freda Bedford.—Free-flowering, orange-apricot coloured blossoms of medium size ; grand habit ; November.
F. S. Vallis.—Grand canary-yellow variety ; splendid quality ; November and December ; of easy culture.
Gladys Roult.—Snow white of compact form ; free ; October and December ; disbud.
Glitter.—A very deep yellow flower ; should be disbudded ; November.
Godfrey's Crimson.—Valued for its December flowers ; colour, deep crimson.
Golden King.—A very consistent golden-yellow incurved variety for December cutting.
Heston Bronze.—An October flowering bronze variety.
Heston Pink.—A delicate pink flower for late displays ; very free.
Heston White.—Pure white sport from Madame Felix Perrin, a beauty ; December.
Heston Yellow.—Brilliant deep golden-yellow incurved Japanese flower ; free and distinct ; November.
His Majesty.—Good bloom of an intense crimson colour ; grows well.
H. Luxford.—A December variety ; colour, white with green centre.
Hortus Toulousanus.—Rich orange-bronze ; flowers borne on erect stems ; October.
H. W. Thorp.—Medium-sized incurved, of good form, and very consistent ; pure white ; an easy doer.

GREENHOUSE VARIETIES—continued.

Ivy Gay.—A beautiful pink, for December cutting.
Julie Lagravere.—A very old free-flowering, dark red kind; late November and December.
J. W. Streater.—Primrose-yellow sport from the incurved H. W. Thorp; very popular.
Kara Dow.—Very large flowers of rich golden-bronze flushed crimson; an easy doer and a useful variety.
Kathleen Thompson.—Of the easiest culture; good habit; colour, rich chestnut, tipped gold; a valuable sport from Caprice du Printemps; good in any form; October and November.
Lady Stanley.—Bright pink Japanese, of much merit.
La Negresse.—A much valued deep crimson flower, tipped gold, of good quality.
Lieut. Howard Peto.—Pretty Japanese of golden-amber colour; stiff stems; mid-season.
Lizzie Adcock.—Glorious rich yellow sport from Source d'Or; Nov.
Lustre.—Useful chestnut flower with golden reverse; December.
Madame Felix Perrin.—One of the best late pink sorts; very charming; December; good habit.
Market Bronze.—Golden-bronze, splendid disbudded; October.
Mdlle. Louise Charvet.—Good pink, of pleasing form; December.
Mdlle. M. Fabre.—An old and well-known pink variety; late October and November.
Mdlle. Therese Panckoucke.—Pure white; long petals; tall; December.
Mdme. Edmond Roger.—Incurved variety, white, overlaid with green; November.
Mdme. Paolo Radaelli.—Large rose and white coloured flower; December; should be disbudded.
Mdme. R. Oberthur.—Large flower, with long, drooping petals; pure white; December.
Miss Doris Raeburn.—A chaste white sport from Mdlle. M. Fabre.
Miss Emma Roupe.—Large mauve pink flower; free flowering.
Miss Gena Harwood.—Rosy-fawn, sport from Rayonnante.
Miss Mary Godfrey.—Pretty, clear canary-yellow variety, for October market purposes.
Miss Maud Jefferies.—A pure white variety, flowering late in December.
Miss Olive Dumsday.—Pleasing soft pink flower, of medium size; free flowering; November.
Money Maker.—Good white variety; good habit; will develop a good number of excellent flowers in November.
Mr. F. McNiece.—A beautiful pink variety for November displays.
Mrs. Buckbee.—For early November cutting this is a good white; lifts well.
Mrs. Cragg.—An October flowering pure copper bronze-coloured flower.
Mrs. Hygate.—A large incurved white of good quality for November and December.
Mrs. Roots.—An invaluable late October flowering pure white variety.

GREENHOUSE VARIETIES—continued.

N.C.S. Jubilee.—Pleasing bluish-mauve; incurved Japanese bloom; November.

Nellie Pockett.—Very free-flowering, pearly-white kind; December.

October Gold.—A beautiful old-gold coloured variety; October; certificated N.C.S.

Parson's White.—A white sport from La Triomphant; November.

Phœbe.—A most accommodating plant; begins to flower in September, and terminal bloom in November and December; colour, soft pink.

Phyllis Cragg.—A late October flower, of a lovely soft pink colour; a good doer.

Pink Pearl.—A large shapely flower of drooping form; colour, pink.

Princess Victoria.—A good white market variety; December.

Rayonnante.—Pretty shrimp-pink colour; tubular petals; November.

Red Cap.—A red sport from Caprice du Printemps; November.

R. F. Felton.—One of the very best market sorts extant; bold flowers with broad petals pleasingly reflexing; colour, richest shade of golden-yellow; keeps remarkably well; November and December; certificated by the N.C.S.

Rosalind.—Beautiful reddish-bronze flower; useful in November.

Soleil d'Octobre.—Good and useful yellow of easy culture; October.

Sorcerer.—Golden-bronze, of good quality; November.

Source d'Or.—Bright orange terra-cotta; one of the best; November.

Sunshine.—Rich golden-bronze; rigid stems; mid-season; very striking flower.

Terra Cotta Soleil d'Octobre.—Beautiful terra-cotta, sport from Soleil d'Octobre.

Thorp's December Pink.—A pretty soft rosy-pink.

T. Page.—A fine incurving silvery-pink flower of good form; free-flowering.

Tuxedo.—Terra-cotta bronze; rather tall; December and January.

Vindictive.—Bright crimson-red of medium size; dwarf and free; mid-season.

Viviand Morel.—Useful mauve-pink flower; November.

W. Duckham.—Beautiful November-flowering plant; colour, pale mauve.

Wells' Late Pink.—A lovely silvery-pink; form not unlike Viviand Morel; November.

White Caprice.—This is a pure white sport from Caprice du Printemps, or its crimson sport; a beautiful plant for October cutting.

Winter Cheer.—Deep rich carmine-pink sport from Framfield Pink; December; grand.

W. Turner.—A most useful pure white flower; when disbudded will carry twelve good-sized flowers.

Yellow Cap.—A yellow sport from Caprice du Printemps.

Yellow Money Maker.—Glorious yellow sport from Money Maker.

Yellow Mrs. Jos. Thompson.—Yellow sport from Mrs. J. Thompson; December.

Yellow-Rayonnante.—Golden-yellow sport from Rayonnante; tubular petals; late November and December.

Yellow Triomphant.—Yellow sport from La Triomphant; November.

GREENHOUSE VARIETIES—continued.

SMALL SINGLE-FLOWERED FOR POTS.

Caterham Bronze.—Charming bronze ; lovely by artificial light.
Ceddie White.—A small to medium-sized flower ; colour, chestnut on golden ground.
Florrie Stevens.—A terra-cotta flower with a golden centre.
Golden Spray.—Pretty bright gold seedling from Indicum.
Grace Darling.—A chaste little white flower.
Gratchen.—Pretty little pure white flower, with green eye.
Indicum.—A tiny yellow flower ; the parent of the big flowers of to-day.
Jack.—A stiff-growing, free-flowering plant ; colour, chestnut with gold tips.
Ladysmith.—Wonderfully profuse very bushy ; October ; pink with yellow disc.
Mary Anderson.—White, suffused rose ; beautiful form ; good habit ; dwarf ; October-November.
Miss Annie Holden.—Straw yellow sport from Mary Anderson.
Miss E. Partridge.—Useful December variety ; free-flowering ; colour, pink. Good in sprays.
Montague Stather.—A rose-pink coloured flower after the style of Ladysmith.
Peter Pan —A very charming sort, flowering at every joint ; colour, fawn ; beautiful in sprays.

LARGE-FLOWERED SINGLES FOR POTS.

Aristocrat.—Golden-yellow.
Arthur Harvey.—Rosy-pink, with white zone.
Bertha Fairs.—A superbly fine flower of large size ; colour, orange, flushed rose ; good habit.
Bronze Beauty.—Beautiful bronze ; useful for sprays ; dwarf.
Bronze Edith Pagram.—Sport from Edith Pagram ; colour, bright reddish-bronze, with yellow base.
Buttercup.—This is a large single of a rich yellow colour.
Caledonia.—Very large, rosy-lilac, with white zone.
Cardinal.—Rich dark crimson ; good in sprays ; mid-November.
Ceddie Mason.—A medium-sized flower of lovely form ; very free-flowering ; colour, bright crimson ; an ideal plant.
Charles Kingsley.—A single of beautiful form and fine quality : colour, buttercup-yellow.
Commodore.—Deep crimson ; dwarf ; December.
Donald.—Salmon-pink ; very pretty.
Dorothy Dann.—A free-flowering single that should be grown in spray form ; colour, soft bronze ; October.
Edith Dimond.—Golden-bronze ; November.
Edith Pagram.—Rose-pink ; very free ; splendid form.
Eileen Thomson.—Very large flowers of a bright wine-red colour ; stiff, erect stems.

GREENHOUSE VARIETIES—continued.

Exmouth Yellow.—Rich yellow ; mid-season.

Florrie King.—A free-flowering, medium-sized single, having many rows of ray florets, but valued for its lovely clear pink colour.

Framfield Beauty.—Deep rich velvety crimson ; handsome late variety.

Gem.—Large, pure white ; disbud ; November.

Glorious.—Deep yellow sport from Mrs. Loo Thomson.

Golden Mensa.—This is a beautiful golden-yellow sport from the well-known variety Mensa, of ideal form and size.

Hampton Bronze.—Another fine single of good size, and of a bright chestnut colour.

Hector Menzies.—Rich glowing yellow ; good habit.

Isobel Felton.—One of the largest and best light golden-yellow singles of good quality ; disbud.

Jessica.—One of the very best of the large singles, of beautiful form ; colour, rich reddish-bronze ; small eye; good grower'; likes a hot season.

J. H. Blyth.—Bright chestnut ; good quality ; November.

Joan Edwards.—Beautiful flower of medium size ; must be partially disbudded ; good spray variety ; colour, pink.

Juno.—A very large single, of splendid quality ; colour, deep rose, with silver tips, and a narrow white zone round a yellow disc ; good habit.

Lady Astor, M.P.—Bright crimson, of natural type, one of the best singles.

Lady Mowbray.—Buttercup-yellow ; good disbudded.

Lily Nevill.—Charming medium-sized single of decorative worth, and with slightly incurved florets ; colour, blush-white.

Marion.—Another large effective flower ; colour, rich silvery pink, with green disc ; early December.

Mary Richardson.—A distinct and charming flower of a reddish-salmon colour ; disbud.

Max.—Large single of a very bright bronzy-crimson colour, tipped gold ; good disbudded and in sprays ; vigorous and free-flowering.

Mensa.—Regarded as an ideal single in form and finish ; of large to medium size ; pure white.

Merstham Jewel.—Large reddish terra-cotta flowers, with gold tips ; a fine variety.

Merstham White.—Another large pure white flower, on erect stems ; disbud.

Miranda.—Beautiful terra-cotta ; good disbudded ; mid-season.

Molly Godfrey.—A very large flower of splendid quality ; colour, deep pink, with white zone round disc.

Monica Mitchell.—Useful flower of a rosy-crimson colour, shaded carmine ; very distinct.

Mrs. Edwards.—Bronze yellow ; good substance with several rows of petals.

Mrs. Loo Thomson.—A beautiful primrose sport from Mensa.

Mrs. Moss.—Large flower of good quality ; colour, golden yellow ; the florets droop at the tips.

DECORATIVE CHRYSANTHEMUM, "BERTHA LACHAUX."

A December-flowering variety. Flowers, bright mauve-pink.

MINIATURE POMPON CHRYSANTHEMUM, "THE BABY."

Showing the general characteristics of the flowers of this type. The blooms average half an inch to one inch in diameter. Flowering season, October and November. Colour, pure yellow.

GREENHOUSE VARIETIES—continued.

Mrs. Tresham Gilbey.—A useful yellow sport from Edith Pagram.
Mrs. W. Buckingham.—An exceptionally free-flowering spray variety; good habit; colour, clear pink.
Mrs. W. Garner.—An improved form of bronze.
Mrs. W. G. Patching.—Very free-flowering variety; colour, bronzy-chestnut, yellow disc.
Mrs. W. F. Smith.—A very large single of promise; white.
Mrs. Walter Hemus.—Deeply velvety crimson; several rows of florets.
Orange Perfection.—Large flowers, suitable for exhibition or for cut flowers; colour, rich buttercup-yellow, shaded orange.
Orlando.—Useful alike for disbudding or for sprays; of Mensa form, and of a striking bright yellow colour; very free.
Phyllis Bryant.—Sulphur-yellow; disbud.
Picotee.—Very distinct and pretty flower, of good size; colour, edged and suffused rose on white ground.
Portia.—Another ideal large single, winner of many honours; colour, bright, rich red shade; disbud; the florets twist slightly.
R. B. Burge.—A free-flowering variety, with fairly broad florets; pure white.
Red Star.—Very free-flowering single of medium size; beautiful in sprays; not overcrowded; colour, reddish-crimson.
Royalty.—A medium-sized flower of good form and free-flowering; colour, bright crimson: December.
Sandowne Radiance.—A superbly fine large single; colour, rich chestnut-crimson; one of the very best.
Snowflake.—Large pure white single, of good quality; must be disbudded.
Snowspray.—Pure white; beautiful in December.
Sussex Yellow.—Another very large single, of good form; colour, deep yellow.
Sweet Auburn.—Pleasing terra-cotta; very bright; dwarf; November.
Sylvia Slade.—Like an immense cineraria bloom; colour, lake, with white zone round disc.
Thos. Ward, Junr.—Very fine rich chestnut-crimson; stiff habit.
Tom Wren.—Large white of good form; dwarf; stiff habit.
White Edith Pagram.—A white sport from the popular Edith Pagram.
Yellow Merstham Jewel.—A most reliable large single, and a golden-yellow sport from Merstham Jewel.

POMPON ANEMONES FOR POT CULTURE.

Antonius.—Very rich golden-yellow variety; flowers of good form November; good habit.
Calliope.—Ruby red, small flowers of good form; tall.
Emily Rowbottom.—Chaste cream white; sport from Marie Stuart; free-flowering; November; invaluable.

GREENHOUSE VARIETIES—continued.

Gem of Earlswood.—Beautiful when grown in partially disbudded sprays ; colour, rosy-blush guard florets, clear citron disc ; November.
Mr. Astie.—Golden-yellow ; rather large ; dwarf.
Marie Stuart.—Pretty flower ; pale lilac guard florets, sulphur-yellow disc ; November ; good habit.

The Pompon Anemones are better when partially disbudded.

LARGE ANEMONES FOR POTS.

Caledonia.—White guard florets ; silver mauve disc.
Clara Owen.—Pale straw yellow-coloured flower of good form.
Descartes.—An invaluable variety ; colour, bright crimson-red, tipped gold ; early November ; rather tall.
Elspeth.—One of the freest and best, especially beautiful in sprays ; colour, lilac-pink ; flowers of medium size and highly decorative.
Godfrey's Perfection.—Pure white ; beautiful in sprays ; useful for cut flowers ; December.
John Bunyan.—A very fine rich yellow variety, deeper centre ; of good form ; November ; good habit.
J. Thorpe, Jnr.—Rich bright yellow of good form ; medium size ; mid-season.
Lady Temple.—Soft reddish terra-cotta coloured flower.
Madame Lawton.—Rosy white guard florets, yellow centre ; large ; mid-season ; medium height.
Mdlle. Nathalie Brun.—Silvery-white gold-tipped centre ; medium height ; mid-season.
Sir Walter Raleigh.—A very beautiful type of bloom, with pale blush guard florets, deeper coloured centre ; large and of good form ; November ; a vigorous plant.
W. W. Astor.—Large and good flower ; blush guard florets, disc yellow, shaded rose ; November ; height, about 4 feet.

ANEMONE-CENTRED SINGLES.

Aphrodite.—Beautiful mauve-pink self, with two-inch disc ; free-flowering : mid-season.
Ceres.—Lovely canary-yellow, deeper centre, disc 1½ inches in diameter ; mid-season.
Kathleen May.—Highly decorative flower, having long, glowing crimson florets and small disc, crimson, tipped gold ; December.
Miss Archer.—Rosy-pink.
Muriel Patching.—A pretty blush-pink flower of large size ; distinctly attractive.
Snow Queen.—Chaste and beautiful pure white flower about 4 inches in diameter, and always valued in decorations ; mid-season.

GREENHOUSE VARIETIES—continued.

MINIATURE POMPONS FOR POT CULTURE.

Golden West.—A charming little flower, with shapely button-like pompons of a golden-yellow colour.

Katie Manning.—A charming little flower ; colour, rosy-bronze ; ideal.

Model of Perfection.—Rosy lilac blossoms of neat, globular form ; November ; dwarf habit ; free flowering.

Primrose League.—Lovely primrose-coloured sport from Snowdrop ; in other respects similar to the parent variety ; late November and December.

Pygmalion.—Deep rose flowers of pretty form ; still worth growing and much valued by many.

Snowdrop.—Pure white flowers of dainty form ; free-flowering ; very small ; beautiful in sprays ; late ; height, 3 feet.

The Baby.—One of the most minute of all small-flowering pompons ; the blossoms, which are borne in pretty little sprays, varying in size from half-an-inch to three-quarters in diameter ; colour, yellow ; dwarf ; late November and early December.

Victorine.—A small dark-brown flower ; useful for decoration.

POMPON VARIETIES FOR POTS.

***Harry Hicks.**—Larger than most pompons, should be grown freely and partially disbudded ; colour, soft pink ; nice shape ; dwarf habit.

Mdlle. Elise Dordan.—Very neat, full globular form ; colour, soft lilac-pink ; late October ; free-flowering ; good habit.

Mrs. Bateman.—A useful orange-brown variety of easy culture ; must be partially disbudded.

Nellie Rainford.—Buff-yellow sport from Rosinante ; disbud.

Prince of Orange.—Light amber-orange ; good form.

Rose Trevenna.—Very free-flowering, excellent for pot culture ; colour, rose ; dwarf habit.

Rosinante.—Beautiful blush-rose ; dwarf and fine ; disbud.

Rubra Perfecta.—Dark crimson ; rather large and late ; disbud.

***William Sabey.**—This is a profuse-blooming, rich yellow flower ; sometimes good outdoors ; November.

William Westlake.—One of the best pure yellow pompons in cultivation ; should be disbudded ; November.

Yellow Gem.—Pretty little bushy plant, bearing fimbriated flowers of good form ; colour, dull yellow ; late October.

EARLY-FLOWERING POMPONS.

***Alice Butcher.**—Orange-red ; height, 2½ feet ; October ; sport from Lyon ; one of the best.

***Anastasia.**—Light purple ; height, 1 foot ; September and October ; dwarf and compact.

Blanche Colomb.—Creamy white ; height, 2 feet ; September ; very free ; fine habit.

GREENHOUSE VARIETIES—continued.

*__Blushing Bride.__—Lilac and white ; height, 2 feet ; September ; large flower of good form.

__Bronze Bride.__—Rosy-bronze and gold ; height, 2 feet ; September ; sport from Blushing Bride.

__California.__—Bright yellow; height, 2 feet ; October ; sport from Blanche Colomb.

__Canari.__—Pale yellow ; height, 1 foot ; September and October ; dwarf, bushy habit.

*__Crimson Precocite.__—Bright crimson ; height, 2 feet ; late October ; free and bushy.

__Dolly.__—A refined and beautiful little flower with fimbriated petals ; colour, pale yellow ; October ; height, 2 feet.

__Flora.__—Golden-yellow ; height, 2 feet ; August ; very bushy habit.

__Gladys Gray.__—Yellow sport from Madame Ed. Lefort.

*__Golden Beauty.__—Golden ; height, 2 feet ; September ; pretty plant ; flowers of perfect form.

__L'Ami Conderchet.__—Creamy white ; height, 1½ feet ; September ; dwarf and compact.

__La Luxembourg.__—Bronze, shaded yellow ; height, 2 feet ; September.

__La Petite Marie.__—White, free bloomer ; height, ½ foot ; August ; charming habit and pretty flowers.

*__Little Bob.__—Crimson-brown ; height, 1½ feet ; September ; persistent bloomer.

*__Lyon.__—Rosy purple ; height, 3 feet ; September ; one of the best.

*__Madame E. Lefort.__—Orange and red ; height, 2½ feet ; September and October ; profuse bloomer ; splendid habit

__Mignon.__—Deep golden-yellow ; height, 1¼ feet ; August ; fine for bedding.

__Miss Davis.__—Pink ; height, 3 feet ; late October ; splendid bushy habit ; sport from Mrs. Cullingford.

__Mrs. Cullingford.__—Blush white ; height, 3 feet ; October ; bushy habit.

*__Mrs. E. Stacey.__—Deep apricot ; height, 1½ feet ; September ; charming plant ; sport from Mr. Selly.

*__Mr Selly.__—Rosy pink ; height 1½ feet ; September ; profuse bloomer.

*__Orange Pet.__—Gold, shaded orange ; height, 2 feet ; September ; a glorious acquisition ; free-flowering

__President.__—Rose purple ; height, 3 feet ; November ; striking colour for late displays.

__Scarlet Gem.__—Synonymous with Little Bob.

__St. Crouts.__—Pink, small flowers ; height, 2 feet ; September ; free-flowering.

__White Pet.__—Pure white ; pretty little plant ; very dwarf ; September.

__White St. Crouts.__—White ; height, 2 feet ; September ; free-flowering.

__Yellow l'Ami Conderchet.__—Golden - yellow ; height, 1½ feet ; September ; sport from L'Ami Conderchet.

*__Yellow Lefort.__—Bright yellow sport from Madame Lefort.

* Varieties for small growers.

HARDY BORDER VARIETIES.

The following are first-rate Japanese sorts for growing in beds and borders for flowering during August, September and October :—

A. Barham.—A useful orange-bronze sport from Eden.

Abercorn Beauty.—A lovely deep bronzy-red ; sport from Polly ; September.

Alan.—A very pretty free-flowering flesh-pink flower ; September.

Alec. Coyle.—Deep amber, paling towards the point of petals ; free and dwarf ; early September.

Almirante.—A very free-flowering bright chestnut-crimson flower ; good disbudded or undisbudded ; October ; an ideal plant.

Anthea.—Large flower with flat florets ; colour mauve-pink ; should be disbudded.

Armorel.—A very large flower ; colour, coppery-bronze ; beautiful colour ; keeps well.

Autumn Beauty.—Free-flowering dwarf plant ; colour, bronzy-yellow.

Batchelor's White.—A grand pure white, specially adapted for disbudding ; large solid flower ; late October.

Belle Mauve.—A useful September-flowering plant ; colour, mauve ; dwarf.

Bertie.—Bright terra cotta sport from A. Barham.

Betty Spark.—An excellent rosy-pink variety, with good sprays on long stems ; October.

Bouquet Rose.—Charming free-flowering plant ; colour, rose, tinted gold in centre ; October ; height, 3 feet.

Bronze Goacher.—Valued because it is an orange-bronze sport from Goacher's Crimson ; good habit ; free.

Bronze Martinmas.—A bronzy-buff sport from Martinmas ; October ; height, 4 feet.

Bronze Normandie.—A charming bronzy-yellow sport from the well-known variety Normandie ; dwarf ; September-October.

Bronze Perle.—A lovely golden-bronze sport from Perle Rose ; October ; dwarf.

Bronze Queen.—Very bright orange bronze ; pretty in sprays ; October.

Caledonia.—A chaste ivory-white flower, very similar to Parisiana, but far superior ; habit of plant better ; September ; height, 2½ feet.

Canite.—A light golden-bronze flower, and the plant has a good compact habit.

Carrie.—A remarkably fine variety, flowering continuously from late August to October ; colour, rich bright yellow ; form exquisite ; beautiful habit ; of the easiest culture ; height, 2 feet.

Champagne.—A useful mid-October-flowering plant ; colour, bright ruby-red ; height, 2½ feet.

Champ d'Or.—Another very excellent yellow ; splendid habit ; sturdy grower ; in flower September-October ; especially good all-round plant ; height, 2 feet.

Charley.—A free-flowering sort, useful for market ; pure white.

HARDY BORDER VARIETIES—continued.

Chatillon.—A very distinct and beautiful plant; free-flowering; colour, orange and ochre-yellow; September; height, about 3 feet.

Chatillon.—Very profuse flowering plant; colour, salmon on pale yellow ground; bushy; late September.

Cherry.—A real gem for September flowering; colour, a lovely shade of cherry red.

Claret.—A most effective border sort, free-flowering, and of a striking claret colour; September; dwarf.

Climax.—Another September sort, with a good habit of growth; colour, soft, clear yellow.

Countess.—A grand flower when disbudded; of the purest white; September; dwarf.

Cranfordia.—A very dependable variety, especially when disbudded; colour, golden-yellow; good habit; late October.

Cranford Pink.—Should be disbudded to be seen at its best; colour, a lovely shade of pink; very free; good habit; October.

Cranford White.—An excellent plant for border culture; free-flowering, sturdy and bushy; useful when disbudded; colour, white, shaded blush; flowers in September and October; height, about 2 feet.

Cranford Yellow.—Excellent free-flowering bright yellow sort; grand in sprays or disbudded; October flowering.

Crimson Diana.—A deep crimson sport from Diana; identical with the parent plant in every respect but colour.

Crimson Grunerwald.—A crimson sport from Gustave Grunerwald; very dwarf.

Crimson Marie Masse.—A rich chestnut-bronze sport from Madame Marie Massé; extremely free-flowering and branching; comes into flower in late August, and continues to bloom till October is well advanced; height, 3 feet.

Crimson Polly.—A deep chestnut-crimson flower with golden reverse; sport from Polly; a splendid acquisition.

Dainty.—This is a pretty little dwarf plant, with a compact habit; the flowers are of a silvery-pink colour, and are to be seen at their best in October.

Diadem.—Free-flowering plant with a bushy habit; colour, beautiful rich wine red; September-October.

Diana.—A deep bronzy-orange, shaded gold, of compact form; free-flowering and consistent; September; height, 2½ feet.

Dick Barnes.—Another free-flowering plant and a splendid addition to the early-flowering section; colour, beautiful rosy-crimson; good in sprays or disbudded; September.

Dolly Reeves.—Another September variety, with a dwarf habit; colour, deep pink.

Dolores.—A pretty plant, developing shapely flowers of a bronzy-terra-cotta colour in August and September; good habit.

Dorothy Ashley.—Useful either disbudded or in sprays; strong constitution; pretty flowers of a pink colour, shaded bronzy-salmon; Oct.

HARDY BORDER VARIETIES—continued.

Dragon.—A bright bronze of good quality.

Dr. A. Neige.—A September-flowering plant, with a dwarf habit; colour, carmine.

Early Buttercup.—A golden yellow flower, at its best in September; dwarf.

Elenore.—Very free-flowering plant, and useful for October displays; colour, deep rose-pink, tinted salmon; erect habit; height, 3 feet.

Elizabeth Gilleland.—Pleasing shade of salmon-cerise; very fine; early September; 3 feet.

Elstob Yellow.—Deep yellow, very similar to Horace Martin, but better colour; height, 3 feet.

Ena Thorpe.—Light flesh colour, with wax-like incurving petals; early September; 3 feet.

Ernest Baltet.—Striking flower; colour, red and old rose.

Ethel.—This is a welcome primrose sport from Rabbie Burns; same habit, etc.

Ethel Blades.—One of the best border kinds; colour, brightest chestnut; flowers are of beautiful form, and freely developed; late September; height, 3 feet.

Fee Orientale.—Beautiful creamy-white flower, shaded rose; good when disbudded; late September; height, 3 feet.

Fee Parisienne.—A splendid addition to the series; large flowers, with drooping florets; colour, deep mauve, with silvery reverse; free flowering; August and September; height, 2½ feet.

Firefly.—Another good October variety, having crimson-scarlet blossoms, tinted gold; height, 3 feet; very effective.

Framfield Early White.—A most reliable, large, pure white flower; sturdy plant that must be disbudded to be seen at its best; September–October.

Fred.—Very early flowering plant, having milk-white flower; the plant should be partially disbudded.

George Bowness.—A pretty crushed strawberry sport from Crimson Marie Massé; in other respects similar to the parent plant.

Gertie.—A very dwarf plant with a poor habit of growth; charming blossoms of a salmon-pink colour, shaded gold; useful when naturally grown or disbudded; flowers from late August till early October; height, 18 inches.

Goacher's Crimson.—One of the very finest early sorts; large flowers of a rich crimson colour; of easy culture; good habit and capital constitution; in flower throughout September and October; height, 2½ feet.

Goacher's Terra Cotta.—A charming terra-cotta sport from Goacher's Pink.

Golden Caprice.—Valued because of the variety being a yellow form of the Caprice du Printemps family of Chrysanthemums; splendid when disbudded; October.

Golden Diana.—A beautiful golden yellow sport from Diana; very useful for cut flowers.

HARDY BORDER VARIETIES—continued.

Golden Glow.—Canary yellow; good disbudded; September; 3 feet.

Golden Polly.—This is a clear yellow sport from the well-known variety Polly; a solid incurving flower.

Golden Queen of the Earlies.—Sport from Queen of the Earlies; colour, yellow; October bloomer; should be disbudded; large flowers; height, 3½ feet.

Goldfinch.—Old gold medium-sized flowers, freely produced; early September; 2½ feet.

Harrie.—A very excellent bronzy orange, on gold ground; nice, full flowers; September; height, 2 feet.

Harriet Cole.—This is a pretty silvery-pink variety, and the plant has a branching habit; September.

Harry Gover.—Striking flowers of a rich orange colour, shaded salmon, with golden reverse; flowers in early October; height, about 4 to 5 feet.

Harry Thorpe.—One of the finest of the 1916 introductions; good either disbudded or in sprays; colour, bronzy-yellow; good habit; September-October.

Harvest Home.—Still one of the brightest crimson flowers, tipped golden-yellow, with golden reverse; free flowering; September; height, 3 feet.

Hector.—Large, full flowers of good form are developed, without disbudding, on plants of this variety; colour, mauve-pink; September; height, 3 feet.

Helena.—This is a good flower when disbudded; colour, chestnut, shaded gold, with gold tips; 3 feet.

Henri Yvon.—Sport from Mons. G. Grunerwald; colour, soft rosy-salmon on a yellow ground; blossoms from late August till early October; height, about 18 inches; large flowers of beautiful form.

Hestonia.—Clear bronze sport from Cranford Pink; disbud October.

Hilda Blick.—A plant with a good, sturdy habit of growth, and free-flowering; colour, bright rosy-red; October; height, 4 feet.

Holmes' White.—A pure white free-flowering variety; August; fine for cutting; height, 2 feet.

Horace Martin.—Beautiful bright yellow sport from Crimson Marie Massé; profuse bloomer; magnificent branching habit and constitution of the very best; in flower from early September till October; height, 2½ feet.

Howard H. Crane.—Exceedingly free-flowering variety; developing pretty starry flowers in handsome sprays; colour, bright chestnut, with golden reverse; beautiful in October; bushy habit; height, about 4 feet.

Improved Masse.—A splendid acquisition; large flowers of good form, on long footstalks; colour, lovely rosy-mauve; free-flowering; branching habit; late September and October bloomer; height, 2½ feet.

HARDY BORDER VARIETIES—continued.

J. Bannister.—Lovely sport from Perle Chatillonaise; colour, lemon-yellow; overlaid reddish-copper; beautiful in disbudded form; certificated by the N.C.S., and similar to the parent in every other respect.

James Bateman.—Very free and effective flower, and one of the best sorts in cultivation: heavily-shaded pink on white ground; a September bloomer; height, 2 feet.

Joyce.—A very free-flowering September and October kind; colour, pretty clear pink; dwarf.

Juliet.—A unique sport from Lentz; colour, rosy-red fading to cinnamon; very free; good habit; October.

Kathleen Thompson.—A beautiful chestnut-crimson sport from Caprice du Printemps; splendid disbudded; late October; height, 2½ feet.

Keith.—Free-flowering plant; good habit; colour, rose-pink on cream ground; September; height, 2 feet.

L'Argentuillais.—This is a lovely deep chestnut-coloured flower; late September; height, 2½ feet.

L'Yonne —Silvery-rose, tipped gold; early October; 3 feet.

La Garonne.—A distinct September variety; colour, deep salmon-red; dwarf.

La Somme.—Valuable for the garden or greenhouse, disbudded or undisbudded; colour, bright mauve-pink; August, September; dwarf.

Le Danube.—This is a September-flowering variety, with flowers of a deep plum colour; very dwarf.

Le Pactole.—This is a large-flowered sort, that should be disbudded; good habit; flowers are borne on long, stiff flower stalks; colour, yellow, shaded bronze; September-October; height, 4 feet.

Le Rhin.—A pretty flower; colour, red, centre tinted orange; September; large flower; disbud; dwarf.

Leslie.—A real rich buttercup-yellow variety, retains its colour well; free-flowering and bushy; certificated by the N.C.S.; September; height, 2 feet.

Le Tage.—Splendid large flowers when disbudded; colour, deep orange, flushed crimson; September; dwarf.

Lichfield Pink.—Good either disbudded or undisbudded; disbudded blooms are superb; colour, soft mauve-pink; good habit; free-flowering; September.

Lichfield Purple.—Bright rich purple; good for cutting; early September; 3 feet.

Lillie.—In this case the flowers are fairly large, and of good form; colour, clear pearl pink; good habit; September-October; height, 2 feet.

Madame A. Nonin.—Beautiful in sprays; does well in the open and the plants lift well; free-flowering; colour, lovely soft pink; September; good habit.

HARDY BORDER VARIETIES—continued.

Madame Casimir Perrier.—A most profuse bloomer in September; colour, creamy-white, freely tinted pink; bushy and branching habit; height, 2½ feet.

Madame C. Desgrange.—An old and well-known garden and market sort; flowers of poor quality; colour, white with yellowish centre; habit, bushy and sturdy; September; height, 3 feet.

Madame Drouard.—An October-flowering plant with a good habit; colour, deep brick red; dwarf.

Madame Emile David.—An attractive bright rosy-lilac flower; stiff habit; October.

Madame Marie Masse.—One of the best border varieties; bushy and branching habit; in flower late August till October; colour, lilac-mauve; height, about 2½ feet.

Madame Marques.—A September sort that should be disbudded; colour, rosy-white; late September.

Market White.—A chaste and beautiful pure white variety; free-flowering and robust; late September and October; height, 2 feet.

Martinmas.—At one time this was classified as a pompon, but has since been removed from that section; colour, pink, with silvery white reverse; October; height, 4 ft.

Martin Reed.—Golden-yellow, sport from Perle Chatillonaise; September; 4 feet.

Mary Mason.—Bright rose, large full flowers; free flowering; good habit; September.

Mignon (NONIN)—A lovely border plant; colour, delicate rosy-mauve; September; height, 2 feet.

Minnie Carpenter.—Pretty terra-cotta flower, at its best in September; good habit; dwarf.

Miss Balfour Melville.—Large flowers, of a rich, deep yellow colour; September; height, 2½ feet.

Miss Burchhell.—A dwarf September variety; colour, pink with gold centre.

Miss F. Collier.—White flower of good form; disbud; October; 3 feet.

Mons. Gustave Grunerwald.—Charming little plant, having large flowers; colour, white, shaded pink; persistent bloomer from August onwards; height, about 2 feet.

Mrs. A. Thomson.—Deepest golden-yellow, small flowers, bushy habit; September; height, 2½ feet.

Mrs. A. Willis.—Sport from Mdme. Casimir Perrier; colour, yellow; shaded and striped red; September bloomer; height, 2½ feet; very profuse.

Mrs. Bailey.—Useful creamy-white sport from Mdme. Marie Massé; very similar to Wells' Massé.

Mrs. Hawkins.—Deep rich yellow: sport of the Mdme. C. Desgrange family; sturdy grower; September bloomer; height, about 3 feet.

Mrs. J. Fielding.—Sport from Goacher's crimson; colour, bronze.

Mrs. K. G. Thorpe.—Dainty pure white, of good quality; thought to be an improvement on Roi des Blancs; early September; 3 feet.

HARDY BORDER VARIETIES—continued.

Mrs. Marshall Field.—Hydrangea-pink; free flowering; good habit; early October; 2½ feet.

Mrs. R. Hamilton.—Rich yellow, incurving petals; disbud; early October; 2½ feet.

Mrs. Roots.—An incurving pure white; good in pots; October; dwarf.

Mrs. Tom White.—Very free-flowering bright crimson variety, October.

Mrs. W. A. Hobbs.—A really excellent variety, free-flowering and bushy; colour, rose, shaded carmine, tipped gold; late September and October; height, 2½ feet.

Mrs. Ward.—Creamy-white; October; 2½ feet.

Mrs. W. Sydenham.—One of the deepest crimson flowers, of striking appearance; September; height, 2 feet.

Mychett White.—The most chaste of all white kinds; blooms of beautiful form; free-flowering; not over robust; September; height, 2 feet.

Nellie Brown.—This is a reddish orange, sport from Ryecroft Glory; good, bushy habit; sturdy grower; October; height, about 3 feet.

Nellie Helmsley.—Very fine, clear, soft pink variety; September; height, 2½ feet.

Nellie Thorpe.—Charming biscuit-coloured flower of promise; September-October; good both in sprays and disbudded.

Nina Blick.—A very fine border variety, with a bushy and sturdy habit of growth; a persistent bloomer from late August onwards; colour, bright reddish-bronze; distinct and choice; height, 3 feet.

Nina Williams.—Bright crimson and gold; October; 2½ feet.

Norbet Puvrez.—One of the very best of the earlies for the border; ideal branching and dwarf habit; colour, rich golden bronze, tinted salmon; profuse bloomer; in flower August and September; height, 18 inches.

Normandie.—Very charming flower, of good form; free-flowering and robust; colour, delicate pink; certificated by the N.C.S.; September; height, 2½ feet.

Oakey.—A variety of medium size; colour, bronze, shaded terra-cotta.

October Gold.—Flower of good form, borne on long stem; colour, old gold; vigorous grower; certificated by the N.C.S.; October; height, 3 feet.

O. J. Quintus.—An old and popular rosy-pink sort; profuse bloomer; good habit; October; height, 3 feet.

Olive.—Valued for its chestnut-red flowers, with golden reverse; a useful September-October variety.

Patricia.—A shapely flower of a mauve-pink colour; good habit; September.

Perle Chatillonaise.—A creamy-white sort, tinted blush; September to October; height, 4 feet.

HARDY BORDER VARIETIES—continued.

Perle Rose.—Beautiful variety; colour, rosy-mauve, shaded white; should be partially disbudded; September-October; good habit; height, 3 feet.

Pink Delight.—Delicate tone of pink; fine for disbudding; September; 2½ feet.

Pink Princess.—One of the earliest pink varieties; large flowers; disbud; August onwards.

Polly.—One of the best for the garden or for pot culture; large flowers, freely produced, on plants possessing a bushy and sturdy habit of growth; colour, deep orange-yellow, shaded bronze; September and October; height, 2½ feet.

Pride of Hayes.—A free-flowering plant with a bushy habit; colour, soft rose; large flower of good form; October; height, 3 feet.

Pride of Keston.—Very fine variety of good habit, free flowering; colour, deep rose with silvery reverse; October bloomer; height, 3½ feet.

Provence.—Another very pretty variety; colour, bright pink, tipped gold; capital habit; certificated by the N.C.S.; September; height, 2½ feet.

Queen of the Earlies.—A very fine large-flowered pure white; in good form in late September and October; should be disbudded; height, 3 feet.

Rabbie Burns.—Charming rosy cerise; sport from Mdme. Marie Massé; branching habit, free-flowering; September and early October; height, 2½ feet.

Ralph Curtis.—A creamy-white sport from Mdme. Marie Massé; similar in other respects to the parent variety.

Red Almirante.—Bright sport from Almirante; September; 2 feet.

Red Emperor.—Deep red profuse bloomer; October; 3 feet.

Rocket.—A free-flowering September and October variety; colour, pretty reddish-bronze; bushy habit; height, 3½ feet.

Roi des Blancs.—A profuse-flowering pure white variety; splendid bushy habit; suitable for all purposes; September; height, 2½ feet.

Roi des Precoces.—A well-known mid-October variety; free-flowering and robust; good habit; colour, bright crimson; October; height, 2½ feet.

Rosie.—One of the very best, large flowers of a bronzy terra-cotta colour; splendid branching habit, and sturdy grower; September and October; height, 2 feet.

R. Pemberton.—A distinct tone of Amaranth; partially disbud; early October: 2½ feet.

Ryecroft Glory.—One of the best-known semi-early sorts; useful alike for the border or pot culture; sturdy grower, branching habit; late October bloomer; colour, orange-yellow, flushed red; height, 3 feet.

Sanctity.—One of the very fine early white kinds in cultivation; good disbudded and in sprays; pure white; end of August onwards; 18 inches.

HARDY BORDER VARIETIES—continued.

Southover Yellow.—Light yellow sport from Framfield Early White.
Tonkin.—Large flowers of a lovely reddish-orange colour; disbud early; September; height, 2 feet.
Verona.—Beautiful variety for sprays; colour, fiery terra-cotta; dwarf.
Wells' Masse.—Beautiful white, shaded blush; sport from Mdme. Marie Massé.
White Masse.—A creamy-white sport from Mdme. Marie Massé; habit, etc., same as the parent variety,
White Quintus.—A white of the purest kind; sport from O. J Quintus; very useful for cutting and for pot culture; October; height, 2½ feet.

SINGLE-FLOWERED BORDER VARIETIES.

A. J. Foster.—Pretty chestnut crimson; September; dwarf.
Alice.—Rosy-red; free, good habit; October.
Amber Beauty.—A dwarf plant; colour, deep amber with bronze markings.
Annie McCracken.—Light terra-cotta; free and good habit; September.
Annie Piper.—Pretty flower, with quilled florets of medium size; colour, lemon-yellow; dwarf.
Annie.—Free-flowering bushy; September variety; colour, amber; dwarf.
A. W. Seabrook.—Striking mahogany-coloured flower, with sulphur disc; September; dwarf.
Canada.—Beautiful plant, bearing flowers of good form; colour, bronzy-salmon; the plant bushy; height, 2 feet.
Charming.—A rose-pink flower; beautiful in sprays; height, 3 feet.
Chastity.—Pure white; early October.
Clarice.—A handsome plant, having flowers of a ruby-crimson colour, with greenish yellow centre; plants are a mass of blooms, that retain their culture well; height, 2½ feet.
Colin Cooper.—Deep golden yellow; very dwarf; September.
Darkie.—Notable for its deep mahogany-coloured flowers; very dwarf.
Dean.—A red and yellow variety, with broad florets.
Dean Swift.—Bushy plant, with bronzy-yellow flowers; dwarf.
Dolly.—Pretty deep yellow-coloured flower; dwarf.
Dorando.—Useful lemon-yellow flower, with salmon points; dwarf.
Dorothy Langdon.—Bright rosy amaranth; very free; dwarf; September.
Dr. Ingram.—An ideal border single; free-flowering plant, evolving cluster sprays of pleasing character; colour, terra-cotta; height, 2 feet.
Ena.—A charming flower; colour, deep blush; dwarf.

HARDY BORDER VARIETIES—continued.

Endsleigh.—A dwarf plant; flowers are of a light pink colour, with white centre.
Eric.—Another beautiful, free-flowering border plant; charming sprays; colour, bronze on yellow ground; height, 2½ feet.
Esther.—A very pretty pink variety; dwarf habit.
Eva Grantham.—A pure white flower, with three rows of florets; very dwarf.
Evelyn Neale.—Beautiful flower of a terra-cotta colour; height, 3 feet.
Firebrand.—A plant with long sprays of fiery crimson blossoms; height, 3 feet.
Florence Gillham.—This is a pure white variety; plant has a capital bushy habit, is free-flowering and robust; height, 3 feet.
Fortune's Favourite.—Large flowers of a reddish-orange colour.
Golden Firebrand.—A golden yellow sport from Firebrand.
Good Hope.—A pretty rose-pink, with white zone.
Grace.—Pure white; dwarf; September.
Haig.—Large rich crimson flowers; dwarf; September.
Hypatia.—Large flowers of a salmon-pink colour; very dwarf.
Jessie Wallace.—Another handsome variety; plant has a sturdy, bushy habit of growth, and the sprays and blossoms are of pleasing form; colour, old rose and salmon; height, 2½ feet.
John Woolman.—Beautiful pink, white zone round disc; September.
J. H Runchman.—A perfect flower; colour, terra-cotta; dwarf.
Kate Westlake.—A beautiful crimson variety; dwarf.
Kingcup.—Bright yellow; dwarf.
Kitty Riches.—Lovely pink flowers on long sprays; height, 3 feet.
Lawrence.—Bright chestnut; good habit; September.
Lily Ovenden.—Large, pure white, of good form; dwarf.
Majestic.—Very bright fiery-red flowers; height, 3 feet.
McGregor.—Large yellow, flushed red; fine habit; September.
Merstham Glory.—Another grand bedder; large reddish-crimson blossoms are borne in profusion, on a splendid branching habit of growth; height, 2½ feet.
Midnight Sun.—Terra-cotta, shaded yellow; striking colour; September.
Mrs. Aleck Thomson.—A striking bronzy-orange flower.
Mrs. C. Curtis.—This large crimson sort led the van of the early singles; still grand in the border; October.
Mrs. Comfort.—Semi-double canary-yellow; dwarf; September.
Mrs. Earle.—Pure white; beautiful in sprays.
Mrs. G. Smith.—Bright red; good habit; September.
Mrs. John Newton.—Bright terra-cotta; large flowers; good habit; October.
Nellie Riding.—An ideal free-flowering October sort; colour, reddish-salmon; height, 3 feet.

HARDY BORDER VARIETIES—continued.

Phillis Cowley.—Chaste white sort; very dwarf.

Richard.—Lovely rosy-claret flower, very distinct; very dwarf.

Rosy Morn.—Rosy-red blossoms of fine form; early October.

Shrapnel.—The finest early single; rich tone of orange terra-cotta; comes into flower at end of August, and continues flowering for a long time; 3 feet.

Sir Julian.—Crimson terra-cotta; fine habit and free; October.

Snowstorm.—Purest white, with green disc; stiff habit; height, 2½ feet.

Surrey.—Another very distinct and beautiful flower; colour, salmon-cerise, glorious under artificial light; pretty plants; height, 2 feet.

Susie.—The flowers are of a lovely shade of salmon terra-cotta; September; height, 2½ feet.

W. A. Cull.—A free and bush plant; colour, reddish-salmon; dwarf.

Winnie.—This deep sulphur-yellow flower is splendid in sprays; height, 2½ feet.

W. Newton—An excellent plant, yielding medium flowers of an orange colour; dwarf.

Yellow Firebrand.—Yellow sport from Firebrand.

Yvette Richardson.—Reddish rose, distinct and pretty; dwarf; early October.

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