



Hunt Institute for Botanical Documentation
5th Floor, Hunt Library
Carnegie Mellon University
4909 Frew Street
Pittsburgh, PA 15213-3890
Telephone: 412-268-2434
Email: huntinst@andrew.cmu.edu
Web site: www.huntbotanical.org

The Hunt Institute is committed to making its collections accessible for research. We are pleased to offer this digitized item.

Usage guidelines

We have provided this low-resolution, digitized version for research purposes. To inquire about publishing any images from this item, please contact the Institute.

About the Institute

The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

Chapter XVII - Observations on varieties of azaleas. Dimorphism, Doubling and list of best varieties (pp. 74-

We have spoken of sowing azalea seeds and one has seen that that is the means employed for obtaining new varieties. There is another which is due to chance (sporting) which is frequent with our plant. One may safely say that there are few plants that offer an example of such great ease in producing variations known to botanists under the name of Dimorphism and to horticulturists as sports.

This is the term for the change in coloration, where all flowers on a certain branch produced spontaneously show a totally different aspect from that previously known, often so different from that known to those familiar with the variety, so different that one must hunt for traces of the variety that give it origin. It is well known that certain varieties that arise in this fashion from weak growing varieties, give vigorous growth and that others arising from vigorous growing varieties are relatively delicate. One scarcely explains these facts, he merely is content to state them.

Commerce cannot but be satisfied with the extreme facility such as that of azaleas in giving rise to such variations, because it finds them admirable having given pleasure for generations. Among the most remarkable varieties, now really old, one may cite: Souvenir du Prince Albert and its white variety, Sigismund Rucker, Jean Vervaens, Dame Helene, Arlequin, Comte de Kerkeve, etc., and more recently the admirable Vervaensare and its variety Marthe Matilde, whose commercial success is really one of true enthusiasm. These beautiful varieties are sometimes sent out with forced colors without charm and that had almost no success while their variations seem to unite in themselves all desirable beauties.

It is evident that this is entirely a question of chance and that there are azaleas that have never sported. Among this number, certain doubles seem remarkably well fixed. Thus, Raphael, Bernhard Andreas, Alba, Deutsche Perle and many others seem never to have varied to the present. It is true that these are already beautiful enough, but the horticulturist is always happy to find a novelty.

It should not be imagined by the reader that these variations of which we have spoken are produced by chance. It seems, at present, that one may state that in all plant subject to variation one may find a parental trace of the old variety "vittata". In every case it is the varieties with corollas of brick red or bright rose that give varieties bordered with white, fringed or margined, while those in which the color approaches cerise red never show a trace of variation. It is enough now to cite some striking examples that better than our explanations will impress the reader with the bizarre tendency of the azalea to produce several kinds of flowers on the same stem, a tendency that it shares with the camellia,

as generous in its way; we will cite a few examples. The variety, Souvenir du Prince Albert, type, is a dull wine red often misformed and not vigorous; the striped variety has a light rose ground color, flamed with purple, bordered with pure white and is extremely vigorous. It has been determined thus that a white-flowered variety, that is delicate and of no great interest, the azalea Dame Melanie (syn. Miss Turner) came from a determined (known) branch of Roi Leopold, a variety of rather fine bright salmon color but while not very brilliant. There also came from the plant the sport with salmon-colored flowers bordered with white and set off by a rather bluish dotting. The azalea Vervaeckena, already mentioned, came from a plant in which the color is lusterless and without interest, while it is rich in tone, light salmon flushed with red and margined with white. It is admirable! Enough of examples, that were given only with the intent to be sure what was meant by "sport" that may be fixed perfectly by graftage having taken pains to mark carefully the branch that gave the flower and to watch the later flowerings in order to eliminate everything that may show any tendency to return to type. We close with one other curious example; the azalea Baronne de Vriere gives striped and flaked flowers, is very late; its variety, called Professeur Wolters has salmon colored flowers, is early and very vigorous; it is a curious fact that never has been explained up to now, we believe, and yet it is rather frequent. One more point comes to our attention, namely, the change of color that appears in certain varieties. Thus, we have just had a plant of Van der Cruyssen that produced spontaneously a branch with three blooms of light orange red, dotted with purple, while the color of the ordinary variety is rose colored. This is the first sport we have seen in this variety, of which we have flowered more than 20,000 specimens of equal strength. These things are mentioned once more to assure you the extreme ease with which azaleas give varieties through sports.

A very charming form of the azalea, is the double flowered. How does this improvement take place? It is certain that it is the result of sowing seed done by able horticulturists, who from the very first have remarked the tending of certain varieties to modify their flowers. On the other hand it is a fact that seems established, namely, that an azalea that shows a great tendency to change its flowers from single to semi-double (goes on) to completely double flowers. We have been able to observe this often enough in certain varieties studied and followed later in their propagation, as well as those of which we are speaking.

But it is certain that the most beautiful varieties giving double flowers have been gotten from seed and fixed by grafting. If we examine the qualities of double azaleas we will notice as follows; it is enough to observe certain varieties obtained by the fortunate Belgian or German growers to be convinced of the beauty of their flowers, that have thick substance, perfect form, and beautiful color of petals that arranged in rosette form like one flower within another, are certainly most splendid.

The horticultural world and amateurs have been enchanted to discover in the double-flowered azaleas an enormous source for enlarging their collections; but above all it is the retail merchant who seeks them out since it has been shown that the double azalea has great endurance and a great solidity for such uses as he might make of it, as much in the makeup of bouquets and baskets as for the sale of plants for apartments.

This vogue for double azaleas has had such a development recently that it disturbs the cultivators, who see the refusal of the very fine known varieties for no other reason than that their flowers are single.

If we look at this purely from the artistic point of view we have no hesitation to give preference to single flowers. There is a beauty in their waved and fringed corollas (text say Calyces) or the large opulent forms of such as the "Imperiales" which nature in their exuberance (makes) so interesting and so rich. A head of single azaleas at an exposition will always make more showing than a variety with double flowers. It will suffice to cite an example. Let us compare a very old plant--Duchesse Adelaide de Nassau for example whose coppery flowers are flushed with an imperial purple to a Bernhard Andrea rose with completely double flowers. It is certain that the former will carry off the (more) decorative effect.

It is no matter, for it is evident that amateurs will make room in their collections for single and double varieties, and as for merchants--they will always be forced to grow what is demanded and they will sacrifice their personal tastes and bow to the wishes of those who buy who are governed chiefly by that capricious Goddess: Fashion!

-4-

List of Azalea indica recommended for their beauty

Pauline Hardner, very early	Madame van der Cruyssen, semi-early
Sigismond Ruckor, very early	Apollon, semi-early
Deutsche Perle, very early	Empereur du Bresil, semi-early
Mademoiselle Bertha Froebel, early	Comte de Chambord, semi-early
Punctulata, early	Madame de Greve, semi-early
Madame Camille van Langenhove, early	Antigone, semi-early
Versicolor, early	Sakuntala, semi-early
Comte de Kerckhove, early	Memoire de Louis Van Boute, semi-early
Eborina plena, early	Simon Hardner, semi-early
Mistress Turner, early	Baron Nathaniel de Rothschild, late
Vervaeana, early	Bernhard Andrea, late
Perle de Gandbrugge, early	Roi de Hollande, late
Professeur Wolters, early	Imperatrice des Indes, late
Raphael, early	Louisa Pynaert, late
Mons. Paul de Schryver, early	Souv. du Prince Albert, very late
Comte de Paris, semi-early	Bernhard Andrea alba, very late

The varieties noted as early may be forced in Nov.-Dec.

The varieties noted as early or semi-early may be forced in Jan.-Feb.

The varieties noted as late may be forced in March-Apr.

This list will seem rather short, it is true; but the purpose of the author was to point out to amateurs who might wish to assemble a small collection the names of varieties that seemed to unite the desirable qualities in view, to decorate greenhouses or apartments, and to lend themselves to a remunerative culture. For longer lists, one need only consult the catalogues of growers.

Chapter XV - pp. 63-

When it is necessary to force azaleas for sale or for the decoration of a private house, it is an operation that demands certain attentions and precautions. Many cultivators do not take sufficient pains with a number of things futile in appearance, and it is that that bores them and makes their work fail. We therefore insist to the reader that all we relate here is the result of long practice, continued observations, and sufficient knowledge--we would not say complete for that can never be--to succeed with the varieties suitable to the type of work described in this chapter.

One of the first qualities of an azalea that is to be used in forcing is that it be an early variety, lending itself readily to the operation. The other required qualities of most importance are that its roots be in perfect condition and that the buds be perfectly formed. Setting aside the question of variety, let us see the principle attentions to be given azaleas intended for forcing.

In the autumn, i.e. in October, when one prepares to return the azaleas to the greenhouse, one should arrange the plants in two categories; those intended to flower at a normal time, i.e. in February, March, April, in order that they be placed in a cold house where the temperatures may fall to 4-5 degrees above zero. The other house for early plants will be a little more temperate, so that one can maintain the heat more easily or give a little less air. This is a necessary preparation, in our opinion,

when the plants are carried into this house one examines them and if there is the least trace of insects, one must dip them (see chapter on Insects) (a nicotine solution BYM); one must take out all the wood without sap or vigor that fills up the interior of the crowns. If these should be too compact, too tight, one may tie the branches apart with raffia in such a way that air reaches all parts of the head and at the same time gives an advantage in size. Then one must get out most carefully all the worms from the interior of the pots.

During the first days of November, the 5th or 6th, one must begin preparation of the forcing house where, if one does not make a specialty of this, or if one is an amateur, one may then place in a warm house in pots turned upside down or on supports the azaleas arranged in such a fashion that they will find their optimum conditions as we will indicate a little further on. Above all else one must choose very early varieties. Those commonly employed in order of their earliness are:

- | | |
|-----------------------------|---------------------|
| 1. Deutsche Perle | 4. Sigismund Rucker |
| 2. Pauline Gardner | 5. Versicolor |
| 3. Punctulata its varieties | 6. Vervaeana |

It is evident that with these six varieties one will arrive perfectly in having flowers from about the 15-20th of December (if started in forcing Nov. 5-6. But it is important to point out other less early varieties, which brought into the house then will give flowers from Christmas to New Years.

They follow in approximate order of earliness:

- | | |
|----------------------------|---------------------|
| 1. Simond Hardner | 4. Paul de Schryver |
| 2. Eborina plena | 5. Prof. Walters |
| 3. Madame Van der Cruyssen | 6. Sakuntala |

It would be well for the reader to get the idea that these lists are variable and that they can always be modified; since every year there are new varieties recommendable for their coloration, their form and properly their forcing qualities. But these dozen varieties at least constitute the basis of all (now) forced and at present are considered the best.

For commercial forcing, it will certainly be necessary to have a greenhouse facing south; it is the best exposure, one that receives the sunlight and that permits a perfect arrangement of the plants so that their heads are in full light. This does not mean that no other sort of house can be employed, but is evident that a house of that exposure is infinitely preferable. The temperature can be calculated in advance and readily raised by calculating the number and size of the heating pipes in order to get the heat needed without overheating the water.

(Cats 17 and 18 show design for houses with single bench and with 2 benches, pipe arrangement, etc.)

In an ordinary forcing house, one should maintain a temperature about 25-30 degrees by day, as one needs more or less heat (but) this temperature will vary a little. It is kept at only 13-15 degrees at night; it is very important to let the temperature drop so that the plants get a needed period of rest. This arrayed, the plants are arranged without being too much in series (in line) and well lit, one begins to give heat. They should be watered daily, morning and night with water at greenhouse temperature, but never on the leaves when the sun shines. In that case one should water the floors, under the benches and along the walls. It is very important to observe the condition of the balls that never must be allowed to dry or to become too wet. If one sees traces of worms they must be taken out with care.

Certain varieties make shoots immediately under the influence of heat and moisture. It is necessary to remove these shoots radically but without harming or damaging the plants; this is accomplished by pulling them lightly, so that they are detached easily at the base. If one neglects this operation, one risks seeing the buds aborted and the loss of all the fruit of ones work. It is sometimes necessary to come to the aid of the buds that are enveloped in a thin tunic, which will rot them. One

must cut this envelope carefully. In about 15-20 days, more or less, under the influence of heat and moisture, the buds swell and show the color of the flowers. At this time one should stop wetting down the (plant) tops or at least to moderate it especially if shaded and yet they must not be allowed to dry out. Certain varieties are more or less sensitive to humidity, and one can generally decide to stop wetting the plants down as soon as the buds are well developed. This is the time when the plants need the most sunlight and the plants should be covered as little as possible, even at night. For this we are biased in favor of glass houses with large clear glass, so that we may dispense with any other cover.

As soon as there is a series of plants sufficiently advanced, that is with flowers opening, they are placed in another glass house, also very open and bright, but cooler; this one may call the "cooler". This is an excellent operation. It strengthens the flowers, improves their color and prepares them for their stay in shop or apartment.

Everything that has been said for the forcing establishment can be said about more hot houses where the plants are put on simple supports but it is evident that it will be difficult to give them the good care indicated, as if they were under normal conditions. We should prefer to see the small grower or amateur arrange a small space in a cool house where he can put his plants and attend to their forcing. The first season he will need 40-45 days to force the very early varieties; but the amount of time lessens as the season advances. Thus one could force the very early sorts of our first list 28-30 days after November 20--later, the same varieties would need no more than three weeks.

But in order that our readers realize it well, let it be repeated that aside from early varieties, it is useless to force or try to force later or semi-early varieties and that such a knowledge of varieties is needed by every forcer. The same thing is true of an azalea that shows no sign of development in a reasonable time. It should be removed from forcing. If one persists one courts certain failure. The same is true of plants that for lack of care are infested with insects. They should be removed also for there is the additional risk of infestation of other (healthy) plants. One may make a valuable observation: in general, strong plants that have a good framework and firm wood, force better and more regularly (evenly) than younger plants; the same is true of grafted plants which force more regularly than those of equal age on their own roots. It is absolutely true and evident that to have a perfect result, it is best to force own root plants in the third group, that is toward the end of December. It is necessary to say that in general azaleas for forcing must be well watched in watering and that they like neither an excess of moisture or of dryness. It should also be added that the varieties of our first and second lists can be forced in the second or third season (time period--not year B.M.) and that then they lack nothing of their qualities. They are only taken into heat as soon as they show signs of flowering and that one may have Deutsche Perle and Pauline Hardner in bloom in 12 to 15 days. Of the remainder, one perceives easily the great earliness of those varieties that from the first days of January begin to show the color of their flower buds even without forcing.

Chapter XVI - pp. 71-

There is a certain interest in raising plants from seed, be what they may, and if azaleas have not been the object of special interest to French raisers, they are plants that have given others a universal reputation and compensation. I must mention the names of Mabire of Angiers and of Bertin and Roger at Versailles. Belgium and Germany have them and there are many remarkable seedling raisers, who have given to commerce plants that have and will keep the favor accorded these beautiful plants. We will try to describe the methods used to sow azalea seeds and desirable for the procedures of those who might wish to try this operation.

One fertilizes the flowers with the greatest care and it is always useful to take out the stamens before they can shed their pollen, in the plant to be fertilized. This is to assure a quasi-certainty that it will not be fertilized by its own pollen. It is evident that fertilization should always be carried out in a well-lit greenhouse and at the proper time, i.e., toward March. It is then that one has perfect conditions to assure success of such an operation. The seeds usually mature toward November or December. They must be watched, since they are very fine and escape easily from the top of the capsules. One risks their loss if they fall in the ground.

One then spreads the seeds on a sheet of paper to complete maturity. One sows them in well-drained pots filled with sifted peat soil. Seed is sown on the surface. The (pots) are placed in a moderately warm house and a pane of glass is put over them which one must wipe off often. In about 3 or 4 weeks, the seeds will begin to germinate; they need the same care one gives to other fine seeds, not too much air, no excess of moisture, and well regulated light. As soon as the seedlings have one or two leaves, one would do well to prick them off into pots prepared in advance and replaced near the glass. One must watch the small plants and not hesitate to retransplant them as needed or if moss or algae cover them up.

Toward May or June, one carries them into the open, to a spot prepared before, but surrounded by boards on which for the first time (weeks?) one will place a frame which one will replace with a wicker frame and finally full light as for young azaleas from cuttings. The young plants require special care. One should take off the sprouts from the base so that a short trunk is formed which one tops to form a head. After this they are treated as for young grafts. They are taken in in the autumn and out in the spring following, and so on until they flower--usually during the second year. The first flowering does not always give a precise

idea of the value of the plant and for sound judging, stabilize the seedling flower by grafting. It is only after the seedlings have been reviewed, grafted, and flowering normally that one can clarify this or submit them to the judgment of connoisseurs, who with the agreement of the raiser, will recognize their decorative or merchandizable qualities, establish their degree of lateness or earliness and place them in the ranks of varieties sought by commerce. This chapter must not close without naming able growers who have given the world these marvelous varieties of all sorts from which commerce draws enormous sums every day. Among the most celebrated, one mentions the Van Kouttes, the Vervaezes, the Van der Cruyssens, the Verschaffelts, for Belgium and for Germany the Schultz, and the Liebig. We will show in the following chapter that seeds are not the only means of building up a collection. But we are not stopped in rendering homage to those who raised those thousands of remarkable seedlings, and that must have seemed impossible of perfection which later through the years are known and show precious new varieties, whether for the florist who forces or for the amateur who prefers normal flowering.

Digitized by Hunt Institute for Botanical Documentation

Notes, This should come after Chap. ^{XV}
 Observations on varieties of agalax. ^{see pages 41 of Moss for XV} Dimorphism, Doubling
 and list of best varieties. (M. * 74 -

We have spoken of saving agalax seeds and we have seen that that is the means employed for obtaining new varieties. There is another which is due to chance (sporting) which is frequent with the mo plant. We may safely say that there are few plants ^{known} that offer an example of such great ease in producing ^{variations} sports known to botanists under the name of Dimorphism & to horticulturists as sports.

This is the term for the change in coloration, where all the flowers on a certain branch produced spontaneously show a total, different aspect from that previously known, often so different from that known to these families with the variety, so different that we must hunt for traces of the variety that give rise to it. ^{It is} that certain varieties that arise in this fashion ~~are~~ ^{are} ~~are~~ ^{are} in growth from weak growing varieties give vigorous growth and that those arising from vigorous ~~growth~~ ^{growth} growing varieties are relatively delicate. We do not so far explain these facts, he merely is content to state them.

Commerce cannot but be satisfied with the extreme facility such as that of agalax in giving rise to such variations, because it finds them admirable having given pleasure for generations. Among the most remarkable varieties, we need only cite: Souvenir du Prince Albert & its white variety, Sigismond Rucker, Jean Verwaene, Dame Melanie, Allequin, Comte de Kerkore etc, and

more recently the admirable *Veronica* and its variety *Pharäide* *Wahlbilde*, whose commercial success is really one of true enthusiasm. These beautiful varieties are sometimes sent us with forced colors without charm & that had almost no success, while their variations seem to unite in themselves all desirable beauties.

It is evident that this is entirely a question of chance and that there are agales that have never spoken. Among this number, certain doubles seem remarkably well fixed: ~~for example~~, ^{thus} Raphael, Bernhard Andreas, Alby, Deutsche Fierl and many others seem never to have varied to the present: it is true that these are already beautiful enough, but the horticulturist is always happy to find a novelty.

It should not be imagined by the reader that these variations of which we have spoken are produced by chance: it seems, at present, that one may state that in all plants subject to variation one may find a parental trace of the old variety "vittata". In every case, it is the varieties with corollas of brick red or light rose that give varieties bordered with white, fringed or margined, while those in which the color approaches carmine red never show a trace of variation. It is enough now to cite some striking examples, that better than our explanations will impress the reader with the bizarre tendency of the agales to produce several kinds of flowers on the same stem, a tendency that it shares with the camellia, as generous in its way; we will cite a few examples. The variety, *Souvenir du Prince Albert*, type, is a dull wine red often misformed

and not vigorous; the striped variety has a light rose ground color, flamed with purple, bordered with pure white and is extremely vigorous. It has been determined thus that a white-flowered variety, that is delicate and of no great interest, the *apalea* Dame Melanie (Syn. Miss Turner) came from a determined (known) branch of Roi Léopold, a variety of ^{rather} ~~very~~ fine bright salmon color but which not very brilliant, these also came from the plant the sport with salmon-colored flowers bordered with white and set off by a rather bluish dotting. The *apalea* Vervaeckera, already mentioned, came from a plant in which the color is lusterless & without interest, while it is rich in tone, light salmon flushed with red & margined with white. It is admirable! Enough of ~~set~~ examples, that one gives up with the intent to be sure that was meant by ~~spoken~~ that may be fixed perfectly by postage being taken pains to mark carefully the branch that gave the flower and to watch the later flowering in order to eliminate everything that may show any tendency to return to type. We close with one other curious example; the *apalea* baronne de Vrière gives striped & flaked flowers, is very late; its variety, called Professeurs Wolters has salmon colored flowers, is early & very vigorous; it is a curious fact that never has been explained up to now, we believe, and yet it is rather frequent; one more point comes to our attention, namely the change of color that appears in certain varieties; thus we have just had a plant of Vander Cruyssen that produced spontaneously a branch with three blooms of light orange red, dotted with purple, while the color of the

ordinary variety is rose caroline; this is the first
that we have seen in this variety of which we
have flowered more than 20,000 specimens. ~~with~~
equal strength. These things are mentioned, once more,
to assure you the extreme ease with which agaleas
give varieties through spores.

A very charming form of this agalea, is the
double flowered. How does this improvement take
place? It is certain that it is the result of
(seed saving) done by able horticulturists, who from
the very first have remarked the tendency of certain
varieties to modify their flowers. On the other hand
there is a fact that seems established, namely, that an
agalea that shows a great tendency to change its flowers
from single & semi-double. (goes on) to completely
double flowers. We have been able to observe this
often enough, and certain varieties studied and followed
later in their propagation, as well as those of which
we are speaking.

But it is certain that the most beautiful
varieties giving double flowers have been gotten from seed
and fixed by grafting. If we examine the qualities
of double agaleas we will notice as follows: it is
enough to observe certain varieties obtained by the
fortunate Belgian or German growers to be convinced
of the beauty of their flowers, that have thick
substance, perfect form, and beautiful color of
petals that arranged in wattle form like one
flower within another, are certain of most splendid.

The horticultural world & amateurs have been
enchanted to discover in the double-flowered
agaleas an enormous source for enlarging their

collections; but above all it is the retail merchant who sells them out: since it has been shown that the double agaleus has great endurance and a great solidity for such uses as he might make of it, ^{as much} for example in the make-up of bouquets & baskets as for the sale of plants for apartments.

This vogue for ^{double} agaleus has had such a development recently that it disturbs the cultivators, who see the refusal of the very fine known varieties for no other reason than that their flowers are single.

If we look at this purely from the artistic point of view, we have no hesitation an instant to give preference to single flowers. There is a beauty in their waved and fringed calyx ^{or} ~~calyx~~ ^{or} ~~corolla~~ ^{or} ~~corolla~~ (text says calyx) in the large opulent forms ^{such as the} ~~such as the~~ ^{superiores} which ~~have~~ ^{the} exuberance (makes) so interesting & so rich; a head of single agaleus at an exposition will always make more show than a variety with double flowers. It will suffice to cite an example. Let us compare a very old plant: Duchesse Adelaide de Nemours for example, whose coppery flowers are flushed with an imperial purple, to a Bernard andrea rose, with completely double, it is certain that the former will carry off the (more) decorative effect.

It is no matter, for it is evident that amateurs will make room in their collections for single and double varieties, and as for merchants — they will always be forced to grow what is demanded,

and they will sacrifice their personal taste,
and incline to bow to the wishes of those who
buy who are governed chiefly by that capricious
goddess: Fashion!

List of Agapan indic.
recommended for their beauty.

2 bound

Pauline Mardner, very early	apptt
Sigismund Pucker very early	Apollon semi-early ^{S-E}
Deutsche Perle very early	Empereur du Bresil ^{S-E}
Mademoiselle Bertha Frockel early	Comte de Chambord ^{SE}
Punctulata early	Madame de Trévé ^{SE}
Madame Camille van Langenhove ^{early}	Antigone S-E (semi-early)
Versicolor. early	Sakuntala ^{SE}
Comte de Kerckhove early	Mémoire de Louis Van Herdt ^{SE}
Eborina plena early	Simon Mardner ^{SE}
Miskens Turner early	Baron Nathaniel de Rothschild ^{late}
Verdancam early	Bernhard Andrea ^{late}
Perle de Gandbrugge early	Poi de Hollande ^{late}
Professeur Wolters early	Impératrice des Indes ^{late}
Raphael early	Louisa Pynaert ^{late}
Mons. Paul de Schapper early	Law. des Prince Albert ^{very late}
Comte de Paris semi-early	Bernhard Andrea ^{very late}
Madame van der Cruyssen semi-early	

The varieties noted as early may be forced in Nov-Dec.
" " " as early or semi-early " " in Jan-Feb
" " " as late " " " in March-April.

¶ This list will seem rather short, it is true; but
the purpose of the author was to print out to
amateurs who might wish to assemble a small
collection, the names of varieties that seemed to
warrant the desirable qualities in view, to decorate

green houses or apartments and to limit themselves to a remunerative culture. for longer lists, one need only consult the catalogues of ~~green~~ growers.

From "Les Agalées." L. Duval

Paris, 1895: Actone Durin, Edit-Publisher
8, Place de l'Odéon.

Chapter XV — Same book pp. 63 —

When it is necessary to force agalées for sale or for the decoration of a private house, it is an operation that demands certain attentions and precautions = many cultivators do not take sufficient pains with a number of things, fatal in appearance, and it is that that bores them and makes their work fail. We therefore insist to the reader that all we relate here is the result of long practice, continued observations, and ^{sufficient} ~~considerable~~ knowledge — we would not say complete for that can never be — to succeed with the varieties suitable to the type of work described in this chapter.

One of the first qualities of an agalée that is to be used in forcing is that it be an early variety, lending itself readily to the operation. The other required qualities of most importance are that its roots be in perfect condition and that the buds be perfectly formed. Setting aside the question of variety, let us see the principle attentions to be given agalées intended for forcing.

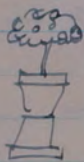
In the autumn, i.e. in October, when one prepares to return the agaleas to the green house, one should arrange the plants in two categories; those intended to flower at a normal time, i.e. in February, March, April in order that they be placed in a cold house where the temperature may fall to 4-5 degrees above zero. The other house for early plants will be a little more temperate, so that one can maintain the heat more easily or give a little less air. This is a necessary preparation, in our opinion.

When the plants are carried into this house one examines them and, if there is the least trace of insects, one must dip them (see chapter on Insects) [a nicotine solution B711]; one must take out all the wood without saving a vigor that fills up the interior of the crowns. If these - should (they) be too compact, too tight, one may tie the branches apart with raffia in such a way that air reaches all parts of the heat and at the same time gives an advantage in size. Then one must get out most carefully all the worms from the interior of the pots.

During the first days of November, the 5th or 6th one must begin preparation of the forcing house where, if one does not make a specialty of this, or if one is an amateur, one may then place in a warm house or pots turned upside down, or on supports, the agaleas arranged in such a fashion that they will find their optimum conditions as we will indicate a little further on.

Above all else, one must choose very early varieties. More commonly employed in order of their earliness are:

1. Deutsch Perle. (Deutsche Perle)
2. Pauline Marjori
3. punctulata & its varieties.



4. Siquismond Rucker

5. Versicolor-

6. Vervecera.

It is evident that with these six varieties or with
 arrive perfectly in having flowers from about the 15-
 20th of December, (if) started in forcing Nov. 5-6. But
 it is important to point out other less early varieties,
 which brought into the house then will give flowers
 from Christmas to New Year. They follow in approximate
 order of earliness.

1. Simon's Maiden.

2. Eborina plena

3. Madame Van der Cingissen.

4. Paul de Schryver.

5. Prof. ~~van~~ Mollers (Walters)

Digitized by Hunt Institute for Botanical Documentation

It would be well for the reader to get the idea that
 these lists are variable and that they can always be
 modified: since every year there are new varieties
 recommendable for their coloration, their form and
 perhaps their forcing qualities. But these dozen
 varieties at least constitute the basis of all (now)
 forced and at present are considered the best.

For commercial forcing, it will certainly be necessary
 to have a greenhouse facing south: it is the best
 exposure, one that receives the sunlight & that permits
 a perfect arrangement of the plants so that their
 heads are in full light. This does not mean that no
 other sort of house can be employed, but it is evident
 that a house of that exposure is infinitely preferable.

The temperature can be calculated in advance & readily raised, by calculating the number & size of the heating pipes in order to get the heat needed without overheating the water.

(Cults 17+18 show leaves to houses - with single bench + with 2 benches, pipe arrangement etc.)

In an ordinary forcing house, one should maintain a temperature about $25-30^{\circ}$ by day, as one needs more or less heat, ^(heat) this temperature will vary a little. It is kept at only $13-15^{\circ}$ at night. It is very important to let the temperature drop so that the plants get a needed period of rest. ~~As far as~~ ^{this arranged,} T-C plants are arranged without being too much in series (in line) and well lit, one begins to give heat: They should be watered daily, morning & night with water at greenhouse temperature, but never on the leaves when the sun shines. In best case one should water the floors, under the benches + along the walls. It is very important to observe the condition of the balls that never must be allowed to dry, or to become too wet. If one sees traces of worms they must be ~~some~~ taken out with care.

Certain varieties make shoots immediately under the influence of heat & moisture; it is necessary to remove these shoots radically but without harming or damaging the plants; this is accomplished by ~~just~~ pulling them lightly, so that they are detached easily at the base. If one neglects this operation, one risks seeing the buds aborted and the loss of all the fruit of ones work. It is sometimes necessary to come to the aid of the bud that are enveloped in a thin tunic, which will rot them. One must cut this envelope carefully, in about 15-20 days, more or less, under the influence of

heat & moisture, the buds swell & show the color of the flowers. At this time one should stop wetting down the (plant) tops or at least to moderate it, especially if shades and yet they must not be allowed to dry out. Certain varieties are more or less sensitive to humidity, and one can generally decide (on days) to stop wetting the plants down as soon as the buds are well developed. This is the time when the plant needs the most sunlight & the plants should be covered as little as possible, even at night; for this we use boxes in favor of glass houses with large clear glass. So that we may dispense with any other cover.

As soon as there is a series of plants sufficiently advanced, that is with flowers opening, they are placed in another glass house, also very open & bright, but cooler; this one being well the cooler one. This is an excellent operation. It strengthens the flowers, improves their color & prepares them for their stay in shop or apartment.

Everything that has been said for the forcing establishment, can be said about these ^{two} houses where the plants are put on simple supports: but it is evident that it will be difficult to give them ^{the} as good care indicated, as if they were under normal conditions. We should prefer to see the small grower an amateur, arrange a small space in a cool house where he can put his plants & attend to their forcing. The first season he will need 40-45 days to force the very early varieties; but the amount of time lessens as the season advances. Thus one

could force the very early sorts of our first list in 28-30 days after November 20. Later, the same varieties would need us more than 11 weeks.

But in order that our readers realize it well, let it be repeated that aside from early varieties, it is useless to force or try to force late or semi-early varieties and that such a knowledge of varieties is needed by every grower. The same thing is true of an apple that shows no sign of ~~the~~ development in a reasonable time. It should be removed from forcing. If one persists one courts certain failure. The same is true of plants that for lack of care are infested with insects. They should be removed also for there is the additional risk of infestation of other (healthy) plants. One may make a valuable observation: in general strong plants that have a good framework & firm wood, force better & more regularly (evenly) than younger plants. The same is true of grafted plants which force more regularly than those of equal age on their own roots. It is absolutely true and it is wisest that to have a perfect result, it is best to force our root plants in the third group, that is toward the end of December. It is necessary & ~~to~~ that in general apples for forcing must be well watched ~~for~~ ⁱⁿ watering and not by like neither an excess of moisture or of dryness. It should also be added that the varieties of our first & second lists can be forced in the second or third season (time period - not year B.T.M.) and that they then they lack nothing of their qualities. They are only taken into heat as soon as they show signs of flowering & that thus one may have Deutsche Perle & Pauline Mandrin in bloom in 12 to 15 days.

Of the remainder, one perceives easily their ~~calmness~~ great earliness of these varieties ~~to start~~ ^{that} from the first days of January, ~~even one may begin forcing~~ begin to show the color of their flower buds even without forcing.

Chapter XVI Pt. 71 -

There is a certain interest in raising plants for sale, be what they may, and if of course have not been the object of special interest to French raisers, or some other plants, they are plants that ^{have} given others a universal reputation: and compensation. I must mention the names of Mabile of Angers & of Bertin & Royer at Versailles. Belgium & Germany have them & there are many remarkable ^{early} seedling raisers, who have given to commerce plants that have & will keep the favor accorded these beautiful plant-^{cycles} we will try to describe the method used by the ^{raisers} and desirable for the procedures of those who might wish to try this operation.

One fertilizes the flowers with the greatest care & it is always useful to take out the stamens before they are shed their pollen, in the plant to be fertilized. This is to assure a quasi-certainty that it will not be fertilized by its own pollen. It is evident that fertilization should always be carried out in a well-lit greenhouse & at the proper time, i.e. towards March. It is then that one has perfect conditions & assure success of such an operation. The seed

usually mature toward the end of November or December; they must be watched: since they are very fine, & escape easily from the top of the capsules, one risks their loss if they fall on the forest ground.

One then spreads the seeds on a sheet of paper to complete maturity = one sows them in (pots) well drained filled with sifter peat soil. Seed is sown on the surface. The (pots) are placed in a moderately warm house & a pane of glass is put over them which one must wipe off often. In about 3 or 4 weeks, the seed will begin to germinate; they need the same care one gives to other fine seeds, not too much air, no excess of moisture, & well regulated light. As soon as the seedlings have one or two leaves, one would do well to prick them out into pots for the first time in advance and replace near the glass. One must watch the small plants & not hesitate to retransplant them as needed as if new as algae cover them up.

In May or June, one carries them into the open, to a spot prepared before, but surrounded by board on which for the first time (weeks?) one will place a frame which one will replace with a wicker frame & finally full light as for young agaveas from cuttings. The young plants require special care. One should take off the sprouts from the base so that a short trunk is formed which one tops to form a head. After this they are treated as for young grafts: they are taken in, in the autumn & out in the spring following, & so on until they flower usually during the second year. This first flowering does not always give a precise idea of the value of the plant & before ⁱⁿ soundly judging, stabilize the seedling flower by grafting.

It is ~~clear~~ ^{that} the seedlings should be reviewed, grafted
and flowering normally, that one can classify the ~~varieties~~
or submit them to the judgment of connoisseurs, who with
the approval of the raiser, will recognize their decorative
& merchandizable qualities, establish their degree of
likeness or earliness & place them in the ranks of varieties
sought by commerce. This chapter must not close without
naming able growers who have given the world these
marvellous varieties of all sorts from which ~~the~~ commerce
draws enormous sums every day. Among the most celebrated
we mention the Van Houttes, the Vervaenes, the
Van der Cruyccens, the Verschaffelts, for Belgium &
for Germany the Schultz & the Listigs; we will show
in the following chapters that seeds are not the only
means of ~~obtaining~~ ^{obtaining} new varieties, build up a collection;
but we are not stopped in rendering homage to those
who raised those thousands of remarkable seeds, &
that must have seemed impossible of perfection, and
later all the year are known & show precious new
varieties, whether for ^{the} florist's show boxes or for the amateur
who prefers normal flowering.