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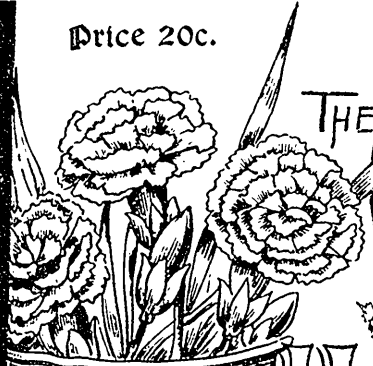

THE CANADIAN HORTICULTURAL MAGAZINE

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M. AND F.G.A. OF P.Q.

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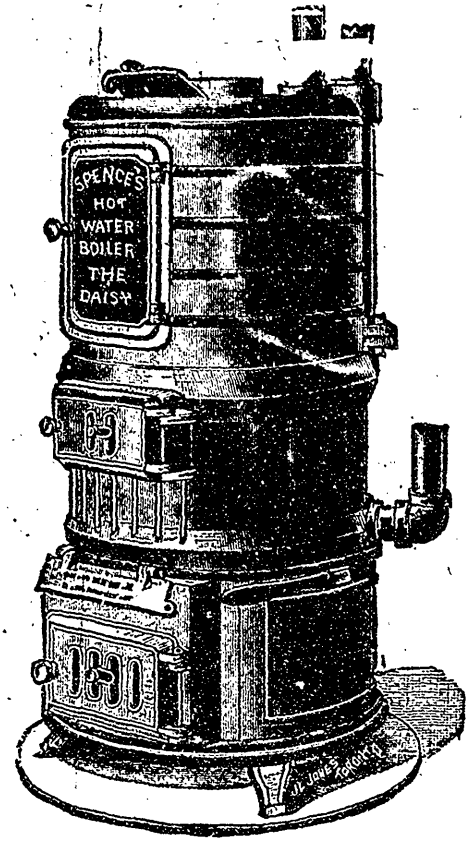

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THE CANADIAN
HORTICULTURAL MAGAZINE.

Vol. II. April. 1898. No. 1.

OUR NATIVE ORCHIDS.

BY REV. DR. CAMPBELL, MONTREAL.

PART VII.

LEPTORCHIS.

LEPTORCHIS LOESELII (L.) MACM.—*Fen Orchis.* This pretty orchid is better known as *Liparis Loeselii*, and is sometimes called "Loesel's Twayblade," because of its double leaf and general resemblance to the *Twayblades*, described in the last paper. It is to be looked for in wet thickets and on springy banks. Dr. Holmes reported finding it in the savanne at St. Michel in 1821. It is widely distributed throughout Canada, but is confined to a particular kind of bog. Its general outline is not unlike that of the *Orchis Spectabilis*, its scape being strongly angled as the stem of that orchis is; but its scape is longer, and the leaves are narrower, and with fewer veins. And then the flowers are smaller and of a greenish colour. It has a strikingly pointed lip, and its capsule is wing-angled on a thickened pedicel. It flowers early in the season. The specimen used in the illustration was collected too late in the year to show the bloom. The situation in which nature produces it will probably make it difficult to transplant; yet any collection of native orchids would be incomplete without it.

CALYPSO.

CALYPSO BULBOSA (L.) OAKES.—*Calypso.* This is the *Calypso borealis* of Salisbury, and the *Cypripedium bulbosum* of Linnæus. And it might well pass for a small *Lady's Slipper*, so far as the general shape of the plant is concerned. No prettier flower adorns our woods than the Calypso, so-called for its rare beauty and solitari-

1 2

FEN ORCHIS. *Leptorchis Lœselii* (*L.*) *MacM.*

(2) CALYPSO. *Calypso Bulbosa* (*L.*) *Oakes.*

ness, after the nymph of ancient fable. Blossoming early in May, while all around is still dead and dreary on the borders of swamps, the sight of it amid these surroundings awakens such delight as one seldom experiences even in plucking flowers. The tints of the blossom are as lovely as its outline is beautiful, being variegated purple, pink and yellow. Its lip is large and saccate, and both petals and sepals are marked by purple lines along their whole length. The plant varies in height from three to six inches. It has a single, round or subcordate leaf at its base, and springs from a bulbous root, whence its specific name. Although the plant is small, any Orchid-house will have its attractions sensibly increased by giving space in it to our Calypso. It is not hard to find, and it should not be difficult for gardeners to imitate the natural conditions in which this charming flower grows. It was reported by Dr. Holmes, in 1822, as occurring in the woods around Montreal. The specimen used for illustration was collected in the woods near Almonte, Township of Ramsay, Ontario.

CORALLORHIZA.

1. CORALLORHIZA CORALLORHIZA (L.) KARST.—*Early Coral-root.* This curious plant derives its folk-name from the peculiarity of its roots, which grow in bundles and are white as coral when taken out of the ground. All the species have this feature in common, although the shape of the aggregation of the branches of the root differs in some of the species. The chief difference, however, between the species is to be found in the blossoms and ovaries. The plant has no leaves, but is clothed with scales, and these scales along with the character of the stem on which they are placed differentiate the species from each other. The one now under notice is more commonly called *Corallorhiza innata*, and grows all over the Dominion. Dr. Holmes found it in the St. Michel savanne, in 1821, and it still grows there. I have found it also on Mt. Royal. It has a very short spur adhering to the summit of the ovary. The flowers are of a dull purple, with a short whitish lip.

2. CORALLORHIZA ODONTORHIZA (WILLD.) NUTT.—*Small-flowered Coral-root.* This is a more delicate plant than the one

3 4

(3) EARLY CORAL ROOT. *Corallorhiza Corallorhiza* (*L.*) *Karst.*

(4) SMALL FLOWERED CORAL ROOT. *Corallorhiza Odontorhiza* (*Willd.*) *Nutt.*

5 6

(5) LARGE CORAL ROOT. *Corallorhiza Multiflora Nutt.*

(6) STRIPED CORAL ROOT. *Corallorhiza Striata Lindl.*

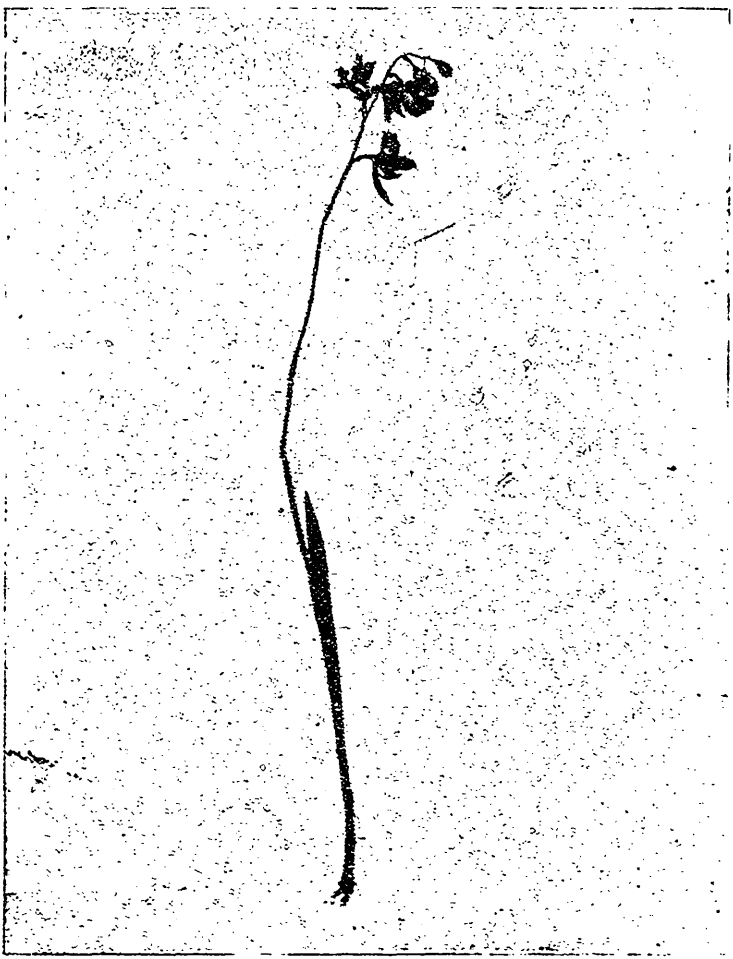
just described. The scape is slender and purplish, as the flowers also are,—the sepals and petals are marked by purple lines. It gets its specific name from the toothed conformation of its root. It has a minute spur and a broadly oval, notched lip. Dr. Holmes reported finding it in the Papineau woods in 1822; but the specimen he took for it was probably rather a pauperized form of *Corallorhiza Corallorhiza*. It belongs to further south than Montreal. The specimen from which the photo-engraving is taken was found in the woods near Galt, Ontario. It is difficult to preserve the root with the plant, and so it is not shown in the illustration.

3. CORALLORHIZA MULTIFLORA NUTT.—*Large Coral-root.* This is the most common in Canada of all the Coral-roots. It grows in great abundance in the mountain woods at Cap-a-L'aigle. I found it also on a high ridge in the woods at Petite Cote, island of Montreal. It has a purplish scape, which is clothed with several closely fitting scales. Its sepals and petals are joined together at the base. The lip is white, spotted and lined with purple; but its special distinction is a well developed yellowish spur. It has also a much larger number of flowers on its raceme than any of the other Coral-roots.

4. CORALLORHIZA STRIATA LINDL.—*Stripea Coral-root.* This Coral-root is easily known by its stouter, storied scape, its dark purple flowers and its oval, wavy lip. It also wants a spur, while its sepals and petals are striped with deeper purple lines than those which mark the *Corallorhiza odontorhiza*. The scape is channeled or striped, and this feature gives it its folk-name. It is somewhat rare in Canada. The illustration is taken from a plant collected in the woods south of Galt, Ontario.

LIMODORUM.

LIMODORUM TUBEROSUM (L.)—*Grass-pink.* This is the last of the list of Orchids embraced in my collection, which I have to describe; but though the last, it is not the least interesting and beautiful. It has the charm of retaining its colour in perfection, even when the plant is dried. We adhere to the name given to the



GRASS PINK. *Limodorum Tuberosum (L.)*

plant by Linnæus, although it is better known as *Calopogon pulchellus*. It is a bog plant, and I have found it on the borders of Lake Huron, at Martintown, Ontario, and at Bic, Quebec. It has a naked, slender scape, a foot or so in length. A single leaf, long and linear lanceolate, grows up from the bulb, from which the specific name is derived. The flowers are about an inch long, purplish pink, and very showy. Its lip is conspicuous, being crested along the face with yellow, orange and rose coloured hairs. The plant is graceful in pose, with a rich full blossom, set off with lovely colours, and its presence in our greenhouses would be a distinct addition to their attractions.

ROBT. CAMPBELL.

GROWING PLANTS IN SCHOOL ROOMS.—The Assistant Medical Inspector of the Philadelphia Board of Health says:—"Growing plants should not be used as permanent school-room decorations; many have medicinal odors to which some children are quite susceptible, and they may serve to harbor disease germs in the dust that may accumulate about them." Only for the statement that there are "many" such kinds, one might suppose people grow poison vines for window plants. As plants absorb the carbonic acid from the children's lungs, they are nature's great purifier of bad air. It would have been as well if the learned gentleman had given a list of those that possess "medicinal" odors susceptible (of disease) to some children,—and why the dust on a live leaf should harbor disease germs more than the walls or permanent furniture, the tops of which are never dusted, might be clearer. Unfortunately, local Boards of Health are usually held as sacred as oracles of the pagans; and the beautiful window flowers, for the which so many of the public schools are famous, will probably have to go. The pretty little conservatories attached to many city homes, may next be banished; and the dust-collecting, disease-germ harboring shrubbery in the city yards share the same fate!—*Meehan's Monthly*.

THE DAHLIA AS A BEDDING PLANT.

There are but few, if indeed any, bedding plants which combine so many points of excellence as the dahlia.

How or why this old time favorite should have dropped from public favor even for a few years is a mystery to all lovers of the dahlia. Much credit is due to those who, in spite of public indifference, continue to grow and improve them, even when there was but little demand for their products. The dahlia carries a very wide range of colors and combination of colors, so odd and varied that one becomes bewildered when attempting a description. Like many other classes of flowering plants, the dahlia has its favorite colors, and is especially rich in maroon, purple, scarlet, red and yellow. These with their varied combinations of colors, need only the addition of the pure snowy white, of which there is now an ample supply. In solid colors they run through all the shades of lavender, maroon, orange, purple, red, scarlet, white, yellow and even green, and of variegations there is no end; but no blue. White, however is not a common color among dahlias. In my experience of fifteen years with many thousands of seedlings, I have not averaged one good white to five thousand seedlings, where the seed has been gathered from the fields of mixed colors. And even when the seed has been gathered from the finest of pure white flowers, the result has been very unsatisfactory.

If properly treated the dahlia will begin blooming in from two to two and a half months from the time of planting when dormant stock is used. But by starting the stock in the house or greenhouse, bloom can be had almost from the time of planting out. This forcing process, however, is not always successful, and should be entered upon with the greatest of care.

To produce flowers of the finest quality several rules must be followed. Never let over two stalks grow from one tuber or hill, and it would be better if only one were allowed to grow; when the blooming season comes on, see to it that no dead or faded flowers

are allowed to remain on the plants ; and at all times keep a sharp lookout for the red spider, which is one of the worst enemies of the dahlia, and as a precautionary measure I would suggest that all dead or yellow leaves be kept off the stalks near the ground, as such material forms a natural hiding place for the red spider. Watering is also a very important part of dahlia culture, and the careful grower will never permit the soil to become hard and dry around the roots, neither will he neglect the cultivation in the early stages of the plant's growth. The dahlia delights in a rich mellow soil and a liberal supply of water during the blooming season. These are important matters, and they must not be neglected. The capricious tendency of the dahlia to freak and sport in color has given rise to numerous delusions concerning them. Such as the drawing of color from neighboring plants through the contact of the roots ; the drawing of different colored yarn threads through the tubers to produce certain colors and streaks in the flowers. It is perhaps unnecessary, and yet I will state that all such views are wholly without foundation in fact. It must, however, be admitted that the variegation and sporting habits of the dahlia are influenced largely by some law at present not well understood. I have studied this question often, but have not yet come to any definite conclusion. Some years a given fancy variety will run almost entirely to solid colors, while at other times scarcely a solid color could be found. This phenomenon will sometimes take place within two weeks time.

Dahlias are divided into six general classes : Cactus, Decorative, Fancy, Pompon, Show and Single. To these may soon be added another class called Tom Thumb. The line of distinction, however, is not always clearly defined, and there is more or less overlapping in some of the classes. The Cactus is the newest type, and has its distinction by reason of its long pointed petals, which are sometimes irregular and twisted, as seen in Gloriosa, but more generally, if really true to the class, the petals are quite regular and as precise in their arrangement as an artist could draw them. As seen in Lady Penzance and Matchless, the Cactus type is not much given to variegating or sporting.

Decorative varieties were formerly classed with the Cactus list, but the time has come when the two must be separated. The Decorative class is composed of an intermediate form between the Cactus and the Show varieties. Their petals are long and broad, and the flower itself is quite flattened in form. This form grows to very large size; frequently seven and even eight inches in diameter. Being purely a garden variety formed from several other types, it has borrowed or taken with it the habit of variegation and contributes many of our best variegated dahlias.

The Fancy class is composed of the dahlias which carry two or more distinct colors.

Pompons are small in size and rounded in form. It is often difficult to tell just where to draw the line with this class, between the Pompon and the Show varieties, as it is only a question of size.

Show varieties are medium to large in size, symmetrical in form and solid in color, although they may sometimes be shaded at the tips.

The Single forms are too well known to require a description. This class was very popular a few years ago, but they are rapidly giving way to the newer Cactus forms.

The varieties to plant is an important question, and in all probability will remain an unsettled question. Some dealers presume to advise the public in the selection of varieties and recommend special lists, taking care to mention only those varieties which they have for sale. This is no doubt a profitable business venture, but will not be satisfactory to the public. In an experience of many years of dealing direct with the consumer, who often calls and makes selections from the plants while in bloom, I find a taste so widely diversified that all hope of ever centering upon any particular set is worse than useless. One orders a dozen all bright distinct colors; the next one wants only the delicate and neutral tints; another will want tall growing varieties, and another will want only the dwarfs. Each grower must be the judge of his own taste.

—*Southern Florist and Gardener.*

CACTUS DAHLIAS. During the last four or five years great strides have been made in the development of this variety of the Dahlia; and it will undoubtedly ere long supersede almost entirely the formal show-flower. For decorative purposes it is much superior to the old form, more especially the best varieties of the single Cactus. At present the weak point of the Cactus Dahlia is the shortness of its flower stem, some of the finest varieties having their flowers largely concealed by their foliage. But from the immense number of new varieties raised every year from seed saved from the finest cross-fertilized flowers this defect will undoubtedly be wholly overcome in the near future, as it has already partially been overcome in some fine varities now distributed.

It may be of value to some of our readers to have before them a short list of named Dahlias and the following are someof the list:—

SHOW:—Selfs, W. Powell, John Henshaw, Mrs. Gladstone, Duke of Fife, Purple Prince, John Standish, Colonist, Crimson King, Shirley Hibberd, Prince Bismark, Seraph, James Crocker, Flora Watt, John Hickling, Arthur Rawlings, John Walker, Maud Fellows, Miss Cannell, Mrs. D. Saunders, J. T. West, Majestic, T. J. Saltmarsh, Mrs. G. Rawlings.

FANCIES:—Dorothy, Hercules, Hattie King, Mrs. O'Cock, Premier.

CACTUS SINGLE:—Guy Mannering, Brenda, Pirate, Ravenswood, Novar, Ivanhoe, Marmion, Sir Water Scott, Alice Lee, Meg Mirrilies.

CACTUS DOUBLE:—Gloriosa, Miss Webster, Starfish, Fusillier, Harmony, Lady Penzance, Matchless, Prof. Baldwin, Major Hastings, Harry Studwick, Blanche Keith.

DECORATIVE:—Grand Duke Alexis, Mrs. Basham, Crawley Gem.

CHATS ABOUT FLOWERS.

BY MRS. G. W. SIMPSON, MONTREAL.

PART XI.—FLESHY FRUITS—BERRIES.

Classification is an art not greatly favoured by Madam Nature, and botanists desiring to classify plants or fruits for reference, find themselves obliged to seize some one or two strongly marked characteristics, and leave the rest more or less unnoticed. Nature is not inert, and does not bind herself to rest within literary limits. She is not changeable, but progressive. We may think we have grasped the whole truth concerning some plant or flower, to find that we have only made ourselves acquainted with a first step in its history. This habit and power of variety is one of nature's charms. We may be sure she will be true to herself, and the closer we examine the more she will delight and instruct us. Nature herself is God's handiwork; His open book in which those who run may read. The language is not always easy, but each syllable is a real acquirement leading to a wealth of true knowledge if patience and observation are allowed to have their perfect work.

Botanical classification, therefore, even that we call natural, is nothing more than a human invention to meet human needs—an index to a large open book to help us to find what we want. In this index, berries, for instance, are not always berries,—sometimes they are oranges, pumpkins, cucumbers, and melons, etc. These are berries in a general sense of the word, but in a particular sense, currants and gooseberries are types or patterns of true berries.

In a general sense, all fruits having the whole wall of the ovary thick and soft, may be thought of as berries, but in the particular sense, the word berry stands for fruit, in which the seeds lie loose in the pulp of the ovary, at maturity. A berry is *indehiscent.* This is a new word and must not be passed over without explanation. *Dehisce* is derived from two Latin words, and signifies, *to gape.* Many seed vessels, *gape* or *dehisce,* when they are ripe, and drop

their seeds into the earth. Most of the dry fruits, such as the nuts, dehisce, as most of us have seen for ourselves when looking amongst the fallen leaves for horse-chestnuts or acorns. But fleshy fruits, in general, have other habits. Anthers dehisce, when their pollen is ripe, and either scatter it abroad for the wind to carry, or drop it over their own petals for the visiting bees to gather. But berries proper do not dehisce.

The ovary of the gooseberry and of the currant being below the calyx, retains its dry leaflets as a crest or crown. These are the particles which give the housekeeper so much trouble when she is making currant or gooseberry jam. The berry, at least, in these fruits, is a compound ovary, that is, it has more than one seed bearing sac.

The ovary of the fruits we are chatting about, after fertilization, swells considerably, and, in the gooseberry, the *placentation* is easily seen. The *placenta* is an organ whose business is altogether with the seed and its belongings, from its first existence as a living cell, to its maturity as a tiny hard seed, able to reproduce its kind in due season. The placenta, from which the fruit, which serves the seed as a cradle, is derived, fills the extending walls of the ovary with soft luscious acid food. The placenta attaches itself to the walls of the ovary and from two places sends forth thread-like processes to which the young seeds are attached; therefore the placentation is said to be parietal, from the Latin, signifying a wall. The seeds have a gelatinous outer coat, and are imbedded in the pulp. When mature, they separate from the placenta and lie loose in the pulp.

That which we have said about gooseberries applies equally to currants. These plants, like the strawberry, are not altogether dependent upon seeds for reproduction. They can multiply themselves by means of *stolens*, which is a vegetative process, something like, but not quite like the *runner*. The stolen is a branch which, instead of inclining upwards, as most branches do, curves downwards till it reaches the earth, when it sends roots into the ground, and a stem into the air. In due time, it is able to live without the help of the parent branch, and becomes a new bush.

There is a true berry slightly different in structure from those we have been considering, with which we are all familiar and often use as food ; I mean the Tomato. Botanists call it Lycopersicum, and a common name for it is Love Apple. We are not apt to think of it as a fruit, but give it the insignificant name of vegetable. The Tomato comes from tropical America, and its near relations are the Potato and the Capsicum. The fruit of these plants are berries, because there are soft ovaries in which the seeds lie loose at maturity. Unlike the gooseberry, the calyx is beneath the ovary, it is persistent, that is, it does not fall away with the flower, but forms a protection for the fruit while it is ripening. And the placenta is not parietal but *axile*.

The placenta, I must repeat, is an organ devoted entirely to the production and nourishment of fruit. Its functions commence with the fertilization of the pistil and end with the maturity of the seed. When the seed, within the berry, is ready to grow independently, the fruit drops, the flesh decays, and, in a state of nature, helps to make a rich bed in which the infant seed can grow and prosper. In compound ovaries, the placentation is of three kinds: *parietal* as in gooseberries and currants, *axile* as in the tomato, or *free central* as in the Cyclamen, which we will consider presently. The axile placenta in the tomato is easily seen; the strong white fibrous flesh holding the gelatinous seeds until they drop loose into the luscious pulp. We do not eat the potato berry and interest ourselves in it so little that we scarcely know what it is like. That part of the potato plant which we regard as food is the tuber. A tuber is a store-house, or natural cupboard, containing excellent food for plants and men, not to speak of other animals. The tuber is an enlargement of an underground stem. We know it is a stem because it bears buds, or eyes, as the farm boys call them. Each eye is a mass of growing points only waiting to be placed in the open ground to grow up into new plants. In the mean time, while they are waiting for the frost to go—while they lodge in cool dry cellars—they live upon the starch stored up in the ripe tubers. Very many of them come to an untimely end in the kitchen oven, or potato pot, but of

those which escape, a new life is possible. The farmer cuts up his potatoes, which he has reserved for planting, into pieces, being careful that each piece has one or more eyes or buds. Sometimes, towards spring, if the cellar is warm and damp, the growing points will send out long pale branches, exhausting the food supply both for themselves and others; for the plants in the ground depend for existence upon the portion of tuber which the farmer leaves attached to the buds, until they have had time enough to send down roots into the earth, and stems and leaves into the air.

While talking of fruit as something to be eaten, we must not forget that the ripened ovary of every flower is a true fruit, whether eatable or not. The function of fruit is to reproduce its kind. The fruits of many of our familiar flowers, cultivated only for their beauty, are well worth attention and study. For free-central placentation, I will give you the Primrose and the Cyclamen, two plants closely allied. If you take the green ovary, just ripening for seed from either of these flowers, and cut it perpendicularly through the centre, you will be able to dislodge the placenta with its ovules without touching the wall of the ovary. The Cyclamen has the peculiar habit of sowing its own seed. Instead of inclining towards the light as most flowers do, it bends from it. In other words, instead of pointing to the sun, it points towards the centre of the earth, as all fruits do when they fall from the tree. The ripe fruit of the Cyclamen brings down the flower stalk with it, until it buries itself in the soft leaves, or moss, or earth upon the ground. The fruits of the Cyclamen and Primrose are not berries, but capsules, which is a kind of pod. Unlike the berry, the capsule dehisces or gapes when the fruit is ripe and the seeds mature. Each flower has its own method of dehiscing and much may be learned from watching the ways of seeds in the open air in the summer time; for greenhouse plants seldom mature seed.

Our other flower with free-central placentation, the Primrose, has an interesting story of its own. A short acquaintance will tell you that the plants are not all alike in the arrangement of their pistils and stamens. Some have long pistils coming to the top of

the Corolla; and short stamens, half way down the throat of the Corolla; and others have long stamens; and short pistils. Does this peculiarity of habit tend in any way to the benefit of the plant? This was the question observers asked themselves. Some painstaking naturalists took time and trouble to answer this question by long and careful experiments. Men living at different times, and in different places, have but one answer to give:—the natural variation is of great benefit to the plant. They told, further, that deprived of the service of insects, it was possible to the flower to fertilize the pistil with pollen from its own stamens, but the resulting seed was feeble, producing only poor plants; the best plants resulted when long pistils were fertilized by long stamens, and short pistils by short stamens. But long pistils were on one plant and long stamens on another, and the short organs were in the same case. Where the Primroses grew in the open ground, however, all the flying insects, bees, flies, butterflies and moths, came to the rescue, and with unerring precision carried pollen from long stamens and deposited it on long pistils, and performed a like good office for the short organs. How could they know exactly what to do? They did not know. The form of their bodies is exactly adapted for the purpose required. While they are seeking nectar in the bottom of the flower cup, the important work of pollination is rightly accomplished.

LUCY SIMPSON.

FOREST SUCCESSIONS.—The Royal Commission appointed to report on the restoration of the White Pine forests of Canada, among other interesting facts, says, that the prevailing opinion, that when a forest is cut away trees of some other species follow, is not correct. They find White Pine seedlings following the cut-away White Pine timber in frequent instances.—*Meehan's Monthly.*

BLACKBERRIES AND THEIR CULTURE.

The place which the blackberry holds in public opinion is not a high one. There are reasons for this. The shapeless crumbling mass with the appearance of coffee grounds and the name of canned blackberries, is not apt to create a great deal of enthusiasm on the part of the consumer, nor does the withered, red spotted, acid fruit, with which he sometimes spoils good cream and sugar, do more than cause an unfavorable comparison with the wild berries of his childhood as they appear to him through the mist of years, with a halo of appetite and a background of jiggers and briars.

The tame fruit is better than the wild, but to properly show its superiority it must enjoy the advantages of civilization to which it belongs. Its real character is not the one given it by gardeners who learn their craft from nature and make no improvements. The blackberry may never supersede the less perishable crops of the fruit farm, but in the garden which furnishes the choicest fruits in season, it certainly deserves a place. It has a prejudice to overcome, but with a near and appreciative market and a grower who understands cultivating, it needs only the proper care and conditions to change that prejudice to its favor.

CHARACTERISTICS OF THE KINDS.

There is much of interest in the botanical study of the blackberry and these few notes on characters and classification (as given by Prof. Bailey) may on that account be not out of place.

All the cultivated varieties of any value are descendents of the wild blackberry (*Rubus villosus*) and natural hybrids between it and the dewberry. *Rubus villoius*, the common high blackberry with long clusters and thimble-shaped fruits, finds its best cultivated representative in the Taylor; variety *sativus* of the same species, a shorter clustered, leafier kind, with rounder and more irregular berries, is commonest under cultivation, it being represented by such varieties as Kittatinny, Snyder and Agawam. Variety *Frondosus*, of still the

same species, is a dwarf form, earlier than the others and smaller fruited, Early Harvest having its origin here. There is another class given as hybrid between *R. villosus* and *R. Canadensis* (the dewberry) in which are put Wilson's Early, Wilson Junior, Sterling Thornless and Rathbun. The characters of this class range all the way between those of the parents.

As to the varieties to plant, authorities give little advice, except to begin with some standard sort like Snyder, and change for or add to that only such kinds as reliable experiment shows to be suited to the locality and needs of the grower.

CULTIVATION.

The soil for the plantation should be well drained and deep, as shown by the readiness with which wild vines start on embankments, "dumps," and other places where the land is mostly upside down and subsoil wanting. This does not indicate a dry soil. Blackberries need a great deal of moisture. Gravelly or sandy ground which dries easily will not do, but a crumbling clayey soil, if rich enough, is just the thing. Plant in spring in rows about eight feet apart with three feet between plants in a row, setting them in six-inch furrows.

The first year some annual crop may be raised between the rows if the time of its cultivation does not extend into the fall. This precaution is necessary in securing hardiness of plants. The cultivation should be frequent and thorough until picking time but after that only enough to loosen up the ground tramped by the pickers.

The canes should be headed back at 2½ feet the first year and they will bear the next. The laterals are pruned in the spring, their length being decided by the amount of dead wood, strength of roots, convenience in cultivation, etc. From three to six canes to the root are enough. After the first year these may be allowed to grow three feet high. New canes should be thinned down to a few of the best while they are small and the old canes taken out as soon as possible after picking is done.

OBSTACLES.

The principal drawbacks are drouths, spring frosts and a few diseases. For the first, the necessary considerations in selection and cultivation of land have been given. Irrigation would, of course do away with this difficulty, and it seems reasonable to suppose that no fruit would better pay for it. All that can be done for the second trouble is to secure good air drainage.

For the diseases, the best thing the grower can do is to keep his patch clean. Learn to recognize the marks of disease and keep everything but healthy wood cut out. When the old rows become foul, plow them up and renew the patch from suckers between the rows, taking care to clean off and burn all old roots and tops. In addition to this, early spraying and bordeaux, though not entirely satisfactory, has been found to aid in keeping the anthracnose in check.

AS A MONEY-MAKER.

Nothing definite can be given as an estimate on profits. The contingencies in the way of weather, prices, etc., for even a single locality, are too great. The cost of a plantation is not heavy. $40 or $50 per acre besides the rent being usually given, while as high as $200 have been cleared on a year's crop. The yield per acre varies greatly; 40 or 50 bushels is common, and some eastern reports run up to 300 bushels.

For the first year the crop raised between the rows ought to more than pay for the use of the land and the first crop of berries should cancel the cost of the plantation. The second crop should be full size, and as a blackberry patch is more or less of a perpetual institution, one may expect the subsequent yield to be proportionate with the care given. If it becomes necessary to plow up the old rows for renewal, a potato crop may be grown between the new rows, as on the first year. If this is practiced and the fertility of the soil kept up by winter application of barnyard manure, the blackberry patch will be welcome to the room it occupies for at least a dozen years.—T. W. MORSE, *in New England Homestead*.

WINTER DAIRYING IN CONNECTION WITH FRUIT GROWING.—One of the greatest difficulties to surmount by fruit growers at a distance from a city is the scarcity of manure, which is undoubtedly a very essential part for successful fruit growing.

To overcome this disadvantage most of our prominent orchard men have adopted the *silo* or invested in clay farms in the lower country as a means of wintering more stock. Winter dairying naturally ensues, and following are a few advantages derived from this system :

(1) An abundant supply of barn yard manure will be secured.

(2) By products in the shape of young stock and bacon, which can be sold, and which will add materially to the orchard revenue.

(3) By this equalizing of labor a better class of help can be secured by the year at lower rates.—W. CRAIG, JR.

XXX

LESSONS WITH PLANTS.—The great difficulty in teaching botany in the common schools is, that neither the teacher nor the taught know what is being talked of. The child is simply furnished with the specimens of various plants as they can be obtained, is taught to observe and to get the name of the parts observed, to compare these parts with one another, and draw deductions from what they see. Just in this successful line is the book of Prof. L. H. Bailey, "Lessons with Plants." To aid in this common-sense method of teaching, it is timely and excellent. Every teacher should have it, wherever nature studies are appreciated. It is published by McMillan & Co., New York.—*Meehan's Monthly.*

HOW TO GROW HERBACEOUS PÆONIES.

It is seldom that the grand old herbaceous pæony is seen in as fine a condition as it is capable of. It is a common plant about many country homes, but it is uncommon to find it treated as it should be. The best of all places for this plant is one that is quite damp, and having a good depth of soil. In fact, the location may be one too wet for many plants, and still suit the pæony. One of the thriftiest collection of these plants I ever saw was situated in what had been a springy plat of ground, made serviceable by running a ditch through it. It suited them admirably, just as it would have done Japanese irises. Let the ground then be deep, rich and wet to have thrifty pæonies.

The spring is so generally considered the time for all kinds of planting, that the pæony is oftener planted then than at any other time; but it is not the best time for it. Early fall is very much better. Pæonies commence to grow early in spring, and any disturbance of the roots at that time results in a loss of flowers for that season. It is a plant not easily killed, no matter when planted, but if flowers are looked for, the utmost care is required in transplanting it in spring. Early fall—even as early as September—is the best time. New roots will then form before winter comes, and, unless the plants are very small, flowers will be produced in spring.

Pæonies are easily propagated by dividing the roots.. If a large plant is dug up, there will be seen several-reddish looking eyes near the last season's flower stems. Each of these eyes will make a plant, if a piece of root can be had with it. The plant should be washed or shaken free of soil and then divided, a strong pocket-knife being sufficient for the purpose. A plant so divided will not bloom for a year or two, but if divided less close, leaving three or four eyes to a plant, and done early in fall, I should hope for flowers from it the next spring.

The single-flowered sorts have been popular of late years. Many florists grow them for the purpose of using thec ut flowers

for the purpose of decorative work, for which they are in much demand. Certainly a mass of these flowers on the plant or in a vase makes a gorgeous display. To me, the double ones are preferable, and, like all double flowers, they do not decay as soon as single ones.

European gardeners have paid much more attention to raising new sorts than our own people have. Perhaps the business is too slow for our fast times. New sorts are produced from seeds, and seedlings do not bloom under some half dozen years. Some seedlings which I raised at one time had not flowered in five years. I lost sight of them afterwards for a year or two, but when I did see them again, some were in bloom. Seeds saved from double or semi-double flowers rarely come double again. The single ones, which are usually the product, are often very beautiful. A few may be semi-double, and now and again one will be quite double. Raising seedlings is an interesting business, and it is quite worth while to attempt to get new sorts in this way.—JOSEPH MEEHAN, *in Country Gentleman.*

LOCAL BOTANY.—Doubtless many readers of horticultural publications have occasion to regret that they are not more particularly posted on the localities where certain plants may be seen and enjoyed in all the beauty of natural surroundings. They are not so situated as to be able to conveniently search the woods and fields, for such flowers as may have appealed to their interest when described or illustrated by some more fortunate of Nature's admirers.

Because of the infrequency of actual contact with Nature, it is impossible to receive a lasting impression of every flower, fruit or leaf that is seen on a general trip. But with an object in mind, memory centres on that point, drawing others into the whirl, and the "jaunt," though short, proves wonderfully interesting and the information well defined.

Within easy reach of all cities, are many plants that are much talked of and written about, but never seen by the majority of persons.

Let a person pay his respects to these plants in their homes, and he will return home with satisfaction and profit.

Unfortunately, the general public are called upon to throng the exhibition halls, where the instinct is trained to regard with greatest interest the monstrosities and scarcely useful variations in color and shapes produced by the florist—notably in the case of chrysanthemums. It is not to be wondered at that the heavy heads of chrysanthemums require hundreds of stakes, for they would otherwise bow in humility from their real uselessness.

Learn to know plants, as individuals, in their homes; encourage your friends and family to do the same; take them nature-seeking just as you go a-nutting; treat the flowers you find to more than passing thoughts of admiration, and you will surely find a new interest in a thoroughly happy kind.—*M*, *in Meehan's Monthly.*

LIST OF ANNUALS.

PART II.

Madia elegans,
Yellow, 2 feet, midsummer.

Malope grandiflora,
Red or white, 2 feet, summer and autumn.

Marigold, African and French,
Yellow, orange or striped yellow and brown, 1½ to 2 feet, summer and autumn. Highly ornamental, and very useful for cutting. The French Marigold is beautifully striped.

Matricaria (Feverfew),
1½ to 2 feet, white, all season.

Mesembryanthemum "Crystallinum" (Ice Plant),
White, 6 inches, summer. Pretty little edging plants, which flower very freely in a hot, sunny situation.

Mignonette, Reseda odorata,
9 to 18 inches, summer and autumn. The "Frenchman's Darling," familiar to everyone. Delightfully fragrant. Sow where the plants are to bloom, as they are difficult to transplant. When transplanting is necessary, do so when the plants are small. A long season of bloom can be had by removing the spikes before they seed.

Nasturtium or Tropaeolum, Dwarf,
Beautiful bedding plants of easy cultivation, height 6 to 12 inches. Various colours, early summer until fall. These charming bedding plants should be sown in poor soil, where they will bear a profusion of flowers the entire season. The tall varieties are elegant climbers.

Nemesia strumosa Suttoni,
Several colours, 18 inches, summer and autumn. A pretty annual of recent introduction.

Nemophila,
White, blue or purple, 6 inches to 1 foot, all season. Easily, and deserve to be more extensively grown. Pretty for pots.

Nicotiana affinis (fragrant),
White, 3 feet, summer and autumn. Pretty flowers, which impart a delicious odor in the evening.

Palafoxia Hookeriana,
Blush pink, 18 inches, midsummer. Pretty everlasting.

Perilla Nankinensis,
Beautiful dark coloured foliage plant. Very ornamental and attractive.

Phlox, Drummondii,
Assorted colours, 6 inches to 1 foot, summer and autumn. One of the prettiest and most useful of all the annuals. Elegant for bedding or massing. It delights in a rich loamy soil and plenty of water.

Platystemon Californicum (Californian Poppy),
Yellow, 1 foot, autumn.

Podolepeis,
Yellow or red, 6 inches, summer and fall. Curious; requires lots of sun.

Poppy, Papaver,
Annual varieties, red, white or yellow, 1½ to 2 feet, all season. Lovely free flowering annuals. The "Shirley" is a long stemmed variety, and is fine for cutting. Easily cultivated. A sandy loam is best suited for them.

Portulaca,
Red, white or yellow, 6 inches, midsummer. Sow where they are to bloom, and not until the soil is nice and warm. The colours are very brilliant. They require a rather poor soil and plenty of sunshine. The blooms do not expand unless in the sun.

Ricinus (Castor Oil Plant),

5 to 15 feet. Very massive and tropical looking plants, grown for their handsome foliage. Planted singly or in beds on lawns they are very ornamental.

Salpiglossis sinuata,

9 to 18 inches, mixed colours, summer and autumn. Very showy, bell-shaped, mottled and striped flowers. Plant in rich soil. Very graceful and pretty as cut flowers.

Sanvitalia Procumbens, fl. pl.,

Yellow, 6 inches, late summer. Pretty border plant.

Saponaria Calabrica,

Red or white, 1 foot, summer and autumn. Pretty continuous blooming bedding plants.

Scabiosa atropurpurea (The Mourning Bride),

18 inches to 2 feet, white, dark crimson, purple, mauve, etc. Summer and autumn. Beautiful double flowers very suitable for cutting.

Schizanthus,

1½ to 2 feet, various colours, summer and fall. Fine bedding plants with beautiful large flowers of many colours.

Schizopetalon Walkeri,

White, 9 inches, early summer. Fringed flowers, sweetly scented.

Silene Armeria and Pendula,

Red, white or pink, 1 foot, early summer. Plant in light loamy soil. Bright free flowering annuals, suitable for rock work.

Stocks, German Ten-Week,

Various colours, 1 to 1½ feet, early summer. Unsurpassed for bedding, massing and pot culture. Free and long flowering. They do best in good rich soil. Fragrant and beautiful for cutting.

Sunflower, Hilianthus annus,

4 to 5 feet. Large flowers. Showy for back borders.

Sweet Peas,

3 to 5 feet, all season. The Sweet Pea is one of our most popular annuals. It has been improved greatly of recent years. It succeeds best in a deep rich soil. The seeds should be sown in a trench 5 or 6 inches deep, and covered with one inch of soil. As the plants grow, fill up the trench with soil. Water where possible. Provide trellis or other supports while plants are still small. If the seed pods are carefully removed each day a succession of flowers can be had until the snow flies.

Virginian Stock (Malcolmial Maritima),

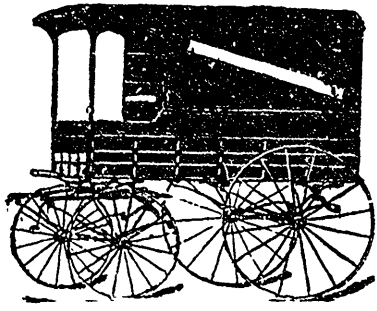
1 foot, red, white or crimson. Early summer.

Whitlavia grandiflora,

Purple and white, 18 inches, summer till fall. Pretty and free flowering.

Zinnia,

9 inches to 2 feet, various colours, summer and autumn. Beautiful bedding plants, bearing an abundance of very double flowers of richest colours. They are easily grown, and require rich soil and a sunny situation.



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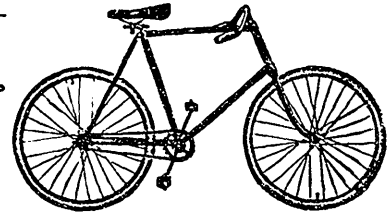

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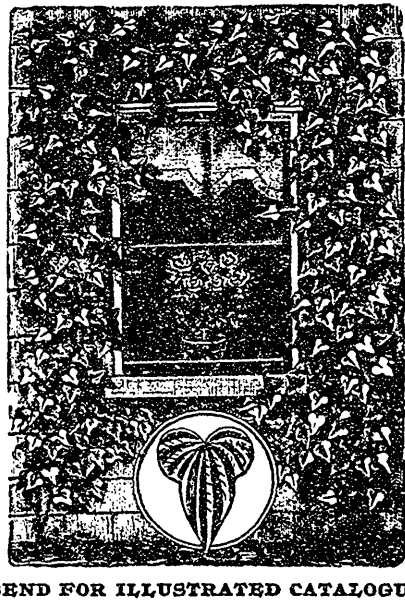

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