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DRINKING FOUNTAINS, BELLE ISLE PARK.

THE CANADIAN HORTICULTURIST.

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No. 2



OBJECT LESSONS IN CITY PARKS.



FIG. 1513.—

TO make the public object lessons worthy of imitation, their author must have a master mind to conceive and its keeper must be a past master to execute. To plan out the various parts of a park so they will fit the uses for which those parts are designed, is almost an impossibility; but if the designer can so plan that future additions may be made

without the various uses overlapping each other or blending inharmoniously together, then his legacy to the park is a rich one.

In general, parks are supposed to be small isolated territories not open to expansion of our Uncle Samuel, and consequently are supposed to be free from the many evidences of his commercial activity. They should be retreats into which one may lose himself from his daily work, and everything that goes to make it complete should symbolize the words: *rest, recreation and recuperation.*

My idea is that their beauty is enhanced by a consistent arrangement, or is destroyed by associating things of divergent nature. Suppose the scene is that of wildness, as a native woods, ravine or small open glade, it should be removed and hidden from the more cultivated portions. The only improvement necessary is to make it accessible. A foot-path made after the plan of an Indian trail, a fallen tree as seats and a



FIG. 1514.--VIEW IN SOUTH-EAST QUARTER OF BELLE ISLE.

OBJECT LESSONS IN CITY PARKS.

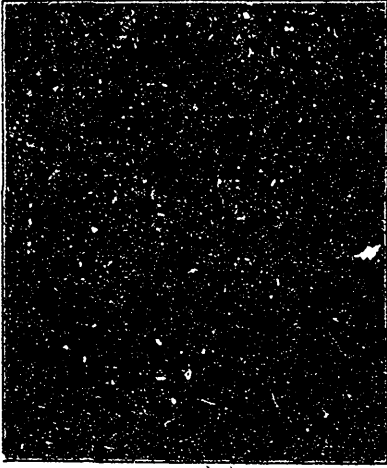


FIG. 1515.—

drinking fountain made as a natural spring are in the line of improvements that are permissible. Everything done to improve it shows as little as possible the effect of man's handiwork.

In grounds where the scenery is artificial, that made by man, another condition exists. Flower beds may abound; banks of flowering shrubs may fringe groups of ornamental trees; drinking fountains of artistic designs may be introduced, as may also a small lake or pond, fringed with ornamental grasses and filled with subtropical water plants. The lawn should be well clipped; the edges of the walks and drives properly edged, and everything here should show the careful attention of man. This picture is the opposite of the previous one. The careful performance of the work in the latter is as necessary as the rigid exclusion of it in the former. It is the proper understanding and carrying out of the details of these pictures that gives the park its character.

The picnic-grounds and play-grounds are localities that occupy a medium place between the two previously pic-

tured. There must be abundant shade and a fairly good lawn, also tables, seats and drinking fountains sufficient for the needs.

A year ago, our Park Board placed in the picnic-ground a number of wire baskets for refuse paper. They are about three feet high and twenty inches in diameter. On one side, they are concave, so they will fit against a tree to which they are locked by a chain. These baskets may not have been in proper keeping with good landscape effect, but they are far better than having the discharged lunch parcels scattered over the lawn. When I state that from six to eight cords of picnic refuse is gathered after a big picnic day, it can be seen that these baskets are very valuable in keeping the lawns free from unsightly litter.

Parks that attract large crowds must be well supplied with drinking fountains. These should be of such design as will harmonize with their surroundings. We are discarding the cast iron affairs and are using field stone.

The horse drinking fountains should be high enough so that the horse can drink without unchecking. It is unaccountable why this is not more often done.

In no one thing can parks be better object lessons in good taste than in the location and construction of its walks and drives. The principal ones must be of a nature that they are in good condition at all times to be in keeping with park surroundings; they should be of gravel or crushed stone. The latter, more commonly known as macadam roadways, is the kind that best fills the requirements, as it is comparatively free from mud in wet weather and the dust is kept to the minimum with a small amount of sprinkling during droughts.

In this day of good road agitation,

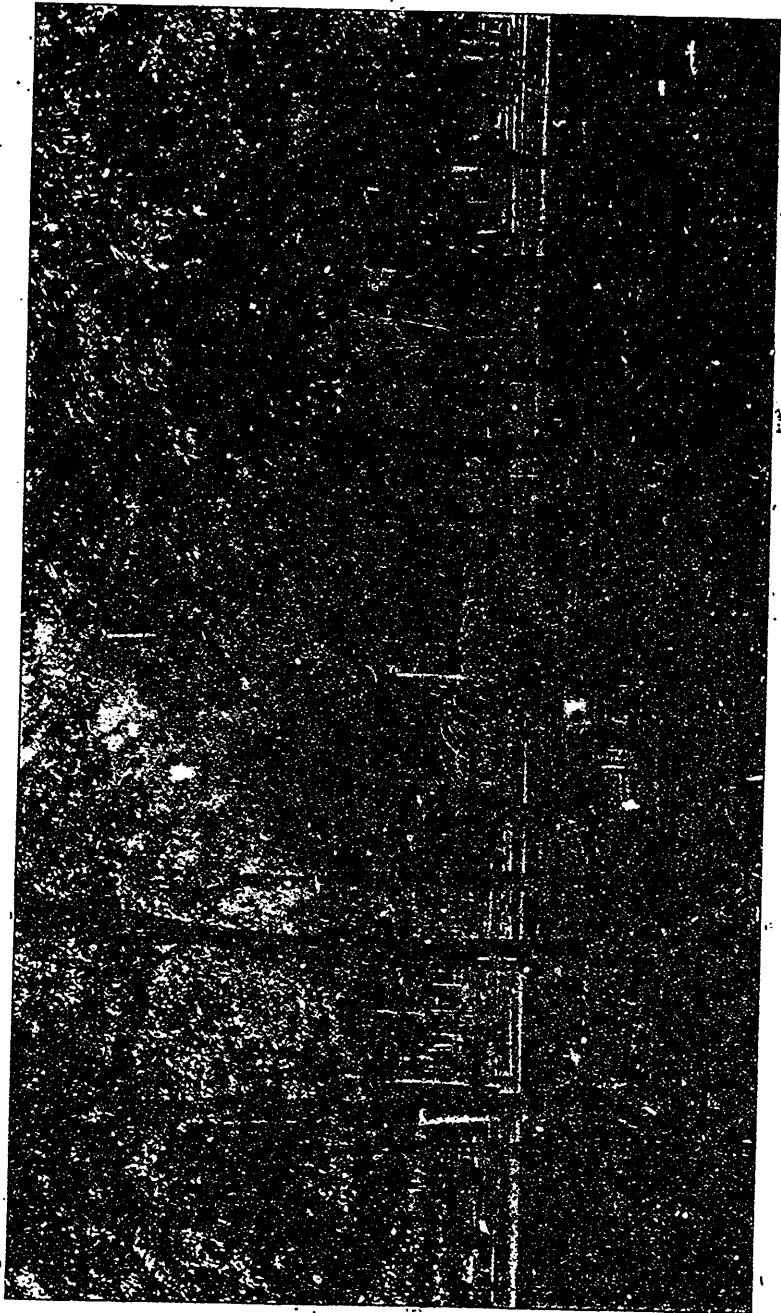


FIG. 1516.—SCENE IN CASS PARK.

OBJECT LESSONS IN CITY PARKS.

the public can rely with safety upon the experience of the park systems of our larger cities in the making of macadam roadways. In localities in Michigan where field stone is found, there is reason to hope that in the near future, means will be provided by which permanent and lasting macadam roadways will be built.

The main drives around the park must be of this permanent nature. No matter what the landscape is, the public demands it and no violence is done to landscape effects, if the drive skirts wild and romantic scenes. In such places no improvement outside of the roadway should be made, thus giving opportunities to all to come in direct contact with nature. Turf roads or mere trails may lead off the main driveway to more thorough contact with the wildness or to reach a desirable picturesque spot.

In laying out the drives and walks caution must be exercised in making the curves. Do not let it appear that a curve is made because the curve itself is desired. If the ground is open, let the curve be a long sweep following the lay of land to make easy ascent or descent to the hills, but through the woods the curves may be shorter; even abrupt. The bend should be sufficient to hide the road ahead of the curve. It is human nature to wish to see beyond the next turn and by proper landscaping one can be led on and on, each turn opening up new pictures, adding zest for more; but let the traveller see the drive beyond the bend, the road looks too far and he gives up and returns.

I have in mind a walk that follows along the bank of a stream, as it runs through an open lawn. The walk is constantly changing its course and it is possible to see every curve in its sixty rods of length and its termination from

the starting point. In fact, it fairly seems a wriggle as the eye follows it along. I never saw anyone walking on this path, but were it more or less hidden by shrubbery, I think it would be extensively used, as the scenery is beautiful; but, as it is now, it all can be seen at a glance, so a closer inspection is not invited.

Paths should be arranged sufficiently direct so that cutting across the lawn is unnecessary, and the surface should be such that there is no tendency to walk on the lawn. A plantation of shrubs is more effective than the sign "No path here," and a thorough sweeping up of the loose stones on the walk is better than the sign on the adjacent lawn "Keep off the Grass."

Last spring the Detroit Park Board tried an experiment of removing the "Keep off the Grass" signs from every lawn on the park system. No serious damage followed and the benefit was inestimable. When you consider that there are twenty-two small parks scattered throughout the heart of the city and are the lungs of thousands of people, it can be realized that the experiment was a momentous one.

The plantations of flowers and shrubs that go to make up the beauty of a park should have a character. They should be so arranged that their effect is combined in one grand whole. There may be planted in one locality plants that blossom at the same time, and when they are at their best their beauty will attract the sight-seer to that place. A fortnight later it will be another collection and so on throughout the season. It may be a pansy bed, a collection of peonies, a mass of spiraea Van Houtti and viburnums, lilacs, roses, phlox, petunias, hybiscus, hydrangeas, golden rods, rudbeckias and sunflowers, and ending up the season with

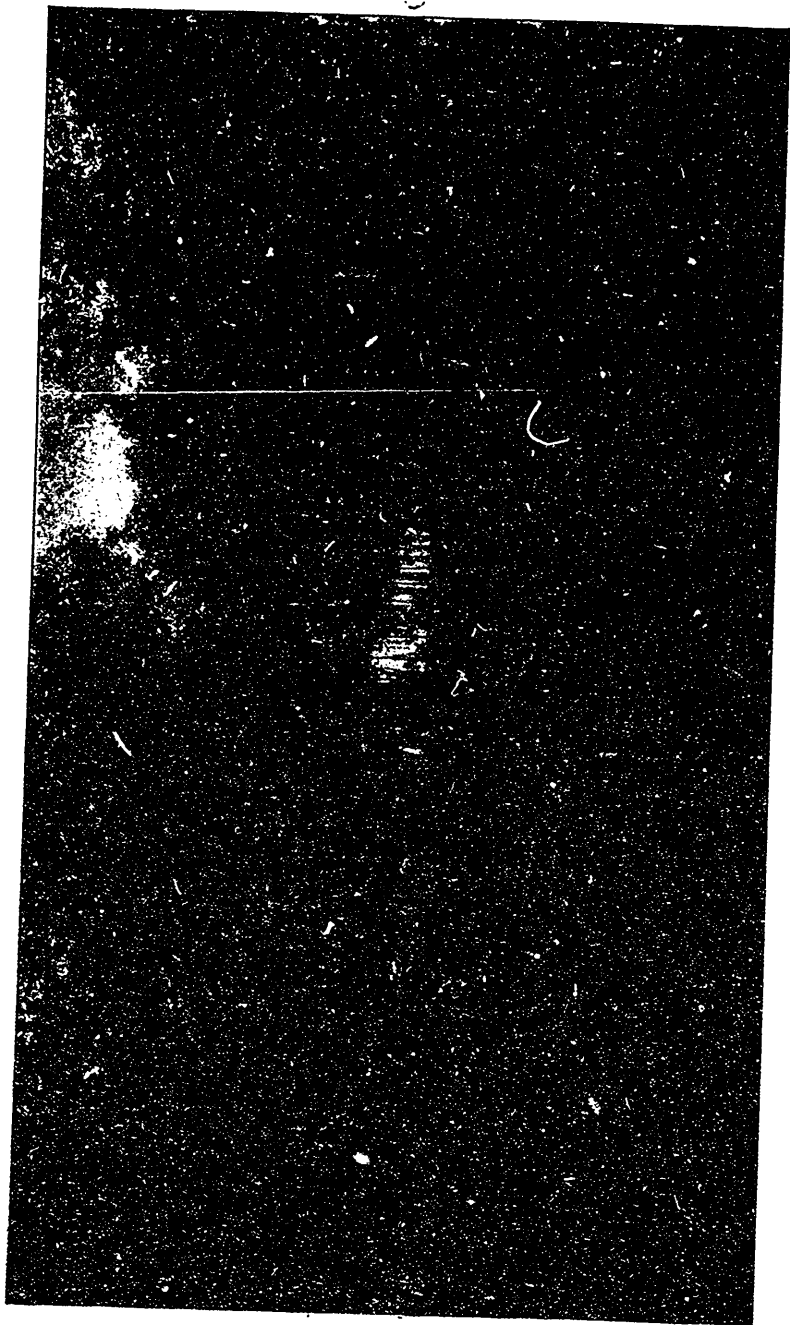


FIG. 1517.—ONE OF THE DRIVES IN BELLE ISLE.

OBJECT LESSONS IN CITY PARKS.

a mass of bright colored autumn foliaged trees and shrubs as Thunberg's berberry, sumach, sassafras or pepperidge, etc.

It is the aim of the Detroit Park Board to have the character of the different parks dissimilar.

Next in size to Belle Isle Park is Palmer Park, on which is situated Ex-Sen. Palmer's log cabin, filled with relics of olden times. It is desired to carry out in this park the primitive conditions of early settlers, instead of gaudy geraniums and assertive canna, will be the old fashioned flowers. In this park will be collected all the plants obtainable that are native of our State, that are worthy of cultivation. It will be a botanic garden of Michigan. It will be such a distinct and unique feature and object lesson that a person wishing to see our various parks can form no idea of this one by seeing any of the others.

That the parks may not be defaced, the rules governing the privilege of stringing telegraph and telephone lines should be a prohibitory one, and those for park purposes should be placed in conduits. As to the advertisements that may from time to time find their way within the park boundaries, there is but one way to settle that—a complaint in the police court. In the Detroit parks everything in the way of an advertisement is prohibited, even to handbills.

A few regulations giving the main rules of a park that are most apt to be

violated may be placed at the entrances. Outside of that, the fewer rules and signs posted about the park the better it is for all concerned.

The park should be conducted on broad lines, and the freedom of the people should be restricted as little as possible. By this, I do not mean that lawlessness is allowable, but that there will be perfect freedom for the enjoyment of its advantages. There should be proper facilities for the enjoyment of the various amusements, a place to bathe, a place for children to wade and sail boats; there may be baseball grounds, football grounds, bicycle tract, lawn-tennis or any sport that may be in popular favor.

One more point. Let the parks be an object lesson in education. New or little known plants should be labeled. As the landscape features are built up, set aside a place where plants can be planted, each family more or less by itself, with a label to every species.

There are many very desirable plants growing in every park that people would like to obtain for their homes, but that do not know its name, and consequently cannot order it from the nurserymen. A label giving its common name, scientific name and its family, places that plant where it can do its full duty to all.

R. J. CORVELL,
Supt. Detroit Parks.

Detroit, Mich.

DRIED APPLES IN FRANCE.

CONSUL TOURGEE, of Bordeaux, writes *The Fruit Trade Journal*, "The decided increase in the importation of dried apples and pears should call the attention of the shippers of these commodities to the necessity of keeping this market well supplied with information in regard to the trade.

This consulate was overrun during last autumn and early winter with applications for addresses of shippers of dried fruits in the United States. I found it very difficult from the resources at my command to answer these inquiries. In a general way this difficulty exists in regard to all lines of trade."



FIG. 1518. —

FERTILIZERS IN COLD CLIMATES.

IT is well known that quick growing crops, or crops grown in countries which from their high latitude or other causes, have a comparatively short season of growth, require plant food in a form very readily assimilated by the plant. An important matter in relation to this point is that with a shortened growing season, maturity closely follows actual growth.

If a crop of potatoes, for example, are grown in a northern latitude to be used as seed for more southern sections, it is very important that ample supplies of the mineral manures, potash and phosphate, should be assimilated early in the growing season. Only a fully matured potato gives satisfactory results as seed, and a dwindling supply of mineral fertilizers, during the latter stages of growth, is pretty sure to result in a crop of immature potatoes; of lessened value as food, and of little value as seed.

Canada-grown seed potatoes have for a long time been used in the United States for early potatoes, but of late years have only too frequently failed to give satisfactory results. It is very common for the "eyes" to fail to germinate, though the tuber is fair and plump so far as outward appearance goes. This is very probably due to the exhaustion of potash in many of the Canadian soils, from constant cropping without adequate restitution. Where wood ashes are used freely, the same result happens very commonly; wood ashes are a good source of fertilizer potash, but they also carry large quantities of lime which acts to liberate the supplies of potash existing naturally in the soil; as a consequence, the soil readily becomes deficient in potash. In the United States farmers have a common "saying" to the effect that lime enriches the father at the expense of the son, meaning that the

use of lime tends to exhaust potash quickly. If sufficient supplies of wood ashes were used to keep up the supply of potash, there could be no damage from the free use of lime, but to properly supply the potash needed yearly would require more wood ashes than the Dominion can supply in ten years.

Potatoes are an exhaustive crop. They are largely water and starch it is true but a good crop of potatoes remove more potash than nitrogen. Wheat removes only a little more potash than phosphoric acid, but oats much more closely resemble potatoes. An acre of oats will require more than twice the potash than an acre of wheat. What has been said of the influence of an ample supply of fertilizer minerals for the proper maturity of potatoes, applies with equal force to wheat and oats, or other crops. As seed, their condition for use in the Dominion is just as important as it is in the United States.

To insure a supply of fertilizers at the proper time, use them early as well as in ample quantities. The mineral fertilizers, that is phosphoric acid and potash, will lose little or nothing by being applied weeks or months before plant growth begins, so long as surface washing can be prevented. With nitrate of soda or sulphate of ammonia, the application must be made only shortly before seeding. With minerals, apply enough and apply it early, is a safe maxim.

R. GARWOOD.

NOTE.—While we agree with our correspondent in most of what he says, and appreciate his remarks about the value of fertilizers, we can hardly accept his statement regarding the exhaustive action of wood ashes, which we do not think has been proven by fact, nor as to the decrease in the germinating power of Canadian potatoes, as the result of lack of potash, which is a new statement to us.

EDITOR.

ORIGIN AND DEVELOPMENT OF SOME COMMON FRUITS.

FREDERICK C. NEWCOMBE, Ph.D., Jr. Prof. of Botany, University of Michigan.

MAN is not content to see the outside of things. It is not enough for some of us that we can recognize apples and grapes as such, but we wish to know how these things come to be, how they originate and how they develop. We are to consider for a few moments the origin and development of a few of our common edible fruits.

We all know that the flower precedes the fruit, and before we can talk of the origin of the fruit we must look to the structure of the flower. In Fig. 1519 is

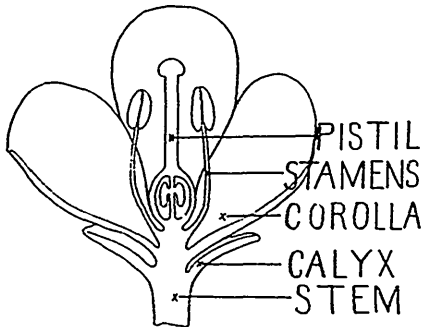


FIG. 1519.—Diagram of a flower in longitudinal section.

shown a diagrammatic view of a longitudinal section of a complete flower. The parts of the flower are seen to arise in circles from the flower stem, the lowest circle being the calyx, the next above the corolla, then the stamens, and sitting on the apex of the stem is the pistil. The calyx is usually green, and surrounds the stem as a cup or as several small leaves; in the bud it is folded closely over the other parts within, often protecting them by a waxy covering from the intrusion of rain, and from bird or insect enemies by distasteful

secretions. The showy corolla which to man's eye paints nature in beautiful colors, is a sign unfurled by the plant to tell insects of good things to eat, of banquets of pollen and nectar. The stamens with slender stalks supporting pollen-sacs are the male organs whose pollen-grains effect the fertilization of the ovule and thus start the growth of the fruit. The pistil is the female organ containing in its flask-shaped base, or ovary, the ovules which are the germs of seeds.

This is the structure of a simple and complete flower. But every part just named is capable of modification, and there is no part among those named that may not be absent from some species of flowers. In the pea and the bean flower, for instance, the corolla is so modified that its separate leaves are no longer all alike, but together present a peculiar butterfly appearance. In the pumpkin the corolla is all in one piece forming a beautiful yellow funnel. The corolla may, instead of one, be composed of several rows of colored leaves, as in the cultivated rose or the white water lily. On the other hand, the corolla may be wholly absent, as in the flowers of the sugar maple; the calyx and corolla may both be absent as in our American sycamore and in the female flowers of the birch; the stamens may be absent as in one kind of flowers in the melons, or the pistils may be absent as in the other kind of flower of the melons. When all parts are present in a single flower, the pistils and stamens may become mature at different times, thus insuring cross-fertilization, as in the pear. The successful fruit-raiser takes

ORIGIN AND DEVELOPMENT OF SOME COMMON FRUITS.

all these variations into account; for he has learned that in order to raise certain kinds of strawberries, grapes, pears, etc., he must so arrange his plants that there shall be a plentiful supply of ripe pollen when the pistils are ready for fertilization.

What is a flower taken as a whole? It is a modified branch; for it has an axis or stem from which grow the parts of the calyx and corolla, these parts being leaves. The stamens and the pistils we believe to be also modified leaves; for we have many plants like the tulips and white water lily in which the parts of the corolla pass gradually into stamens. This is shown well in Fig. 1520.

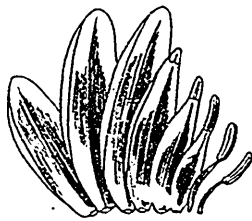


FIG. 1520.—WHITE WATER LILY (*Nymphaea odorata*), showing graduation from sepal on the left, through petals to stamens on the right.

Moreover, there are many plants in which the pistils develop into leaves instead of taking their usual form; our common trillium or wake robin is one of these.

If we wish to see the origin of a fruit, it is not enough that we find in the flower the part from which the fruit comes. We can go still farther back and find the origin of the parts of the flower. If we were to dissect a peach bud, or almost any other flower bud in December, we should find all the parts of the flower present in small size. If however, we were to make an examination in August or September, we should find the buds then forming. Suppose we dissect carefully the tip of a branch in the late summer; we should find the appearance shown in Fig. 1521. The first view shows the apex of the stem directed toward the observer, while growing from it is a circle

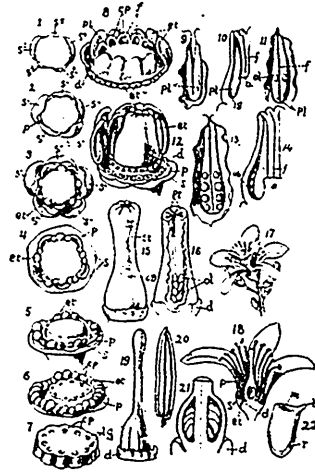


FIG. 1521.—DEVELOPMENT OF THE ORANGE BLOSSOM. (*Citrus aurantium*). 1, tip of stem showing the origin of the 5 sepals; 2, the 5 petals beginning to show alternating with the sepals; 3, appearance of the first 5 stamens; 4, other stamens arising on the flanks of the first 5; 5, same stage as the preceding, but in different position, with calyx and corolla cut away; 6, origin of the circle of pistils as little hoods on the stem; 7, origin of pistils showing alone; 8, older stage of stamens and pistils; 9, 10, 11, interior views of pistils; 12, young flower with pistils united into one in the middle, and other parts cut away on the near side; 13, 14, showing the origin of seeds in the pistil; 15, 16, older pistils; 17, 18, mature flower; 19, mature pistil; 20, mature stamen; 21, ovules in pistil; 22, ovule enlarged.

of little tongue-like structures. These five tongues are the germs of the five sepals. In No. 2, we see the sepals grown longer, while just above, and alternating with them are five little elevations, the beginning of the five petals. In No. 3, sepals and petals have enlarged, and now appears a third circlet of elevations, the germs of the first stamens. Soon other stamen germs grow out beside these first five, so that in No. 4, 5 and 6, where calyx and corolla have been partially cut away, one sees a circle composed of many little knobs. In No. 8, still another circle of elevations has risen from the stem, these being hood-shaped, and representing the beginning of the circle of pistils. In Nos. 12, 15 and 19, these pistil-germs have enlarged and finally

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united to make one compound pistil. Nos. 13, 16 and 21 show how the ovules arise within the base of the pistil. Many of our edible fruits are formed, as we shall see, by the extraordinary development of the pistil, and it will be well to remember that the first indication of the origin of such fruits is one or more little tongues of tissue rising from the surface of the stem at the tip of the branch.

to become spherical, finally becoming pulpy, a delicious fruit of the simplest origin—a modified pistil.

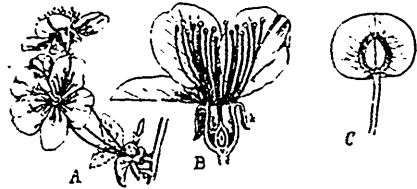


FIG. 1523.—SOUR CHERRY. (*Prunus cerasus*) A, flower cluster; B, flower in longitudinal sections, showing pistil sunken in cup-shaped stem; C, fruit in section.

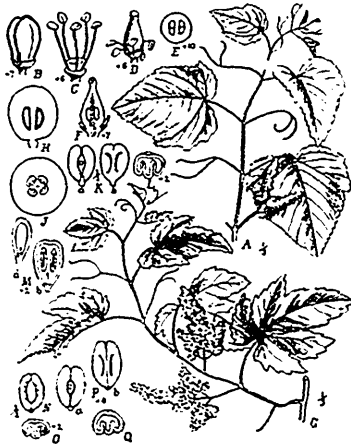


FIG. 1522.—A TO F NORTH AMERICAN FOX GRAPE. (*Vitis labrusca*) A, branch with leaves and tendrils; B, unopened flower; C, male flower, D, female flower, with sterile stamens and glands alternating with the stamens; E, F, Cross and Longitudinal sections of the pistil; G to M, European Grape (*Vitis vinifera*). G, flowering branch; H, J, Longitudinal and Cross sections of the berry; K, L, M, the seed.

One of the simplest of our market fruits is the grape, illustrated in Fig. 1522. The figure A is a branch from our American Fox grape, the ancestor of many of our cultivated varieties. B shows a flower of this species, the calyx being a mere ring around the stem, while the corolla never opens, but early falls off, revealing the stamens as in C, or the pistil with abortive stamens as in D. Thus we see that the flowers of this grape are of two kinds, male and female. The only part of the flower that develops into the fruit is the flask-shaped pistil, which after fertilization begins to swell, becomes fleshy, loses its flask form

From the grape we pass to cherries, peaches and plums, the cultivated species all derived by America from the old world. In Fig. 1523, the illustration, B shows a cherry flower longitudinal section. There are depicted flower stem, calyx, corolla, stamens and a single pistil. The same parts are present here as shown in our diagram Fig. 1519, but in the cherry the parts are differently disposed.* The stem or axis instead of preserving its conical form becomes cup-shaped, bearing the pistil in the bottom of the cup, and all other parts on the rim of the cup. No one could tell by looking at this flower alone what parts would develop into fruit. It looks very much as though not only the pistil but also the cup-shaped stem would become fleshy. But in the immediate development after fertilization, the cup ceases to grow, while the single pistil begins to swell, the inner part of its wall becoming stony, the outer part fleshy and edible. The relation of stony and fleshy part is shown in C (1523). Thus the fruit of the cherry, the peach and the plum are made solely from the enlarged base of the pistil. These fruits are therefore in origin the same as that of the grape.

*In the following account the author has chosen to regard the cup-shaped base of the flower of Rosaceæ as an extension of the stem rather than as a calyx tube.

ORIGIN AND DEVELOPMENT OF SOME COMMON FRUITS.

The fruit of the lemon and orange are also derived from the pistil alone ; but whereas in the grape, cherry, peach and plum it is the wall of the pistil or ovary which becomes the succulent part, in the lemon and orange the ovary wall forms only the yellow skin, while the juicy flesh is formed by a mass of hairs which fill up the cavity of the ovary.

The apple blossom is illustrated in

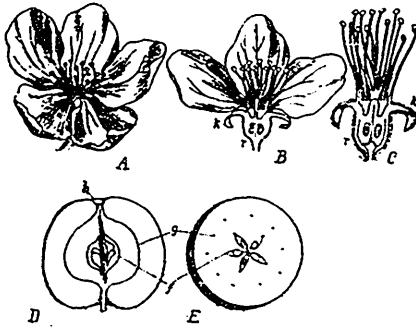


FIG. 1524.—THE APPLE (*Pirus malus*). A, flower; B, flower in section; C, flower in section with corolla removed; r, the axis or stem which develops into the fruit; D, fruit in longitudinal section, showing persistent calyx k, wall of ovary j, and vascular bundles v. E, fruit in cross section.

Fig. 1524. If we look closely at the sections of flowers as shown at B and C, we shall note two principal variations from the structure of the cherry flower. The apple instead of one pistil as in the cherry has usually five ; and the pistils instead of sitting freely in the bottom of the cup of the stem as in the cherry, are fused with the cup of the stem in the apple. As the fruit begins to develop after fertilization, the stem-cup, as well as the pistils, enlarges, carrying the rest of the flower on the rim of the cup for a short time ; soon the corolla, the stamens and the upper part of the pistils fall off, but the calyx remains even upon the ripe fruit.

Of a quite similar origin to the apple are the pear and quince. The fruit of the apple, pear and quince is therefore a swollen stem or axis enclosing the base

of the pistil, thus differing widely from the fruits previously considered.

Currants, huckleberries, gooseberries cranberries, pumpkins, squashes, melons and bananas have a similar origin to the apple ; for in the flower, their pistil-base is fused with the cup of the stem, and as the fruit develops both stem-cup and pistil-base enlarge together. There is, however, this difference between the fruits last named and those of the apple, pear and quince ; in the latter group the edible part is all or nearly all stem ; while in the former group, the stem part is but a thin covering over the outside, the edible part being mostly pistil.

The flowers of the blackberry and raspberry have, as shown in Fig. 1525, a single circle of calyx leaves, a single circle of corolla leaves, but several circles of stamens and pistils. By looking at B, Fig. 1525, it will be seen that the calyx, corolla and stamens, just as in the cherry and apple, arise from the rim of a stem-cup, a deep cup in the cherry and a shallow cup in the black-

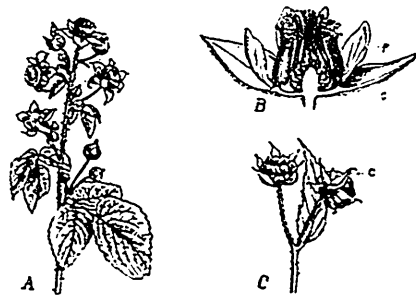


FIG. 1525.—EUROPEAN WILD BLACKBERRY. (*Rubus fruticosus*). A, a flowering branch; B, flower in longitudinal sections; C, branch with fruit; p corolla and c calyx.

berry. This cup in the raspberry and blackberry has rising from its bottom a solid dome, on whose sides the pistils are arranged. This dome is a part of the stem.

The flower of the strawberry is in every way quite similar to that of the

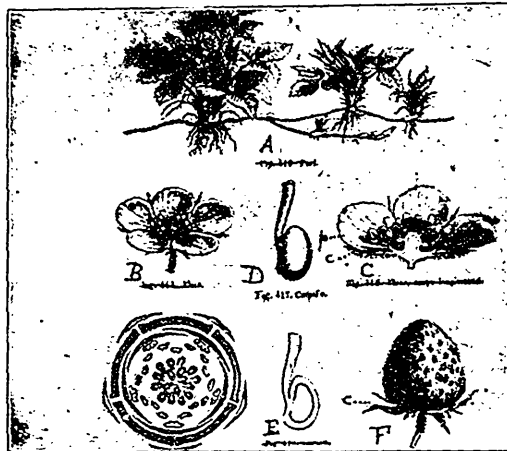


FIG. 1526.—STRAWBERRY. (*Fragaria vesca*). A, complete plant; B, flower; C, flower in longitudinal section; D, pistil; E, pistil in longitudinal section; F, fruit; p corolla and c calyx.

blackberry, as will be seen, by reference to Fig. 1526, B and C.

The last four groups of figures examined, those of the cherry, apple, blackberry and strawberry, illustrate members of one plant family—the rose family or Rosaceæ. Since this family furnishes us in this region with the most of our tree and bush fruits, it may be worth while just here to take a comparative view of the flowers of its members, as illustrated in Fig. 1527. It will be noted that in all these six flowers the calyx, corolla and stamens are borne on the rim of a cup. The manner of arrangement of the pistils is what chiefly distinguishes the flowers from one another. At C we have the type of the cherry flower, with a single pistil in the bottom of the cup; at D is the same relation, except that there are several pistils instead of one; at E, which is the type of the rose flower, the pistils are borne on the sides as well as on bottom of the cup; at F, the apple flower, the base of the pistils

are fused with the cup; while at A and B, types of the strawberry and blackberry, the pistils grow from a dome rising from the bottom of the cup.

Returning to a consideration of the fruit of the blackberry and the strawberry, we find that although the flowers are so nearly alike, the edible parts of the fruit are much unlike. The pistils in the blackberry become thick-walled, just as the single one does in the cherry, and these fleshy pistils give us the appearance shown in Fig. 1525, C, and Fig. 1528, B, the calyx of the flower still showing beneath the fruit. In the strawberry on the other hand, the pistils do not become fleshy; they remain small and become dry and hard, while the domed axis from which they grow swells enormously, furnishing thus the edible part. Therefore the blackberry is composed mostly of succulent pistils attached to a small central stem or core, while the strawberry is composed mostly of the enlarged central stem, in whose surface are borne the dry pistils.

Fig. 1528 shows a series of three ber-

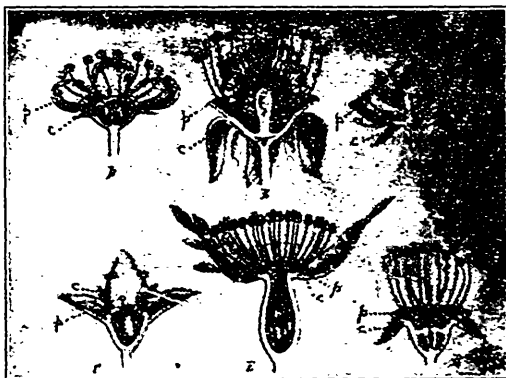


FIG. 1527.—Comparative view of flowers of the Rose Family A, Marsh Five Finger (*Potentilla palustris*); B, Avens (*Geum urbanum*); C, Lady's Mantle (*Alchemilla alpina*); D, Meadow-Sweet (*Spiraea decumbens*); E, Dog-Rose (*Rosa canina*); F, Apple (*Pirus malus*); c calyx and p corolla.

ORIGIN AND DEVELOPMENT OF SOME COMMON FRUIT.



FIG. 1528.—Comparative few of fruits. A, Strawberry; B, Raspberry; C, Mulberry.

ries—strawberry, raspberry and mulberry. The mulberry, to a superficial observer, may look not unlike the raspberry or the blackberry. We see, however, that each little fruit in a raspberry or blackberry is tipped with a single thread—the remains of the upper part of the pistil; but each little fruit in the mulberry is tipped with more than one thread, and there are lines crossing the fruitlet. If we cut longitudinal sections of these berries, we shall have before us such appearances as are shown in Fig. 1529. From these figures and from a study of the development of the fruits, it can be seen that the fruit of the strawberry is a fleshy stem or axis with the small dry pistils in its surface; the fruit of the blackberry is composed of many fleshy pistils attached to a slightly fleshy axis; the fruit of the raspberry, as ready for market, is like that of the blackberry except that the pistils of which it is composed are separated

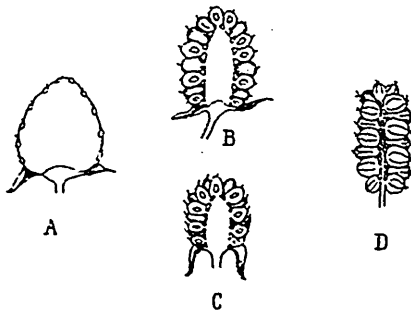


FIG. 1529.—View of fruits in section. A, Strawberry; B, Blackberry; C, Raspberry; D, Mulberry. Dotted line in A and B show where the fruit separates from the axis.

from the central axis; while the fruit of the mulberry consists of a whole branch, all parts of the flowers of which have developed over into fruit. Each little fruit in a mulberry has a central part which is the pistil containing seeds, and enveloping this pistil are four fleshy calyx-lobes. Each little

fruit is attached by a short stem to the central larger stem; so that the mulberry is made from a whole group of female flowers including the stems of these flowers. The mulberry is therefore the same kind of fruit as a naked ear of corn. In the ear of corn, however, the pistils are not united with the calyx as in the mulberry.

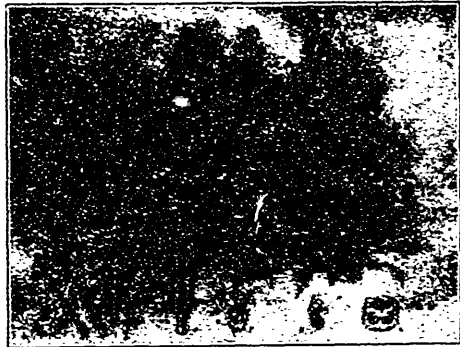


FIG 1530. PINE APPLE. (*Ananas sativus*). A, head of flowers; B, head of fruit; C, single flower, showing calyx and corolla; D, flower in longitudinal section; E, petal and stamen; F, pistil and calyx.

In the pine apple, Fig. 1530, the flowers are grouped in a head as in the flowers of the red clover. There is a central stem from which the flowers branch off as in the mulberry, but in the pine apple, in addition to the various parts of the flower, there are leaves interspersed, a leaf just below each flower. When the pine apple ripens, all parts become fleshy and fuse together, pistils, stamens, corollas, calyces, leaves and plant stem, all uniting to make this delicious fruit.

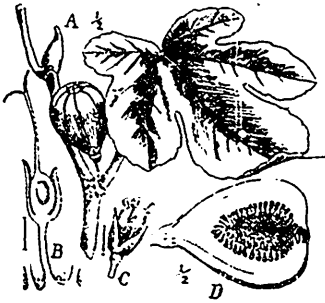


FIG. 1531.- (Ficus carica). A, flowering branch; B, female flower; C, male flower; D, mature in longitudinal section.

In the last fruit to be dealt with here, the fig, we have the same parts present as in the pine apple, only their arrangement is different. In the fig, the plant stem instead of being solid, giving off flowers outwardly as in the pine apple and the mulberry, is urnshaped, giving off flowers inwardly, as seen in Fig. 1531 D. The urn of the fig is outwardly nearly like that of the rose, Fig. 1527 E; but the

urn of the rose gives off only pistils, while that of the fig gives off flowers and rudimentary leaves.

Thus it is seen that fruits arise from the development of various parts present in the flower; that the parts of the flower all arise as little tongue-like out-growths from a plant stem; that in the ripe fruits, we have in the grape, cherry, plum and peach only the pistil of the flower; in the apple, pear, quince and others, the pistil with a thick stem part outside; in the raspberry, a hollow dome composed of many pistils; in the blackberry, a central stem bearing many succulent pistils; in the strawberry, a succulent stem bearing dry pistils; in the mulberry, a thin central stem bearing many lateral flowers, all of whose parts become succulent and remain in the fruit; in the pine apple and fig, a complex of pistils, stamens, corollas, calyxes, leaves, and stems.

NEATER PACKAGES FOR FRUIT.

There is a needed tendency toward smaller and neater packages for fruits. In addition to getting nearer the wants of the consumer, the fruits are not subject to the injury they are exposed to in large packages, where the ripe are crushed by the greener ones. A light attractive package helps to no small extent in the sale of the contents. The cost of the packages is no longer a big expense. The decline has kept pace with the decline in values of fruit, and new and improved machinery insures still lower prices for many of the packages necessary.

Conceding that the grower has done

his duty so far in raising, picking and packing the fruit, the next step is the best market, and last, but not least, the firm selected to ship to. The alluring and neatly worded circulars have led many shippers astray. Big figures, too, often prove a bait that many cannot resist. Every big market has plenty of firms who are entirely satisfied with their legitimate commissions, to whom the grower can ship without assuming any risk. Beware of the big, windy circulars that promise everything, and the firms that send them out.—Proceedings of American Pomological Society.

PALM CULTURE IN OUR HOMES.

Read by Mr. J. O. McCulloch, at the December Meeting of the Hamilton Horticultural Society.

IN this paper "Palm Culture in Our Homes," I can only give an account of the method pursued by myself. It may not be the best method, but it has resulted in some fairly good plants, and there is no doubt that any one, with the exercise of a little care and patience, can produce

This is a mistake, as there are few plants that will give as much satisfaction, with ordinary care as some varieties of the palm. They will grow and thrive where any blooming plant would prove a disappointment, because they do not require the sunlight which most other plants must have.

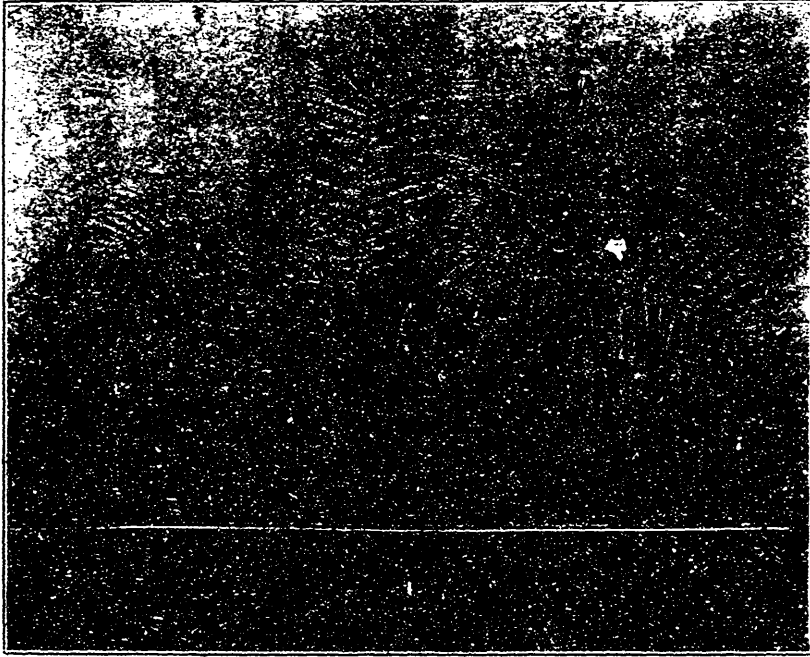


FIG. 1532.—PHŒNIX RECLINATA.

fine specimens of this most graceful and beautiful class in our ordinary living rooms; and I hope, that those who have succeeded, perhaps by some different method, will give us the benefit of their experience.

It is unfortunate that many have been deterred from attempting to grow palms, by the somewhat widespread notion, that they will not do well in the house.

Palm culture, like everything else, must start by procuring the palm. Any florist can supply you, but it is not so easy to say with what variety to begin. If I were advising anyone to make a start, it would be with *Phœnix Reclinata* or *Phœnix Rupicola*. These two will stand almost anything, high temperature, low temperature, fluctuating temperature, coal gas (the less of it however the

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better), and even drying out until the leaves droop, and still maintain an appearance of which no one need be ashamed. Next in order would come the *Kentias*, *Balmoreana*, *Forsteriana*, and *Canterburyana*, then *Latania Borbonica* and *Seaforthia Elegans*, followed after a little experience, by *Areca Lutescens* and *Cocos Weddeliana*; these last two are very graceful, the *Cocos* perhaps being the finest of all for table

symmetry so necessary in a palm. However, having possessed yourself of a plant grown in a high temperature, is no reason for discouragement, as each succeeding leaf, after the first one grown outside the greenhouse, will come on a little longer stem, and the plant in time resume its graceful shape. When buying, be sure your plants are well rooted, have them turned out of the pots and see that the tips of the roots are white



FIG. 1533.—PHENIX RUPICOLA.

decoration. And now a word about buying the plant, content yourself with something of rather a small size to start with and try and get a plant that has been grown in a cool temperature. If you get a plant that has been grown in a high temperature, the next few leaves it puts out, after having been removed from the greenhouse, will come with shorter stems than those already on the plant, thus destroying the

or pink, and that there is a goodly number of them. A well rooted, cool grown palm may be safely removed from the greenhouse to our living rooms at any season of the year.

The first requisite of house culture is regular attention. Other plants may be injured by neglect and quickly recover, not so with the palm. The damage done by one weeks neglect may require a couple of years to repair. By

PALM CULTURE IN OUR HOMES.

regular attention, I do not mean watering, or for that matter doing anything else at stated intervals, except looking your plants over at least once a day, to see what attention they need. There can be no stated time for watering plants. The temperature of the rooms may be higher one day than another,

and easy as it is, it has proved a greater stumbling block than anything else. Constant soaking with water has ruined many palms, and drying out has probably ruined as many more. When you water do it thoroughly, using tepid water if it is handy, and then watch your plant until it shows signs of becoming dry,



FIG. 1534.—*KENTIA FORSTERIANA.*

there may be more sunlight, the air may be drier ; in fact, there are a variety of causes, not easily traced, which make it possible for a plant to require water twice in two days at the beginning of a week, and once in two days at the end of it. To be able to determine whether a palm needs water or not, is perhaps the most essential thing in palm culture,

before watering again. You can tell this by the appearance of the earth in the pot, by the feel of it, or perhaps best of all, by the sound produced by rapping the pot with the knuckles. To become familiar with this last method, take a pot filled with earth and let it become dry ; rap it sharply with the knuckles and note the sound, then water

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it, and rap again noting the difference. Have a pot that was watered the day before, rap it and you will have still another note. With a little practice you will be able to tell by this simple method whether a plant needs water or not. The only rule to be laid down is, never allow the earth to become dry enough to powder between the thumb and finger, and never keep it soaking wet. One of the best methods of watering is to place the plant in a pail or tub of water, where the water is deeper than the pot, and allow it to stand until the air bubbles cease to come to the surface; then, in taking the pot out, drain the water from the top of the pot so that as little water as possible will pass through the soil. The reason that this method is better than the one usually employed is, that the earth in drying shrinks away from the pot, and when the water is poured in at the top, it is very apt to find its way down the sides of the pot and out at the bottom, without having thoroughly penetrated the centre. You will also find that plants watered by this method do not dry so quickly, thus showing that the watering was more thoroughly done. And now I must sound a note of warning in regard to jardinières, they are all very well in their place, and certainly improve the appearance of a handsome palm, but they were never intended to water palms in. When you water your plant, take it out of the jardinière and allow it to drain before putting it back; and it is perhaps as well, as a matter of precaution, to have an inch of beach gravel, or something of that nature, in the bottom of the jardinière, and when you lift your plant out, drain out any water that may have accumulated.

The next matter of importance is washing the leaves. To keep a palm in good order, this must be done at least

once a week and at a time when the plant needs water. Perhaps the easiest way is to stand the plant in a bath or tub and give the leaves a shower bath with the watering can, or fill up the bath and put the plant in so as to cover the leaves, if necessary, placing it on its side. Should you prefer to have the leaves cleaner than these methods will make them, rub them over with a damp sponge, rinsing it occasionally. There is no necessity to use castor oil or anything else of that nature to make the leaves glossy, if they are kept perfectly clean. Handle your palms carefully. The tip of the coming leaf in some varieties is very brittle, the slightest touch will break it as I have found out to my sorrow more times than one. If you should be so unfortunate as to break one, don't feel too bad about it as the injury is generally temporary, seldom effecting the leaf after opening.

With regard to temperature, a palm with proper watering will stand a higher or a lower temperature, than we would find comfortable in our living rooms. It is a mistake to suppose that they require an extra amount of heat. They will grow and thrive just as well in a lower temperature, say from 55 to 65°, and in the end make a better plant. A palm will stand, without injury, an occasional temperature of 45°, provided it has not been grown in a high temperature, but it is not of course advisable to subject the plant to such an extreme, if it can be avoided. As to light, give them a sunny window in winter if you can, but it is by no means a necessity; many palms that are fine specimens have seen little or none of the winter sun. Be careful not to give a full exposure to sun in the late spring, or the result will probably be unsightly burnt leaves. If your house is heated by a

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hot air furnace, be sure to keep the water pan filled, as much for the benefit of yourself as your plants, and avoid if possible coal gas, though palms stand even more of this than most plants. Should your house be lighted by gas, grow your palms in the room where least of it is used. Special ventilation I do not think is necessary, the air that is

have them in any quantity, take a tooth brush and water and scrub the leaves until the scale has fallen off. If however, your plant is free from these pests to start with, and you examine it occasionally, you will probably never find more than half a dozen or so, which may be removed with a little piece of stick, or anything else that comes handy.



FIG. 1535.—KENTIA CANTERBURYANA.

pure enough for us will be all the palm requires.

There is but one class of insects that are injurious to palms. These are generally known as scale, and you will have to learn to know them and keep a sharp look-out for them, otherwise, your efforts at palm culture will come to naught. They appear as little greyish or brownish scales on the leaves, and will, if left undisturbed, render the finest green leaf a sickly yellow. Should you

Never apply kerosene emulsion or anything else of that nature to your palms, it may kill the scale, but will certainly injure the plant.

And now, we may consider the soil and method of potting. I have grown palms with some measure of success, in soils of widely varying nature; for instance, in rotted clay sod, then in leaf mould, and again in a mixture of the two, and I have found but one soil so far, in which they would not grow, and

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that was, rotted sod and manure. The lesson to be learned from this is, avoid manure in any shape for palms. Whatever soil you use, make leaf mould the basis of it. All my palms but one or two, are growing in pure leaf mould, and the one or two are in leaf mould, with the addition of about twenty-five per cent. fine beach sand. This latter soil is the better of the two; but I think the substitution of light rotted sod for the sand, would be still better, provided, there was no manure mixed with the sod. In case, that any of you do not understand what is meant, by leaf mould, I may say, that it is simply thoroughly decomposed leaves, and can be found in any woods. Scrape away the rough leaves on top, and you will find your leaf mould from two to four inches in depth underneath. In using it, don't sift it, or throw out the fibrous parts, or little pieces of stick; let it all go into the potting soil. Another thing, don't take your leaf mould from a depression, where water might lie, select a spot that is well drained, otherwise your soil will be sour, in fact it would be better to throw the leaf mould in a little heap, in cellar or outhouse, and turn it over a couple of times, to make sure it is perfectly sweet before using.

In potting, the first thing to be considered is drainage, and this must be perfect. To attain this end, I know of nothing to equal the method described by our president, in his talk about bulbs; if you remember he covered the hole in the pot, with a piece of broken flower pot, then, put in half an inch of beach gravel, and over this, some moss or leaves torn to shreds. This is an improvement on any method I have used so far, and I intend to use it in future. Having provided the drainage, put in some soil, and then your plant, and remember one thing, pot tightly;

take a flat stick and ram the soil down around the side of the pot, you will hardly get it too tight. Be sure the pots you use are perfectly clean, and use a pot an inch larger than the one the palm is already in. In some cases, it may be desirable to put the plant back in the same pot that it is growing in. To do this take the plant out of the pot and stand it in a pail of water, washing all the earth from the roots; then put it back in the pot and with the fingers, ram the new soil in between the roots until the pot is full. This is rather a delicate operation, and I would not advise any one to try it extensively without first experimenting, though it proved a success with me in the case of two plants last spring. The best time for an amateur to pot palms is in spring, probably the latter end of May, and one shift a year is plenty for all palms though some of them may not require potting as often; it all depends on how the plant is growing. Learn to turn a plant out of the pot without disturbing the soil, and keep track of the condition of the roots; in health, the tips should be light in color, if black and soft, something is wrong. The trouble may be, too much or too little water, the one, who waters the plant, is the only one, who can determine which. When turning out the plant, if you see a worm, take it out; but it is doubtful, whether they do any harm or not. Should you wish however to get rid of them, try watering with lime water or stick half a dozen matches in the pot, sulphur end down, and leave them there through two or three waterings, and the worms will come to the surface.

Palms will probably be the better for staying out of doors in warm weather. Certainly, they are more easily looked after, but they must not be fully exposed to either sun or wind; the sun

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FIG. 1536.—*PANDANUS UTILIS*.

will burn, the wind thrash and split the leaves. The ideal spot is one with wall to the south and west; in such a position the plants get three or four hours sun in the morning, and are protected from the prevailing winds. Another good place, in summer, would be a sunny position, where they could be protected by cotton, stretched along the sides, and over the top of them. In this position, they would make a more rapid growth but would require very careful watching, the slightest drying out would result in injury. In summer, I have always watered my palms with the hose. There is no doubt, that tepid water would have been better, but the hose was so much the handier, that it outweighed all other considerations. Take your plants in when the nights get cool, and put them out during the day. You can give them all the sun they can get, at this time of

year, without fear of injury; but beware of the wind.

In recommending varieties of palms, I have confined myself to personal experience, and there are no doubt many others of which I know nothing, that would do equally well in the house. There are also some other plants, which cannot be classed as palms, but which are of the same decorative nature. Chief among them stands *Pandanus Utilis*, the screw pine, which does well in the house; but should not be subjected to as low a temperature as palms will endure, and will come a much better color, if grown entirely in the shade. *Pandanus Veitchii* is a variegated form, green and white but seems to run to a solid light green and is not so desirable as the other. *Ficus elastica*, *Cordyline indivisa*, *Araucaria excelsa* and many greenhouse ferns, make fine decorative plants, and grow well in the house.

One word, in conclusion, to those among you, who may have bought palms, and seen them die or become so unsightly as to be an eyesore rather than an ornament. Don't be discouraged, and conclude, that palms will not grow in the house; rather try and find out wherein you have gone astray, and thus, get the benefit of the experience, that has cost you so dear. Remember one thing, look your plants over every day. It won't take but a moment or two, and you will be surprised to find, how their needs vary with the varying conditions surrounding them. That palms can be grown in ordinary living rooms as well as in greenhouses, I know to be a fact. I venture to state, that I can find many palms, that have not been in a greenhouse in years, that size for size, will hold their own with any plants grown under glass.

* The Orchard and Fruit Garden *

HOW TO MAKE FRUIT GROWING PAY.

HOW to make fruit growing pay seems to be the question of the hour. There has been so much failure during the three past years that there is universal discouragement, but the dawn of better days is near. The fact is that we must make a complete change in methods. We have been planting and growing fruit for our home markets; we have now completely stocked these markets and we imagine because Ontario is overstocked, the whole world is in the same condition. So far is this from being the case, that the very opposite is the truth. England, Germany and Belgium are all looking to Canada for their supply of fancy dessert apples. Only this season, some of our growers have received net returns from Hamburg of \$3.50 per barrel, for Ontario apples, and the writer has received a net return of 50c. per 3rd bushel case for selected Baldwins and Spys. England is beginning to look to Canada for her fancy table pears. Our Bartletts, Boussocks, Clairgeaus, Anjous, Duchess, and even Kieffers have been making net returns of from one to two cents each according to size, and the demand is unlimited for the larger sizes and fine grades of pears, of high quality. The Kieffer is as yet new to the English market and for that reason has sold well both in '98 and '99 on account of its fine appearance. But we have reason to doubt whether it will continue salable. One firm in Edinburgh, for example, writes: "We find that persons buying Kieffers, do not want them a second time."

To make fruit growing pay in the

changed conditions of the present day, we must revolutionize our methods completely. Once it would pay to grow small, soft apples, and even scabby and wormy apples, because our home markets were so hungry they would buy anything in the shape of fruit, and it cost so little to put it on the near markets that even natural fruits brought us a fair margin of profit. But now that our home markets are filled and we have to reach out to distant markets and compete with the finest fruits of California, and of Europe, and even of South Africa and Australia, the old slipshod methods will no longer do.

To begin with, we must *entirely cease growing inferior kinds*; they must all be either rooted out or top grafted. We must waste no more time or money over them, but at once grow varieties suited to our changed conditions. Just which special kinds these are must be to a large extent left to each man's judgment, because localities differ; but in general we must (1) *plant good shippers*—i.e., kinds that will carry long distances under favorable conditions. Now it has been proved that the Crawford peach, for example, the best variety we grow for our home markets, will not carry to foreign markets, even in cold storage. The Dwarf Champion and the Dwarf Aristocrat tomato will not carry; nearly every package of these varieties which we sent over in 1899, arrived in a rotten condition, and left the shippers in debt, while the Ignotum carried perfectly.

The next important thing is (2) to *select varieties that are worth shipping*.

HOW TO MAKE FRUIT GROWING PAY.

It costs the same money to grow a poor variety as it does a good one. The packages and the freight are the same, and now that the costs of reaching distant markets have to be added, the high grade, fine size, well colored varieties are the only varieties that will pay. The variety should not only be a good shipper and of good appearance, but of the best quality. The Ben Davis apple and the Kieffer pear, for example, are lacking in this last particular, while almost faultless in the previous qualifications. It is hard to find all these points in any one fruit, but let us seek after them.

Then when the best varieties are chosen, (3) *only the best samples should be grown or shipped*. What is the use of allowing our trees to produce a lot of small peaches, or apples, and then find that one half the crop is worthless. We must stop growing such stuff. We must manure, prune, and thin in a scientific manner, just as a trained gardener in the old land does, with a view to producing only the finest grade. Michigan peach growers thin their peaches to eight inches, and say it pays them, even for a home market; how much more is it important for a foreign market. In our experience at Maplehurst thinned peach trees yielded about as much fruit as unthinned by increase of size, and when you count advanced

price, it will always pay. Pears for export in 1898 were packed in cases $23\frac{1}{4}$ inches long, 11 inches wide and 5 inches deep, and graded extra A No. 1, A No. 1 and No. 1. Of the first grade, 60 pears, about $2\frac{3}{4}$ inches in diameter, filled a case. Of the second, 80 pears, $2\frac{1}{2}$ inches in diameter; and of the third, 100 pears, $2\frac{1}{4}$ inches. We have not the full and complete returns yet, but in general we may say that the 1st grade Bartletts netted us \$1 a box, the 2nd grade 75 cents, and the 3rd about 50 cents. Pears smaller than $2\frac{1}{4}$ inches were entirely unfit for export. Herein lies a lesson of great importance to the Canadian fruit grower which must not be despised, viz., that it will no longer pay to grow small-sized fruit of any variety for export, and that the grower must make up his mind to pull off all small, poor and mean specimens, and allow only the best to come to maturity. Over in Michigan, the growers are wide awake on this even for their home markets. They are asking the legislature to pass an Act forbidding any man from offering for sale poor trash of any kind of fruit, in order to bring about this very end. Must our Association ask this? will our growers have sense enough to stop growing second class stuff, and so make such action unnecessary in Ontario?

TO GET EARLY PEACHES.

J. H. Hale, the peach grower, gets ripe peaches two weeks earlier by the following method:

In the middle of the growing season put a strong wire around a large arm of a tree and twist it fairly tight. This checks the flow of sap and causes fruit buds to form early and in great number. The fruit on the branches of this arm

will ripen two weeks earlier than that on the untreated branches and will be much more highly colored. But this part of the tree will be so weakened by the treatment that it should be cut away after fruiting that new shoots may come and take its place. Thus one large arm or limb of a tree may be forced each year.—Strawberry Culturist.

THE CLYDE STRAWBERRY.

ONE of the most difficult fruits to keep posted about is the strawberry. Forty years ago there were but two varieties much grown among us, viz.: Hovey and Early Scarlet; and when a little

came legion, and among them some that excelled in size, and others in quality. The Bubach, for example, was for a time a leading variety on account of the lack in vigor of the plant.

Now the number of excellent varieties,



FIG. 1537.—CLYDE STRAWBERRY.

later, there appeared Wilson's Albany, and Crescent it was the beginning of a new era in strawberry growing. For a long time these two varieties held the supremacy as money makers, until by and by its competitors be-

came many of them far superior to Wilson's Albany, numbers in the hundreds; so that the most fastidious strawberry lover may have his whims gratified; and among them such berries as Carrie, Saunders, Seaford, Nick Ohmer, Glen Mary, Mar-

THE CLYDE STRAWBERRY.

garet, Wm. Belt, etc. Two years ago we saw the Clyde growing on the grounds of Mr. Stephenson, Guelph, and ever since we have been inclined to commend it as one of the best for general planting, on account of its uniform good size, and great productiveness. We therefore, read with some interest what Mr. E. W. Wooster says of it, in the December number of American Gardening, as follows :

That the Clyde is the most universally popular strawberry of to-day in America goes without saying. That it is deservedly so there can be no question, for although it has been pushed by its introducers, but not to that degree as is usual with most new introductions, most of which could not be compared with it in point of real value, by its own demonstrations wherever it has gone it has pushed itself most strongly to the front. Dr Staymen is deserving of much credit

for originating such a noble variety, the more so when we come to appreciate the fact that it was not over extolled by him ; neither, as fruiting with me for the first time last summer, have I found it over-praised by any introducer. In this respect it stands as a single exception to every other variety I have ever treated ; only a few others have I found equal to all that was claimed for them.

With the majority of fruit-growers I predict that this noble variety will have a short life of popularity, because they will fail to see the necessity of giving it that special culture which it demands in order that it may maintain its present high standard of excellence. The downfall of the Parker Earl among so many growers was, in my opinion, due almost wholly to this cause ; but among the most painstaking, carefully observing growers it is still one of the leaders.

CALLAS EFFECTIVELY POTTED.



FIG. 1538.—CALLAS WITH VARIEGATED GRASS.

A VERY successful arrangement of potted calla lilies is shown in the accompanying cut. A florist writing to The Country Gentleman says of it :

It was a large pot containing three strong callas, and in the center a plant of zebra grass (*Eulalia japonica zebrina*, var.). The soil was rich, and during the winter a top dressing of fine manure was given it, with plenty of water. The growth was magnificent, both of the callas and the grass, which gave the whole object a particularly pleasing effect that is but too poorly expressed by a picture.

Many flowers were borne and it continued in beauty till late in the spring, when it was planted in the garden and given a rest.

THE CULTIVATION AND CARE OF ORCHARDS.

SIR,—Now that affiliated societies are being organized in almost every town and village on the St. Lawrence, a few remarks and suggestions on the care of orchards for Eastern and Northern Ontario might be of interest to some. I speak more particularly of the apple orchard, as there is very little other fruit grown in this section. There is one thought ever present with the careful orchardist, what are we to do to get our trees in the best possible condition to withstand a temperature of from 25° to 30° below zero, for we all look for and rather expect such a temperature sometime during January or February, which may last from a few hours to several days.

Now such temperatures are very severe on root-cell, branch and fruit bud. First let us take into consideration the root. If we can encourage deep rooting, and thereby partly getting below the frost line, we may largely overcome the difficulty. Now, how are we to do this? First, what are the functions and duties of the root as regards the growing and life of a tree? Briefly stated, the duty of the roots are to gather certain elements in the soil, such as potash, phosphoric acid, nitrogen, etc., held in solution by the water of the soil, which water or solution is carried in the form of sap to the leaves of the tree, where they are combined with carbon, which the leaves absorb from the carbonic acid gas present in the air and then returns through the tree, forming new wood, roots and buds. Now to get the food elements soluble, we must get the air into the soil to cause nitrification, and how is this most thoroughly done?

First by underdraining then by careful and frequent tilling of the surface. By deep draining we cause nitrification to a greater depth and a warming up of the soil to a corresponding depth and the roots will follow. Now by cultivating the surface frequently, keeping it soft and mellow, we cause more rapid nitrification near the surface, and when the rains come instead of running off

the land it will be absorbed by it like a sponge taking up the food elements that have been freed by the air near the surface and carrying them in solution to the roots below.

If you take a sponge and fill it full of water, then place it on a piece of wire netting, and cover over thoroughly with thick cloths to prevent evaporation you will find it as damp at the end of a week or two as it would be when freshly squeezed out from the bath. Only a certain quantity, the surplus has drained away.

Under the above conditions we cause a rapid and succulent wood growth which, however, must be checked early enough in the season to allow for it to ripen. The most approved method and the one that has given me most satisfaction is to cease cultivation about July 20 to August 1st, and to sow at that time clover seed at the rate of about 20 lbs to the acre, which, besides being a valuable fertilizer, serves to draw the moisture of the soil, thereby checking the wood growth of the tree, and thus giving it a chance to ripen. A good crop of weeds is better than no crop at all, and here is a point that is of the utmost importance in this section. We must have a cover crop to catch the first snow and ice and protect the ground from the severe frosts that are apt to come before we have sufficient snow on exposed surfaces to keep the ground from freezing to a considerable depth.

In this section I cannot recommend the practice of the orchardists in Southern Ontario of plowing the orchards late in the fall, and leaving the exposed surface to the action of the frost; it has been followed by bad results here frequently.

To summarize—underdrain thoroughly, cultivate frequently until Aug. 1st. Then grow a cover crop of clover, rye, oats or buckwheat, etc., and allow it to lay on the surface through the winter, commencing cultivation again early in April or as soon as the ground can be worked.

HAROLD JANES.

Maitland, Ont.



Flower, Garden and Lawn. ❀

A FEW EARLY FLOWERING PERENNIALS.

DURING the latter half of May our gardens are bright with spring flowering perennials, but in the early part of the month the bulbs, alone, usually furnish us with all the bloom we have at that time. But while crocuses, squills, snow-drops, tulips, hyacinths and daffodils, if properly arranged, make a fine display, there are a few other charming early flowering plants which should not be omitted from any garden. The following are six of the best of them.

Spreading Pasque Flower (*Anemone patens*). This beautiful perennial begins to bloom during the last week of April. It has large, deep, purple flowers which are very attractive and excellent for cutting.

Ox-eye (*Adonis vernalis*). Though only attaining a height of from six to nine inches, this pretty little plant is very desirable. The flowers are large and of a lemon yellow colour, and the foliage finely cut and graceful. It begins to bloom during the first week of May.

Iceland Poppy (*Papaver nudicaule*). This poppy begins to flower during the second week of May and there is a profusion of bloom until early summer, when it rests for a time beginning afresh in the autumn. The flowers are of several colours, yellow, orange and white

being the most common; they make fine table decorations on account of their bright coloring.

Red barren-wort (*Epimedium rubrum*) A very graceful and beautiful little plant beginning to bloom during the second week of May. The flowers are small, bright crimson and white, borne in a loose panicle. The leaves of this plant are very pretty. There are several other species of this genus which are desirable. They are very ornamental as cut flowers.

Lovely Phlox (*Phlox amoena*). There are many species of early flowering phlox but this is one of the earliest and best. The flowers are bright pink in colour and the stems are long enough to make it a good flower for cutting. It begins to bloom during the second week of May.

Dwarf Jacob's ladder (*Polemonium humile pulchellum*). All the polemoniums yet tested here are pretty, and this is the earliest and one of the best. It is a profuse bloomer with violet blue flowers and small narrow leaves.

There are a few other early flowering perennials which are very desirable, such as the bleeding heart, tall leopard's, bane and trollius.

W. T. McCoun,

Horticulturist Central Experimental
Farm, Ottawa.

IVY LEAVED GERANIUMS.

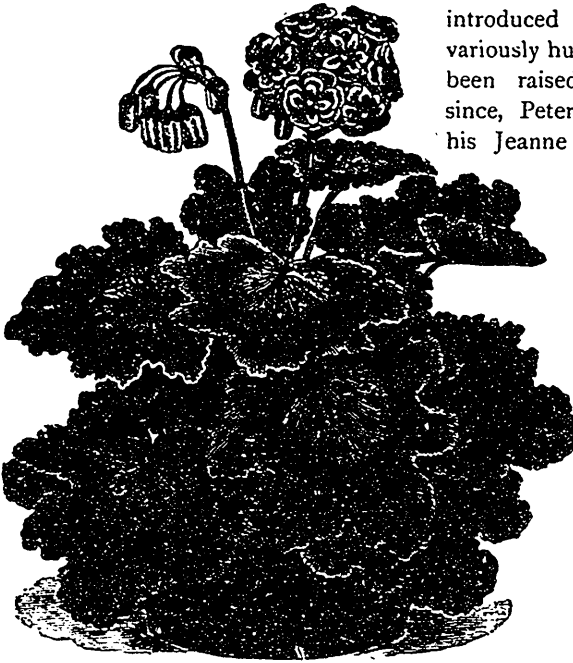


FIG. 1539.—NEW HYBRID GERANIUM, P. CROZY.

THE beautiful leaves and flowers of this section of the Pelargonium family, are the object of much admiration. The older varieties are all single-flowered and of rapid trailing habit. The later introductions tend to very large double or semi-double flowers and bushy habit, well suited for pot plants. All the varieties have, in a greater or less degree, the charming Ivy-shaped, spicy scented foliage, the thick waxy texture of which, would alone render this class well worthy of cultivation.

Pelargonium peltatum is the name of the species, two varieties of this were

introduced in 1701. From these the variously hued and formed flowers have been raised. More than a decade since, Peter Henderson, disseminated his Jeanne d'Arc, double white, and James Vick, his Mme. Thibaut, giving an impetus to the culture of these plants in America, which is still evident. Ivy leaved geraniums flower most freely during the spring and summer, the trailing sorts are good, some plants for hanging baskets, rockeries and trellis, the dwarf varieties are better for pot plants, though any of them look well and do well trained to a trellis *Souv. de Chas. Turner* is probably the largest flowered sort; individual pips can be grown 2 inches across. *La Foudre*

is a very bright double flowered scarlet, probably the brightest of the color. The predominating shades seem to be pink and magenta. *Le Elegant* is a very old variety, with a very fine trailing habit, leaves medium sized, green, edged heavily with pure white. *Duke of Edinburgh* is another variegated kind, leaves quite large, a more rapid grower.

Peter Crozy, the subject of the illustration, is a unique hybrid between the zonale and the ivy-leaved sections, color bright scarlet, it flowers very freely and is desirable in many ways.

WEBSTER BROS.

Hamilton.





✧ Our Affiliated Societies. ✧

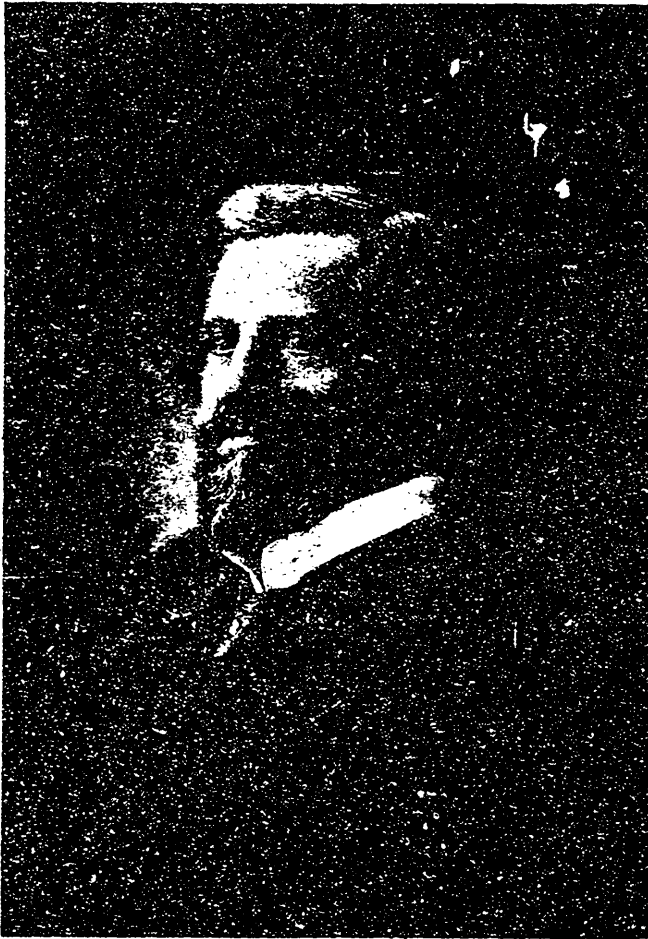


FIG. 1540—D. W. KARN, PRESIDENT WOODSTOCK HORTICULTURAL SOCIETY.

WOODSTOCK.—The annual meeting of this Society was held in the Council Chamber, on Wednesday evening, at 7.30. There was a good attendance of members and much enthusiasm. Secretary-Treasurer Scarff's annual report was as follows :

RECEIPTS.

Balance from 1897.....	\$71 70
Legislature grant	41 00
Members' subscriptions	98 00
Donations	19 40
Admission fees to exhibition	54 85
	<hr/>
	\$284.95

THE CANADIAN HORTICULTURIST.

EXPENDITURE.

Rent of building, etc.....	\$16 30
Canadian Horticulturist.....	97 00
Purchase of seeds and plants.....	76 17
Printing.....	16 08
Music.....	7 00
Postage.....	1 69
Balance on hand.....	70 71
	\$284 95

The election of officers resulted in the election of D. W. Karn as President, G. R. Patullo, 1st Vice-President, and Mr. Scarff, Secretary-Treasurer. A letter was read from the Secretary of the Ontario Fruit Growers' Association, with kindly greetings; and also a set of by-laws for Affiliated Horticultural Societies, which were adopted.

OWEN SOUND.—The annual meeting of the Owen Sound Horticultural Society, was held in the Council Chamber, Owen Sound, on the evening of Wednesday, the 11th inst. President, the Venerable Archdeacon Mulholland presiding.

The minutes of the previous annual meeting being read, the President delivered an interesting and instructive address. The Directors report showed a membership of 57 for the preceding year; \$45.60 being expended for Horticultural periodicals. Hyacinth bulbs were purchased and distributed among the members to the value of \$22. The Association begins the year with a balance at its credit of \$19.52. Two addresses were delivered during the year under the auspices of the Society. One by Mr. W. Baker, on "Indoor and Outdoor Plants," and one by Mr. Jenkins, Principal of the Collegiate Institute, on "The San Jose Scale," both were heartily enjoyed, but slimly attended. A letter was read from the Editor of the *HORTICULTURIST* in which many valuable suggestions were made, all of which were endorsed by the meeting. He also sent a draft copy of By Laws which were adopted with slight changes. The election of officers for the current year was then proceeded with, resulting as follows: Ven. Archdeacon Mulholland, President; R. McKnight, 1st Vice-President.

An animated discussion then took place as to the best method of extending the usefulness of the Society, amongst other conclusions arrived at, it was decided to hold four public meetings during the course of the year, at which addresses are to be delivered by some member of the Society. Two of these meetings were provided for, Dr. Cameron and Mr. McKnight being secured to address them.

At a meeting of the Board of Directors subsequently held, Treasurer Peckham was re-elected, and the services of D. R. Dobie were secured as Secretary. The Society begins the year with a list of 53 paid up members.

BROOKVILLE—This Society was organized on the 11th ult., with about 100 members in affiliation with the Ontario Fruit Growers' Association. The President is Mr. Samuel Reynolds, and Mr. Geo. A. McMullen, Sec.-Treasurer. The by-laws submitted by our Committee was adopted with a few small amendments. As the President remarked in his closing address, "It is to be hoped that all lovers of flowers and plants will join the Society and reap the benefits accruing therefrom. By the payment of one dollar per annum, a member is entitled to full membership privileges, which includes free admission to all meetings, exhibitions, etc., the selection from a choice list of rare and hardy fruit trees, shrubs, creepers and flower plants."

The membership will include the whole of the county of Leeds, and the officers trust they will be loyally supported by all parties interested in gardening and orchards, or window gardening. In addition to the benefits referred to, every member will receive a free copy of the *Canadian Horticulturist Magazine* for one year.

NIAGARA FALLS.—At the Annual Meeting Mr. W. P. Lyon was elected President; Thos. J. Robertson, Secretary. The plants to be distributed this year are Rudbeckia, Golden Glow, Hardy phlox, Eulalia Zebrina, Deutzia Crevata, Weigela rosea, and one packet each of hardy Larkspur and Canterbury bells.

LINDSAY.—Our Annual Meeting was small, so many other meetings the same evening. We elected Mr. Alex. Carter, President; and Mr. F. J. Frampton, Secretary. We adopted the by-laws with some amendments.

COBourg.—Among the officers elected at our annual meeting were Mr. J. D. Hayden, president, and Major H. J. Snelgrove, Secretary.

During 1898 the members of the society was increased from 86 to 91. There is a balance of \$25 in the Treasurer's hands.

Last year the directors distributed among the resident members a large quantity of rare plants, shrubs, trees, bulbs, etc., including cannas, roses, honey-suckles, hollyhocks, anemones, deutzias, forsythias, lilacs, spiraeas, rudbeckias, irises, ivies, clematis, bigonias, pæonies, asters, carnations, narcissi, hyacinths, tulips, currants, plums, raspberries, etc., comprising a valuable acquisition to Cobourg's beautiful gardens. Under the practical direction of Mr. Baker, a number of choice new vegetable seeds were also introduced.

Besides receiving *THE HORTICULTURIST*, a monthly magazine devoted to fruit, flowers and forestry, and the useful report of the Ontario Fruit Grower's Association, the members of the society will have the privilege of hearing lectures by noted florists from time to time. Mr. Webster of Hamilton, has been invited to address the society on "roses" at an early date, which will be a rich treat for all lover of the queen of flowers.

OUR AFFILIATED SOCIETIES.

THE GRIMSBY SOCIETY elected Messrs. E. J. Palmer, president, and W. H. Read, secretary-treasurer. A resolution was passed to hold three monthly meetings, the 2nd Monday in February, March and April. At the first, a paper will be read on the Carnation by Mr. A. Cole, 2nd vice-president. The by-laws, as suggested by the Fruit Growers' Association was adopted.

At a meeting of the directors held later, it was decided to send out the following fine list of plants to each member, viz: Hypericum, Carnation, Lilium auratum, Dracena, Datura, Dahlia, Salvia, English violet, specific kinds to be selected later.

WATERLOO.—The directors congratulated the society on the continued prosperity, the members having increased to 167 during the past year, each of whom received the **CANADIAN HORTICULTURIST**, and a bound copy of the Annual Report. In addition there has been distributed 72 plum trees, 114 cherry trees, 102 spruce trees, 352 house plants, 15 peonies, 87 Crimson Ramblers, 16 Gault raspberries, 3 black currant bushes, 54 Wickson plum trees, and 2,004 Hyacinth bulbs. The financial report was as follows:

RECEIPTS.

Balance on hand.....	\$ 42 89
Legislative Grant.....	140 00
Membership Subscriptions.....	167 00
Miscellaneous Minor Receipts..	20 55
	\$370 14

EXPENDITURES.

Horticultural Periodicals.....	\$133 60
Trees and Plants.....	164 88
Miscellaneous.....	24 22
	\$322 70
Balance on hand.....	\$47 74

At the election Mr. A. Weidenhammer was made president, and Mr. J. H. Winkler, secretary. A resolution was passed, authorizing the directors to purchase \$15 worth of flower bulbs in the fall, and distribute them between the Central and the separate school children, with the object of cultivating a taste for flowers among the children.

BRAMPTON.—At the Annual Meeting, Mr. A. Barber was elected President, and Mr. Henry Roberts, Secretary-Treasurer.

DURHAM.—The Annual Meeting of Durham Horticulturist Society was held in the Public Reading-Room, on the evening of the 11th inst. Reports were read, the Directors' Annual by the Secretary; the Auditors' by the Treasurer. These on motions were adopted.

A communication from the Secretary of the Ontario Fruit Growers' Association, containing By-Laws for adoption by Affiliated Societies was, as requested, read and relegated to a future meeting of Directors for consideration.

The election of officers for the current year then was proceeded with:—C. Firth, President; G. McKechnie, Vice-President. Business being completed an adjournment took place. The Directors met then and John Kelly was elected Treasurer, and Wm. Gorsline, Secretary. After routine business, passing accounts, etc., Directors' meeting adjourned at the call of the President.

The Directors' Annual Report for 1898 was as follows:—

Ladies and Gentlemen,—We wish you the compliments of the season, and are pleased to report that our efforts during the past year for the attainment of the objects of our organization, the diffusion of horticultural knowledge and the distribution of nursery stock, plants, bulbs, etc., has been appreciated and attended with a fair measure of success. Many of our members purchased and had delivered to them, free of charge, those things at cost prices, which were so low as to be to them a revelation—a complete surprise.

An exhibition of house plants and out flowers was held in the beginning of September. The great heat and long continued drought of summer gave these such a forlorn aspect generally, that a selection for show purposes were somewhat of a difficult and critical task. Members and others kindly permitted us to select such as we chose, and these, when collected carefully and judiciously and artistically massed on a raised platform in the centre of the Town Hall, most pleasantly surprised the many visitors.

From the province and county liberal grants were received during the year, which enabled us to deal generously with our members, to each of whom we gave premiums costing \$3c. The Ontario Fruit Growers' Association supplemented this by a free distribution for experimental purposes of trees, plants, etc., giving one or more to each person.

Through the Society during the year, members obtained flowering shrubs—rose bushes and peonies; small fruit bushes—black currant, gooseberry and raspberry, 780; fruit trees—apple, pear, cherry, plum and peach, 108; strawberry plants, 50; house plants—palms and chrysanthemums, 39; bulbs and tubers—gladioli, calla, hyacinth, tulip, lily, narcissus, daffodil, tuberous rooted begonia, and canna, 4600; papers of seeds—flower and vegetable, 475. Of these 6186 articles, the Ontario Fruit Growers' Association supplied 113, the Society gave 3213 as premiums, and members purchased, through the Secretary, 2860.

CHRIS. FIRTH,
President.

WM. GORSLINE,
Secretary.



The Canadian Horticulturist

SUBSCRIPTION PRICE, \$1.00 per year, entitling the subscriber to membership of the Fruit Growers' Association of Ontario and all its privileges, including a copy of its valuable Annual Report, and a share in its annual distribution of plants and trees.

REMITTANCES by Registered Letter or Post-Office Order are at our risk. Receipts will be acknowledged upon the Address Label.

ADVERTISING RATES quoted on application. Circulation, 5,000 copies per month.

LOCAL NEWS.—Correspondents will greatly oblige by sending to the Editor early intelligence of local events or doings of Horticultural Societies likely to be of interest to our readers, or of any matters which it is desirable to bring under the notice of Horticulturists.

ILLUSTRATIONS.—The Editor will thankfully receive and select photographs or drawings, suitable for reproduction in these pages, of gardens, or of remarkable plants, flowers, trees, etc.; but he cannot be responsible for loss or injury.

NEWSPAPERS.—Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editor to see.

DISCONTINUANCES.—Remember that the publisher must be notified by letter or post-card when a subscriber wishes his paper stopped. All arrearages must be paid. Returning your paper will not enable us to discontinue it, as we cannot find your name on our books unless your Post Office address is given. Societies should send in their revised lists in January, if possible, otherwise we take it for granted that all will continue members.

IN RETURN.

To THE CANADIAN HORTICULTURIST in reply to its New Year's greeting in its new dress, to its 5000 subscribers.

Your subscribers (thousands five)
In return wish *you*
Joy and gladness o'er your live,
Lustrous, garments new;
Which are in perfect keeping with
Your intellectual power and pith.

The same five thousand also wish
Your Editor in-chief,
Long life and every luscious dish
That can convey relief
To one who in our time of need
Has been a patriot indeed.

WM. MURRAY.

"Athol Bank," Hamilton, Jan. 1899

✦ Notes and Comments. ✦

NEW CREATIONS IN FRUITS IN FLOWERS, supplement for 1899 from Luther Burbank, Santa Rosa, California, contains notices of several new fruits of interest. Among them we notice the *Climax* plum, the best selection from a number of hybrids of Simoni and Botan. The originator claims that it is "as productive as Burbank, about four or five times as large, two or three weeks earlier, and very much more richly colored." Another new plum is

The Sultan, a cross between Wickson and Satsuma, over two inches in diameter and round, excellent sub acid. Ripens a week before Burbank; a great keeper.

The Bartlett is another, unfortunately named we think—but so called because in quality, flavor and fragrance, it so resembles that pear. A cross between Simoni and Delaware.

A new quince, *the Pineapple*, is also offered, similar in appearance to the

NOTES AND COMMENTS.

orange, but much lighter yellow, and higher flavor. Said to cook tender in five minutes.

MR. HAROLD JONES of Maitland, sends us for this number the first of a series of articles adapted for fruit growers north of the St. Lawrence river. The first is on the *Cultivation and Care of Orchards*, to be followed by articles on Fertilizing, Trimming, Harvesting, Grading, etc.

STRAWBERRY PLANTS for new plantations should be well chosen. Only those formed by runners should be used, and of these the first formed are the best. It is injurious to a bearing plantation to allow the plants to run freely, because the last formed will produce little fruit, and cause the variety to "run out." The very best plants are those first formed on a young plantation in its first year.

THE HARLEQUIN BUG.—Prof. Johnson, of Maryland, says that this insect which is so destructive to turnips, radishes, cabbage or mustard, is very difficult to kill, as it does not eat the foliage but simply sucks the juices. The insect has a particular fondness for mustard, which is planted as a trap crop, and the insects are afterwards destroyed by strong kerosene wash. He suggests the use of kale as a still better trap, because it can be planted in the fall, and being already in leaf in early spring will catch the early appearing insect.

A FASHIONABLE FLOWER.—A fine, new carnation has been raised by George Nicholson, Framington, Mass. It is a beautiful pink color, and is named Mrs. E. N. Lawson, after a Boston woman. The papers state that there was considerable competition among florists for the purchase of this variety, one of them

a Bostonian having offered \$5,000, and a Chicago man \$6,000. We should not advise the owner to hesitate long over such offers.

SPRAYING FOR FUNGI is seldom as it should be, and, when failure results, the first grower declares it a useless waste of time and money. Usually the lazy method is followed, of riding about the orchard and squirting a light spray on the outside leaves in passing; this is a most superficial method to be sure. The thorough method, and the only paying method, is to have the nozzles carried under the trees, or elevated on poles among the branches, by a man walking, who sees to it that every leaf and every branch is covered with the mixture, and this at least three or four times in the season.

IF THE GRAPE PRUNING was left unfinished in the fall, we would advise that the work proceed in mild weather. With Concords and such vigorous growers, almost all the young growth needs removing, to about two buds from the main arm. With slower growers like Wilder we would advise the cutting back every other shoot at two years of age.

CRUDE PETROLEUM is recommended as an insecticide by Prof. J. B. Smith, in *Entomological News*. Kerosene was too strong to be safely applied, but all experiments with the Crude Petroleum had been successful, without doing any injury. He had first tried on pear tree affected with San José Scale, painting every part; then a dozen similar trees, then entire orchard of Ben Davis apple trees was sprayed with Crude oil, and all these experiments were successful in killing the insects without injuring the tree. The Ben Davis apple trees were

THE CANADIAN HORTICULTURIST.

sprayed April 14 to 22, and in the following September were fully loaded with fruit.

POMPON CHRYSANTHEMUMS. — We notice American Gardening speaks favorable of this class for amateur cultivation. For some time this old group has been somewhat neglected, owing to the more showy and popular greenhouse monstrosities. But it appears that many are paying attention to Pompoms, because of their ease of cultivation, and of their abundant bloom even under considerable neglect. The varieties mentioned in Gardening as worthy of a place in the amateur's garden are (1) Rose Trevenna; (2) La Sœur Melanie; (3) Emily Roeboltom, and (4) Jules Lagravere.

THE WORDEN SECKEL pear is figured in the January number of the American Nurseryman, as being considerably larger than the well-known Seckel. This new variety was originated by Sylvester Worden, of Oswego Co., N. Y., originator of the Worden grape. It is claimed for it that it is a first class dessert pear, of very beautiful appearance. The tree is said to be hardy and productive. We expect fruit of this pear at Maplehurst this coming season, and will then report farther.

NEW AFFILIATED SOCIETIES.—Seven new Societies have been formed this year in affiliation with us, viz.:—St. Catharines, Kemptville, Carleton Place, Arnprior, Millbrook, Cardinal, Brockville. This makes forty-two in all that have thus been formed during the past three years in connection with our Association, and so popular and successful are they, that they gain in numbers and interest year by year. The old fashioned societies are dying out, be-

coming every year involved in financial difficulties, and in time we doubt not nearly all the provincial horticultural Societies will become associated with us.

THE RUSSELL STAPLE PULLER, of which a sample has been sent us by Russell Hardware Company, Kansas City, Mo., is a fine handy tool combining staple puller, wire cutter, hammer, wire splicer, pincers, monkey wrench, etc. The firm would like some firm to take charge of it in Canada. It certainly would be a very convenient tool in keeping the wire trellesis in order in a vineyard.

WOODALL & Co., apple receivers, Liverpool, send us a review of the apple market to 31st Dec. They note the almost entire absence of Newtown Pippins, of which in the past there have always been a few fine samples, enough to satisfy the fancy trade, but this year they have been conspicuous by their absence. A few inferior to medium did come forward, but were a sorry representative of the well-known and much appreciated fruit, and not being what was wanted were ignored, although some few sold up to 35/ per barrel, which was very much beyond their value, and which buyers discovered too late and to their cost.

Californian Pippins, in boxes, have to some extent taken the place of Newtowns, and although of fine appearance, are not considered equal in flavor, so that when there is a good crop of the old favourite, it will not find that its position has been usurped.

NOVELTIES.—The Baldwin cherry is a new claimant for patronage, named after the introducer, Mr. S. J. Baldwin, Seneca, Kansas. A sweet and rich cherry of the Morello type.

❖ Question Drawer. ❖

Ornithogalum.

Reply to Question 1041, by W. E. Saunders, London, Ont.

Ornithogalum Arabicum may be forced in the house for winter bloom by the same treatment as that given to the hyacinth. It requires a longer season of active growth, and the flower is fully six weeks later than that of the hyacinth, but ordinarily good treatment should suffice. I have not always been successful with it, and think that possibly it may be injured by delay in planting. Good bulbs, planted early, have usually succeeded. It is a striking plant in bloom, the black centre of the flower giving it an unusual appearance; but the pot needs to stand on the floor, as the flower stem is about two feet long beneath the umbel.

Reply by Mr. E. A. Bog, Secretary Cambellford Horticultural Society.

SIR,—In answer to Mr. Dickson's enquiry No. 1041, I may say that I have forced the Ornithogalum Arabicum with great success. My treatment is as follows: "Pot the bulb in a 4 or 5 inch pot, first week in October. Bury the pot in the garden with about a foot of soil over it, leave it there until end of November; then bring it into the house and put it in a hot, sunny window, give plenty of water, plant food twice a week; will bloom in February or March. I had three magnificent specimens last winter, which were the admiration of everyone who saw them. The bulbs I had were imported *direct* from Holland. My object in burying the pot in the garden is that the top grows very quickly, before the roots start; burying it prevents injury to the top and does not grow so quickly.

Apples for Profit.

1042. SIR,—As I am thinking of planting from eight to ten acres of winter apples, I would like your advice as to Ontario, Cranberry, Ben Davis and York Imperial, and a few others.

A. B., Picton, Ont.

Questions concerning the best varieties to plant in a certain section can only be answered in a general way, because those most desirable this year may be quite displaced by new varieties in a few years. There can be little said, however, against the varieties above mentioned. Ontario is a great favorite with those who grow it, as a commercial apple, because it is so clean, so uniform in size, so regular in bearing, and so well colored. Its chief fault seems to be over-bearing, which is inclined to weaken the vitality of the tree, and shorten its life.

The Cranberry Pippin is a favorite export apple with the writer, for on rich sandy and clay loam, the fruit is remarkably fine. It is larger and better colored than Ben Davis, carries well to a distant market, and yellows up about Christmas so as to set off its red stripes to the best advantage. But it is a very fastidious variety, if we may so speak of an apple, for unless soil and climatic conditions suit, it is apt to bear a good many blemished or wasty samples.

Ben Davis is reliable, and pays; and, until an apple of the same season, productiveness, and good appearance, but of better quality, appears, we are obliged to accept it in spite of its poor quality.

York Imperial has a high reputation, but has not been tested in Canada, so far as we know.

We would be inclined to add Blenheim and Wealthy to the list; for both

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are superb apples; and we wish we could add *Spy* and *King*, but our experience in apple growing for thirty years past would condemn them both for planting, the former because it does not produce well until fifteen or twenty years planted, and the latter because it never bears paying quantities. Both are prime apples—the best in quality for general uses, but what is the use of quality if you cannot get enough of it to be worth handling? We have an orchard of Northern Spys, covering about six acres of ground. They have been planted twenty-five years, and have only given us two good crops! We have an orchard of Kings about thirty-five years planted, which have never given more than three good crops and several small crops.

Pears for Export.

1043. SIR, — I intend planting, next spring, a large number of pear trees, and have decided that for *export* varieties the Duchess d'Angouleme, Beurre Clairgeau, and Beurre d'Anjou, are as good as any.

The only question that undecided me is, whether they are sufficiently prolific, to pay as well as others. If planted, they will be in good strong clay soil, well drained, and will be carefully cultivated.

Now will some kind friend, who can speak from sweet or bitter experience, please let me know, through these columns, as soon as possible, if these varieties yield a good paying crop, under the treatment spoken of above?

Also, I would like to know, from an experienced man, whether Mountain Ash is a desirable stock on which to graft pears?

W. B. STEPHENS,
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The experience thus far gained in exporting pears to the British market is so small and limited, covering only two years, and that chiefly from one section, and a limited number of varieties—that it is quite too soon to give a settled opinion regarding the best for the purpose. We have had excellent success exporting the Bartlett in cold storage, for when it arrives in good condition, it sells well. This last season we received from 50c. to \$1.25 net for $\frac{1}{3}$ bushel cases, or about \$3.50 per bushel for the very finest—but they

need great care in storage, or they will arrive rotten and be a bill of expense. We cannot therefore recommend this pear for general planting for export.

Fine DUCHESS pears always do well, if well grown. They usually do better as dwarfs than as standards, growing to a finer size. In the Grimsby section the Duchess orchards have not been bearing well for several years, we do not know why, for the tree has the character of being productive. If this variety does well in Simcoe county, it may be planted with confidence that a fine quality will bring a good price in the British market.

³ CLAIRGEAU is a fine-sized pear of beautiful appearance, and a good shipping kind. Well grown and well colored it is a variety of great excellence, and should do well for a distant market. It may be grown either as a dwarf or standard.

ANJOU is one of the finest, and no pear, that we sent over, brought prices equalling it. Some bushel cases sent over in 1897 sold for \$3.75 each. In our experience at Grimsby, however, this variety is a poor bearer as a standard, and the fruit is not quite as large as on the dwarf. We have always grown it on sandy loam, and no doubt the standard would do better on clay, still in any case we would expect the best fruit on the dwarf.

The KIEFFER should also be planted to a limited extent, because it is sure to *succeed*. It will grow anywhere, and produce tremendous crops. With good cultivation and manure, and thinning, it will yield fine-sized fruit. This pear ripens for use in December and January, and will carry any distance in perfect condition. The only question is its quality, which is very poor for dessert. For canning it is unexcelled. However, should the time come when it is not in demand, no stock would be finer for top-grafting than the Kieffer.

Regarding the Mountain Ash for stock there is no doubt that it will answer, for it has been frequently used; but we would give the preference to a good seedling pear.