Selected Papers.

The Flowers of Early Spring.*

BY REV. J. W. CHICKERING, JR.

There is perhaps a nearly equal charm about the notes of the first robin, and the sight of the first Mayflower. It will be the object of this article to enumerate, with a few notes upon each, some of our earlier floral visitors, in wood and meadow, in New England.

The list opens, not very attractively, with a plant well-known to all, under the malodorous name of Skunk Cabbage *(Symplocarpus fœtidus)*, but whose flower is by no means so familiar, save to the observing botanist, and even he must be on the alert to obtain this first gift of Flora, in full perfection of color and aroma. Early in April, or even in March, almost before the ice is fairly melted, may be found in low marshy ground, this flower, clumsy in form, repulsive and snaky in color, dark purple, with yellowish blotches, and digusting in odor, soon to be followed by the clump of large fleshy leaves, conspicuous during the rest of the summer. Like Stramonium, and most other noxious and unsightly weeds, it has been tried as a remedy for asthma, and with about as much effect.

In very pleasing contrast comes next *Epigæa repens*, or, as it is sometimes miscalled, Trailing Arbutus, better and more appropriately known throughout New England as the Mayflower.

This, among the very earliest, is also the choicest gift that Flora has in this latitude to offer us, alike for its beauty of form and color, its delicious fragrance, and its charming habit of peeping out, almost from the edge of the retreating snowdrifts. To find the first bunch of Mayflowers is the ambition of many a boy and girl, as well as not a few children of larger growth. The finest specimens ever seen by the writer were from a mountain in Camden, Maine. It has also been used as a medicinal agent, but with no better nor worse results than many others. It is a true wild flower, resisting all attempts at domestication. Closely associated with this is found the *Hepatica*, in its two forms of *triloba* and *acutiloba*, one with rounded, the other with pointed leaves, probably merely varieties. The little clump of flowers pushes its way through the ground, often in advance of the leaves, and with the varying shades of pink, blue and white, seen in different plants, is a welcome addition to our spring bouquet, though lacking the fragrance of the Mayflower.

About this same time the southern aspect of rocky hillsides begins to whiten with the cheerful, though not specially graceful or showy flowers of the Early Saxifrage *(Saxifrage Virginiensis)*, and in forest marshes the inconspicuous little Golden Saxifrage, with a name longer than itself *(Chrysosplenium Americanum)*. Soon in the meadows the carpet of living green is embroidered with the golden flowers of *Caltha palustris* or the English Marsh Marigold, improperly called Cowslip, and whether correctly or not, associated with creamy milk and yellow butter, while a little later are seen in the morning sun, the white stars of the Bloodroot *(Sanguinaria Canadensis)*, as fragile as they are beautiful, generally lasting but for a day. Its orange-colored juice is much used in medicine as an emetic, an expectorant, and a liniment. This plant readily bears transplanting, increases in size under cultivation, and becomes one of the most attractive ornaments of the early flower border. In some parts of the country is found a somewhat similar flower, the Twin-leaf, or Rheumatism Root *(Jeffersonia diphylla)* also well repaying cultivation.

Meanwhile the pastures are beginning to whiten (last year remarkably) with the modest little Houstonia, or Innocence *(Oldenlandia cærulea)*, while a host of violets are making their appearance. *Viola blanda*, a wee, white, sweet-scented species, in the woods; *cucullata*, with its large blue flowers and hoodshaped leaves, with their curious palmate variety; *rotundifolia*, with yellow flowers and shiny leaves; and on the hillsides and in the pastures the widely varying *sagittata*. *Claytonia Virginica*, well named Spring Beauty, must not be neglected in its moist and generally shady bed.

Along streams in open woodlands, we may find the Spring Cress *(Cardamine rhomboidea)*, with large, white flowers; and just shooting up its green stalk, its first cousin the Winter Cress *(Barbarea vulgaris)*.

Nor should the floral efforts of trees and shrubs be disregarded. Among the earliest indications of spring the Hazelnut *(Corylus rostrata)* shakes its long catkins along the roadsides, before any signs of swelling leafbuds are visible, while the Willows *(Salix)*, whose name is legion, begin to burst their warm wintry covering. The Savin *(Juniperus Virginiana)* is covered with its curious little flowers. The Hemlock *(Abies Canadensis)* is early in flower, as also the American Yew *(Taxus baccata)*. All these require close examination to detect their inflorescence, but well repay it. The two maples, *Acer dasycarpum* (the Silver Maple) and *Acer rubrum* (the Red Maple), hang out their showy pendants very early. The Sweet Gale *(Myrica Gale)*, along the edges of swamps, and the Sweet Fern *(Comptonia asplenifolia)*, whose dried leaves are the basis of juvenile attempts at smoking, are now in flower; and *Dirca palustris*, well named Leather-wood from the marvellous toughness of its bark, such that it is frequently used in default of leather or twine in repairing broken harnesses or sleds, hangs out its little yellow bells in advance of any leaves.

We close the list with the fragrant Sassafras *(S. officinale)*, well-known by its aromatic bark and curiously lobed leaves, not so well by its early clusters of yellow flowers, somewhat resembling those of the Sugar-maple; and the Spice-wood, or Feverbush *(Benzoin odoriferum)* also highly aromatic and possessing, like the Sassafras, medicinal value as an aromatic stimulant. Such are the earliest flowers, which in forest, field or fen, invite the search of the botanist and the lover of nature.

Perhaps subsequent articles may give some notes upon the flowers of later spring, summer and autumn, with a floral calendar, and possibly an enumeration of some plants and shrubs well worthy of a place in garden or shrubbery, but hitherto neglected. If this shall succeed in leading any to a closer study of nature's beauty, and the goodness and glory of the Creator, its object will be answered.

* This article, which originally appeared in the "American Naturalist," was written to suit the climate of the New England States, but as most of the specimens alluded to are also found in this country, we have no doubt the paper will prove generally acceptable to our readers.—ED. CAN. PHAR. JOUR.

On Essence of Sassafras.*

BY MM. E. GRIMAUX AND Y. RUOTHE.

Essence of *Laurus sassafras* is colourless when first rectified, but turns gradually yellow after exposure to air and light. Its smell resembles that of essence of fennel. Its density at zero is 1·0815; it rotates the polarised ray to the right, and its rotatory power is 3.5° for a length of 10 centimetres. It is a mixture of dextrogyrous hydrocarbon with an inactive oxygenated principle, and also contains small quantities of a body which is apparently a phenol, and which gives it the power of reducing nitrate of silver. This body is separated from the essence by stirring with this latter an aqueous solution of potash, which, after the addition of chlorhydric acid, precipitates some oily drops, having a strong smell of eugenic acid, and coloured light green by ferric chloride. By distilling this body with steam, a colourless liquid was obtained in just sufficient quantity to permit analysis, which gave C = 71·43, H = 6·46. Such extremely small proportions are found in the essence that it can scarcely be said to do more than exist. The hydrocarbide (safrène) contains $C_{10}H_{16}$, which formula is confirmed by the density of its vapour, which, ascertained by Dumas's method, was found equal to 4·71 (theoretically, 4·7). Safrène boils between 155° and 157°, is dextrogyrous, and its rotatory power is 17°·5 for a length of 10 c.c.; its density at zero is 0·8345.

Nine-tenths of the essence are extracted after the first distillation between 230° and 236°. They consist of an oxygenated principle (safrol), which distils chiefly between 231° and 233°. This latter has not a constant boiling point, for it always changes and becomes slightly resinous under the influence of much heat. It is insoluble in water, but difficult to dry over chloride of calcium, and requires rectification in a current of pure hydrogen before analysis. Its odour is similar to that of the essence; its density 1·1141 at zero; it exerts no influence on polarised light, and remains liquid at a cold as low as—20°. Safrol will not combine with bisulphites, dissolve sodium, or decompose chloride of benzoyle at its boiling point. It will not dissolve alcoholic potash even at 180°, but is changed by it into a black, non-crystallisable resin.

Treated with boiling iodhydric acid at 127°, it yields a thick green iodised oil; with perchloride of phosphorus it gives only a protochloride, and no trace of oxychloride, and the thick viscous body left in the retort after distilling the protochloride should be a monochloruretted safrol. It does, in fact, present the appearance and qualities of those monobromised derivatives obtained by merely adding a molecule of bromine to a molecule of safrol, but if excess of bromine be added, a solid crystallized derivative of pentabromised safrol, $C_{10}H_5Br_5O_2$, is obtained. To prepare this body, dissolve safrol in sulphide of carbon, and add five times its weight of bromide; after a few days the vessel will be

* From the Chemical News.