HORTICULTURAL REGISTER,

AND

GARDENER'S MAGAZINE.

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As Modified by the Transplanting Machine, between 1810 & 1821

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JANUARY 1, 1836.

ART. I. — *Transplanting Large Trees, or Alanton Park as Wooded between* 1816 *and* 1821.

WE present our readers with the annexed engraving of a view of a Park, wooded by the transplanting machine for the purpose of introducing the subject of removing large trees, the importance of which has recently engaged the attention of many individuals of our community.

This branch of Arboriculture will, we doubt not, in process of time, receive the attention and study of physiologists of the country, commensurate with the increasing taste for ornamental planting which is exhibited annually at the country residences near the principal cities of the United States.

For this view and for the following remarks, we are indebted to Mr GEO. C. THORBURN, of New York, who has presented us with a copy of "*Stuart's Planter's Guide*," recently published by him. We make the following extract from the work, giving a history of the operations performed by Sir H. Stuart, to give immediate effect to wood.

" At the place from which these pages are dated, they found a Park of limited extent, and possessing no particular claim to beauty, but visited from curiosity by many persons, within the last ten years. It consists of about a hundred and twenty English acres, abundantly clothed with trees and underwood of every common species, by means of the transplanting machine; and exhibiting within itself a *practical illustration* of every principle laid down, and every theory held forth in this Essay. The single trees and bushes, in groups and

open dispositions, amount to about seven hundred in number, exclusively of close plantations and copse-wood. Their size, when removed, was not great, the largest not exceeding from thirty to forty feet in height, and from three, or three and a half, to five feet in girth, at a foot from the ground; but many of them were of much smaller dimensions. The height of the bushes or underwood removed was from four to ten feet, and consisting of every sort usually found on the banks and lakes of rivers. But size, in an art founded on scientific principles, is a mere matter of choice and expenditure; for trees of the greatest size are as susceptible of removal, as those of the least. It was desirable, however, as almost everything was to be done here, in the way of Park-wood, to limit the operations to the smallest possible expenditure, consistently with producing some effect on the foreground, and middle distance of the landscape, and with careful execution.

"There was in this Park originally no water, and scarcely a tree or a bush, on the banks and promontories of the present lake and river; for the water partakes of both those characters. During the summer of 1820 the water was executed; and in that and the following year, the grounds immediately adjoining were abundantly covered with wood, by means of the transplanting machine. Groups and single trees, grove and underwood were introduced, in every style of disposition, which the subject seemed to admit. Where the turf recedes from, or approaches the water, the ground is somewhat bold and irregular, although without striking features of any sort: yet the profusion of wood, scattered over a surface of moderate limits, in every form and variety, gave it an intricacy and an expression, which it never possessed before.

"By the autumn of the *third* year only after the execution, namely 1823, when the Committee of the Society honored the place with their inspection, the different parts seemed to harmonize with one another, and the intended effects were nearly produced. What it was wished to bring forward, appeared already prominent. What was to be concealed, or thrown into the background, began to assume that station. The foreground trees, (the best that could be procured,) placed on the eastern bank above the water, broke it into parts with their spreading branches, and formed combinations, which were extremely pleasing. The copse or underwood, which covers an island in the lake, and two promontories, as also an adjoining bank that terminates the distance, was seen coming down nearly to the water's edge. What was the most important of all, both trees and under-

wood had obtained a full and deep-colored leaf, and health and vigor were restored to them. In a word, the whole appeared like a spot at least forty years planted.

"The actual extent of surface, to which this cursory delineation refers, does not exceed from forty to fifty acres; but the intricacy and variety, created solely by various dispositions of *wood* upon an uneven surface, confer on it, to the eye, indefinite limits. In confirmation of this remark, the reader is referred to the frontispiece, where he will find a view of the Park taken in 1827, from the western side of the lake; it was soon after the planting of the steep bank or head in that quarter, as is designated by the transplanting machine, which is seen still remaining on the ground. The spot is nearly *opposite* to that, from which it was viewed by the Committee of the Highland Society. The whole of the Park thus delineated was wooded by the machine, whether in masses, or detached groups of trees, between the years 1816 and 1821, but chiefly in the latter, excepting only the distant or bounding lines of plantations, over which a few old trees are here and there seen to elevate their heads."

Art. II.—*On the Introduction of the Vegetable Productions of China.* By Hon. H. A. S. Dearborn.

Roxbury, Dec. 14, 1835.

To the Editor of the Horticultural Register,

My Dear Sir,—Notwithstanding the intercourse which has subsisted, between China, and most of the commercial nations of Europe, for more than two centuries, how little attention has been bestowed upon the agriculture and vegetable productions of that mighty empire. Within a few years, however, horticulture has been enriched by the acquisition of several varieties of magnificent plants, some of which now constitute the most admired selections of our gardens and green-houses. The superb Camellias, the ever flowering and other beautiful varieties of Roses, and the splendid family of Chrysanthemums are samples of the floral treasures of Eastern Asia; and the Morus Multicaulis, which has recently been obtained, is justly considered as one of the most precious gifts, which could be bestowed upon our country. These alone are sufficient to excite a deep interest, in relation to a region, which possesses such beautiful and

valuable objects of cultivation; and an ardent desire is consequently induced, for extended investigations, to ascertain whether other equally as desirable additions, cannot be made, to the products of our farms and conservatories.

No portion of our fellow-citizens have been more liberal and active, in whatever tends to advance the arts of civilization, than those who have been so successfully engaged in oriental expeditions, since the first voyage made from the United States to Canton, in 1784; and we can, with the fullest confidence, rely upon their disposition, zealously to co-operate with the emulous cultivators of the soil, for obtaining from distant nations, all the varieties of fruit trees, flowers, esculent vegetables, and such others, as may be useful, in any of the departments of national industry, or gratify the taste of the horticulturist. It is only necessary that they should be apprised of the benefits, which they have it in their power to bestow upon their countrymen, to insure their realization.

An exalted spirit of inquiry and a generous disposition to advance the best interests, prosperity and glory of the nation, has ever been one of the great and honorable characteristics which has distinguished commercial adventure. Whenever, and wherever it has attained pre-eminence, the whole people have not only been accelerated in the progress of refinement, but have reached an elevation, which has never been approximated, where navigation, or foreign trade, in some manner, was not fostered, and encouraged. Tyre "the mart of nations," was the creation of merchants, whose numerous fleets made the world their tributaries, and whose affluence acquired for them, the appellation of "princes, and the honorable of the earth." The ruins of Palmyra and Balbec are monuments of their industry, energy, and wealth, during the ages of remote antiquity. In the midst of a desert, cities were reared, as entrepots, for the innumerable caravans, which passed between the Mediterranean and Euphrates, whose extent and architectural embellishments were unrivalled. The drifting sands were subjected to tillage and covered with verdure. Fields and gardens were refreshed by artificial streams and fountains, and luxuriant groves shaded the earth, which for hundreds of years, had been swept by the blasting influence of the scorching sirocco. In after times, wherever commerce has established her emporium, it has been the nucleus around which all the arts have rapidly concentered, and man has developed his most exalted attributes of genius and taste. Who reclaimed, from the

waves of the ocean, the cities and prolific fields of Holland? Who has most contributed to render England a "precious gem, set in a silver sea?" Who has given that mighty impulse to our tillage, which has enabled it, in so brief a period, to pass the Alleghanies and to advance with such rapid strides beyond the Mississippi? Are they not the triumphant results of that zeal, intelligence and enterprize which navigation excites, and is cherished by commercial patronage?

To our merchants, and especially those who have been engaged in the lucrative trade beyond the Cape of Good Hope, are we much indebted for the great improvements which have been made, in useful and ornamental cultivation, during the last thirty years, in the vicinity of Boston, and other maritime towns of the State. The well tilled farms, magnificent gardens, prolific graperies, and splendid green-houses, with their choice collections of fruits and superb flowers, which have rendered Massachusetts so celebrated throughout the Union, for her advancement in horticulture, are the happy results of their meritorious exertions and commendable example. Among those who have most contributed by their munificence and practical illustrations, the names of Col. Thomas H., James, and S. G. Perkins, Lyman, Pratt, Preble, Barrell, Prince, General and Hersey Derby, Parsons, — father and son, Bussey, Cushing, Lee, Crowninshield, and the Winships are eminent for their indefatigable and successful labors. To those gentlemen then, who still survive, as the revered benefactors of the republic, and their liberal minded successors or competitors, whose argosies now cover every sea and are daily visiting every clime, we can appeal with confidence, to aid in the introduction of whatever may tend to the advancement of rural economy, either in the objects of embellishment, or of profitable cultivation.

It is with poignant regret and profound humility, that Americans are obliged to declare, that no efforts of the national government can be named, for encouraging the labors of the husbandman, or advancing the knowledge of natural history, by the collection and distribution of seeds, plants and animals, which belong to the domains of agriculture, and gardening, or by specimens in zoology, botany and geology. While the maritime nations of Europe have sent public ships round the globe, to obtain intelligence and such natural or artificial productions, as might be rendered subservient to the economical arts, or illustrate science, this republic has done nothing. So far from it, even in commerce, — one of the greatest, and most pros-

perous branches of national industry, our bold and adventurous mariners, have been compelled to pioneer their way, into the harbors of every continent, explore all the isles of the deep, and open a trade with every people upon the earth, long before it was attempted, on the part of the executive, or Congress, to facilitate their operations, by the establishment of friendly, or commercial relations, with either. The diplomacy of the United States, instead of preceding, has lingered far in the rear of the daring expeditions of the American Argonauts; and many a Colchis has been discovered and the "Golden Fleece" brought triumphantly back, before the existence, or even the name of our country, had reached those distant shores. In some instances, negociations have been tardily opened, when complaints of outrage had been made, and wrongs demanded redress; but this is not sufficient, for either the interests or honor of the nation, and it is sanguinely anticipated, that more enlarged views, a more enlightened policy and more liberal measures will soon prevail, and that voyages of geographical and scientific research will be projected, which shall quadrate with the character, vast resources and dignified station which this nation maintains among the empires of the earth.

Explorations and hydrographical surveys of our coast, on the Pacific Ocean, so important to navigation, have not been undertaken, and that immense region is less known to our citizens, than the Russian dominions north of Nootka Sound, although a third of a century has elapsed since its acquisition. We have squadrons officered by as intelligent, gallant and enterprising gentlemen, as walk the decks of the proudest navies that float, which are cruising in every sea and visiting all the nations of Europe, Africa, Asia and this western continent; yet no instructions have been given, funds appropriated, or appointments conferred, to advance science, or benefit the country, by the introduction of the vegetable or animal productions of those countries whose ports they enter. With gratitude and commendation, however, it should be acknowledged, that many of our naval officers, from a generous spirit of patriotism, the promptings of a highly cultivated mind, and the dictates of a refined taste, have done much, for the benefit of their fellow-citizens, and the nation, by contributions to the public libraries, the museums of natural history and the academies of the arts, and by additions to the varieties of objects which are interesting to the cultivators of the earth. None feel more sensibly, or regret more deeply, the utter indifference of the national government, to these highly important investigations and researches,

than the naval officers. They meet, in every foreign port, the ships of England, France, Russia and Holland, charged with the honorable duties of acquiring nautical intelligence, correcting their national charts, opening new channels for commercial speculation, collecting specimens for the cabinets of science, and whatever may be deemed worthy of introduction to their several nations, to increase manufacturing industry and give an impulse to tillage. Such interviews cannot but excite painful sensations, from the lamentable and degrading contrast which they present, between the enlightened munificence on the part of the European sovereigns, and the disgraceful negligence of their own government. They anxiously wish and richly merit to be placed on a level, at least, in these respects, with the enviable condition of the officers of other fleets, who do not surpass them in skill, energy and ability, to maintain the glory of the flag, which waves over their heads.

The probability of finding in China, numerous valuable or ornamental trees and plants, better adapted to the climate of the United States, than those produced on the western coast of the eastern continent, has been repeatedly suggested; but as the reasons for this assumption, have been so clearly stated and conclusively urged by Mr Reynolds, in his very interesting journal of the voyage of the Potomac, under the command of Commodore Downes, it is desirable that they should be more generally known. I have, therefore, made the following extract, with an ardent hope, that some of the gentlemen, who are in constant correspondence with the "Celestial Empire," will become the benefactors of their country, by successfully transplanting such specimens of the vegetable products of that vast region as may be deemed either useful to the farmer, or interesting to the horticulturist.

Extract from Reynold's Journal of the Voyage of the U. S. Frigate Potomac Round the World, in the years 1831–2–3 and 4.

"A proper estimation, in this country, has never been placed upon the benefits which might result to agriculture, and particularly to horticulture, from an expedition to the coast of China. That country has a climate very similar to our own, arising from its similar position on the eastern edge of a great continent. Both are dry, and subject to greater vicissitudes of heat and cold than countries in the interior, or on the other side of the great continent. This being the

case, the vegetable productions suitable to the one, cannot but thrive well in the other.

"China has been a long time civilized, and the whole extent of its coast has been for ages under a government, which has paid more attention to agriculture, than any other government that has ever existed. Under such circumstances, it is impossible to be otherwise but that the vegetables and fruits of the various climates have been acclimated to a degree much beyond what they have with us, or in Europe, from whence we derive our fruits and vegetables.

"The territories of China, embracing both sides of the tropic of Cancer, we have every reason to believe, that the productions of the south, have been extended, as far as possible to the north, and those of the north to the south.

"By getting, therefore, fruits and vegetables from a country thus situated, we get the advantage of a thousand or more years of acclimation. For instance, we get our apples and pears from England and France. The apple we have not yet acclimated as far south as Georgia. There are, we believe, only one or two varieties, which, in the upper part of that State, prove fruitful in some years. Their flavor is very indifferent. So with the pear. Coming from the latitude of from fortytwo to fifty, it is unproductive south of Baltimore, and so with other fruits.

"Who can doubt but that, in a country in which the extension and prosperity of agriculture have been the great object of government, their fruits and other vegetables have, in the course of fifteen hundred years, been extending gradually to the south, so as to become used to a climate, which it will take nearly the same period to reach, with the varieties of fruits, which we now have. It is the same with the fruits and vegetable productions of the south. The tropical fruits and vegetables must have been brought as far north as they can be profitably cultivated. From fifteen hundred to two thousand years have been passed in this process of acclimation.

"Why should we undergo this long process, when a few thousand dollars may introduce them among us?

"It is well known, that among other plants, the sugar-cane may be gradually introduced into a climate which was at one time incongenial to it. The Otahite has been introduced into Louisiana. What a gain it would be to our country, if a variety could be procured which could be raised one degree further north than the Otahite! The advantages from this single plant alone would a thousand times

compensate for all the expenses of such an experiment. For the introduction into this country of the various fruits and vegetables which such a country as China must produce, might be attended with advantages almost incalculable.

"We have already received from China one animal, the benefits of which to our country surpass a thousand times the expenses which might accrue in setting on foot the proper inquiry in relation to this matter. The Chinese hog is the animal to which we allude. A long series of years devoted to the selection of animals having a propensity to fatten, could alone have produced the breed, which has added so much to the wealth of our farmers, and to the pleasure of our epicures, who admire a nice ham. What would our gardeners think of the immense piles of headed lettuce, described by travellers in China, as heaped up at the gates of the cities, preparatory to entering and being distributed among the morning markets? We have nothing of the kind in the United States or Europe. We cannot have, unless by hundreds of years of persevering industry and care.

"These things are more particularly of importance, because they are those in which the great mass of the community are directly and principally interested. They add to the comfort of the poorest, as much as they do to that of the richest. All are benefitted, and none could complain of an expenditure which all acknowledge is for the benefit of all classes and all sections. If there be any section that may be more benefitted than another, it is from latitude thirtytwo degrees south.

"The introduction of one single vegetable, the turnip, into England, changed the whole face of a large district of country, and rendered it, from being almost barren, one of the most fertile in the kingdom."

ART. III. *Observations on the Origin of Species, Varieties, and Variations in the Vegetable Kingdom.* Communicated by Professor JOHN LEWIS RUSSELL.

PERHAPS there is no subject in Physiological Botany so imperfectly understood by the generality of readers of Horticultural works, as is that of the reproduction and creation of new species and varieties of

vegetables, by the primary influence of the seed, that wonderful organ in the economy of the plant, the great and last master-piece of skill and wisdom, in which is enfolded with a precious and nice care, the glories of the future plant. At the point from whence ignorance begins to trace the rise and progress of vegetation, the seed, science ends; and although an analogy of this wonderful economy may be traced throughout every branch of the vegetable kingdom, yet in a great proportion of the species and genera, the analogy is far from exact. For instance, among the simple and almost rudimental stages of vegetation, as the microscopic algæ, this reproductive organ assumes a form scarcely dissimilar from the rest of the cellular tissue of the entire individual. Minute globules, from which issue rootlets and foliage, constitute these germs of vitality; and both conjoined, to the incurious eye, seem but the useless froth of stagnant liquids. But simple, and apparently fortuitous, as may seem these, no less subjects of skill or power, or objects for admiration are they, and oftentimes in their results, of great importance. Every science is dependent on another for the accuracy of its investigations: and even Geology, which in later days has been the favorite pursuit of the learned world, and attracted the attention and employed the talents of the brightest and most powerful minds, from these humbler, but no less important links in the creation, has drawn conclusions at once satisfactory and interesting.

But as we ascend the gradual scale of progressive developement, through the still imperfect, because least understood orders, we find the same curious organ assuming a more and still more definite form, until the hidden mysteries of Nature, evolve themselves under the different accompanying mutations of the reproductive economy.

And then from gemmiferous granules, frustrulæ, and vesicles, we come to the fully developed seed; the chaos, if such a term may be allowed, of Cryptogamia, to the perfection of Phænogamia. The analogy between seed and reproductive organ, indeed of both these and the bud, is still apparent; for many species of the Liliaceæ, evolve their plumules and radicles, before they have dropped from the capsule which contains them, — in fact, a viviparous progeny. These interlinks, though so puzzling to the systematist, are of intense interest to the simple student of nature, responding to his own deep conviction that her operations are without limits and bounds, an infinitude of variety.

From seeds, of whatever form, or under whatever modification, are

produced individual species, varieties and variations. This is the general law of organized vegetable bodies, but the simple continuance of these is not confined to this method. Almost every part of an individual plant, may be rendered capable of producing a perfect and unique counterpart of its parent stock. Ærial and subterraneous stems, leaves, branches, axillæ, bractes and bractæal appendages, petals and sepals, under peculiar and favorable circumstances, can become the means of reproduction. The lacerated foliage of the extensive lily family, push with readiness an infant progeny in the form of a little bulb. The crenatures of the leaf of "Bryephyllum," are each capable of evolving a stem and foliage; the leaf and appended petiole of "Gloxinia," and of "Hoya," are often substituted for more perfect cuttings by the florist, and the flat stems of the "Cacteæ," readily form proper plants. It is thus that vegetables seem the creatures of circumstances; the great end of their existence being the production of the seed; whatever tends to discourage such efforts, seems to modify their usual functions. Endued with an almost intuitive and provident care for their continuance and reproduction, the energy of the vital operations is expended in some other than the usual form, but which shall accomplish the end.

It is from the seed that we usually expect the species. A true species comprehends only those plants, therefore, which so much resemble each other in every important particular, as to make it evident that they proceeded from the same original parent. But notwithstanding the resemblance may be so striking as to denote them as one species, yet minor differences may exist, permanent in themselves, which are continued from generation to generation by the agency of the seed. These constitute a *race*, and several races may derive their origin from one species. But should impregnation occur, either by accident or design, between two races, it gives rise to another distinct form, called a *variety*, and this can only be propogated as a veritable variety by subdivision of its several parts. The seed of such a variety would invariably return to the original race or species, from which it sprung. Owing to some peculiarity of soil, exposure, disease, or the like, *variations* may occur, and these can only be continued by expedients similar to the circumstances under which they occurred.

Varieties are often misnomered *hybrids*. A hybrid must be the joint production of two distinct species by impregnation; and few such productions can form seed. In the animal economy all hybrids are

barren, and instances have been recorded of real vegetable hybrids raised between two species of *Verbascum*, and also of the species of *Digitalis*, the latter of which was decidedly barren.

Variations may be propagated by artificial means. "Pelargonium Zonale," sometimes produces distinct branches of a perfectly white or silvery foliage, and one plant with which I was acquainted, was particularly prone to this habit. Several varieties of the "Camellia," assume a similar appearance, sometimes curiously spotted or blotched. Sections of such branches, in the form of cuttings, or layers, or inarched scions might propagate these distinctive characters. It perhaps the most generally happens, that such aberrations from the usual course are too much dependent on soil or other fortuitous circumstances, to render them anything more than objects of curiosity. Flowers of some well defined varieties of the Camellia are thus very liable to singular variations; for instance, that commonly known as the "Double striped;" while beautiful and rare varieties of the gorgeous Dahlia, the pride of the garden, undergo strange mutations in different soils. From the identical parent root of one such, "Levick's Incomparable," two separate plants in different situations during the past summer produced very unequal flowers, the elegant white tipped petals of one, being comparatively frequent and regular, while they were scarcely observable on the other. No less remarkable the aberration in two plants of "Levick's Commander-in-chief," under similar circumstances, traceable in this instance entirely to the different qualities of the soil. Though no admirer of "Picta formosissima," yet I have seen among its almost innumerable flowers, some of the utmost regularity of stripes, and again others scarcely worthy its trivial name. Who has not been struck with the curious habits of the beautiful and fragrant Carnation, now blending in pictorial harmony its many and varied colors, and now producing one deep splendid dye over its every petal?

It is this curious, though universal law of the vegetable kingdom, which enables the operator to produce so many useful and beautiful objects to delight the eye or gratify the senses. The attention which has been paid to this subject in England, France, Belgium, and in some degree in this country, has been rewarded by treasures worthy the skill and pains employed. The singular and oftentimes unexpected results of such labors, have led physiologists to consider the theory of such mutations, and enter on studies which should elucidate the apparent mysteries of reproduction, and the permanent or acci-

dental influences, which result therefrom, and which affect the subjects of their researches.

It has been already mentioned that species and varieties, and even their mutations may be rendered permanent primarily by the seed, or subsequently by subdivision of their several parts. On the same principle of subdivision and increase by cuttings, is the common operation of grafting, so familiar to every cultivator. This practice is undoubtedly one of great antiquity, and probably derived its origin from the observation of a natural union, which often takes place between two living stems whose surfaces have been abraded of their bark, and rendered contiguous by accidental pressure. To insure the success of the operation it is necessary that the vessels of the liber, (which is composed of woody fibre and ducts) of both plants should meet, in order that the cambium or descending and elaborated sap should descend from the scion into the stock. This union and the developement of the scion cannot be regarded in any other light than as a modified cutting and the stock in which it is inserted the peculiar and necessary medium of nutrition.

Many idle and fanciful things and notions have heretofore obtained respecting the operation of grafting, such as the ready union of a scion on any stock; and some influence the scion has in modifying and indeed changing the character of the stock, or the stock, affecting to a greater or less degree, the scion. Thus the ancients mention that apples and vines were grafted on elms and poplars, though they add, that their duration was short; and Evelyn, among the more modern writers on the subject, tells us of a rose which he saw grafted on an orange tree in Holland; and even now though less rare than formerly, we hear of the practicability of roses being united to the black currant and barberry, producing yellow or black flowers. Should such union take place it could not be permanent, as it is an immutable law of vegetable increase, that to insure success the plants must be of the same family. The operation of grafting is therefore performed either to preserve a valuable variety, or to increase the individuals of such a variety. Viewed as a modified cutting in a peculiar and appropriate pabulum, the false theory of its influence exerted on the stock becomes apparent. By certain and curious experiments, Knight satisfactorily proved that each variety of fruit requires its own foliage to bring it to perfection; and it is equally well determined that although the ascending sap is identically the same in stock and graft, yet the different leaves of the latter by their own economy and

functions elaborate an entirely different cambium for its annual increase. The object of the cultivator is therefore to afford that abundance and strength of nutriment to the scion or graft, derived from a more mature and vigorous plant, which should more rapidly cause it to evolve its flowers or fruit.

Regard should be paid to the physiological characters of the individuals to be increased by grafting; such as the similarity in quantity of sap, the period of defoliation or a similarity of internal structure. The apple has thus been grafted on the hawthorn, and a complete union was effected, yet the healthy growth was confined to the stock to the detriment of the scion, which after protruding a few sickly leaves, perished at the end of summer.

Diseases like variations, may be continued by grafting. The health or vigor of the stock cannot modify or recreate the declining powers of the sickly scion. With the inherent qualities of the particular variety to which it belongs, it also possesses and must transmit the inherent disease of its parent stem. Valuable varieties cannot be saved from destruction, and recourse can be only had to the chance of a similar from the seed.

It is a common practice to destroy all the shoots or suckers as they are sometimes called, which protrude from the stock below the graft, because, as it is generally supposed, they divert the sap from the scion. A better reason may be assigned, that it is desirable to facilitate the full downward expansion of the alburnum by the descending current of the cambium, and thus render still more perfect the change effected by the operation of grafting. This principle being admitted, there has arisen an error in some minds, relative to the total change of the entire tree or plant. If after a certain period the annual deposition of alburnum by the descending cambium has identified the stock with its scion, should not the fortuitous bud evolved from the stem, be of the same character with those of the scion and produce the same quality of flower or fruit? The error consists in a mistaken notion of the origin of buds. Physiologists have demonstrated that *these exist in the first annual developement of the axis, stem or branch*, and are nourished by the medulla or pith; that they may remain dormant for any number of years, being protruded in this state and nourished by each successive annual layer, dying with the destruction of the plant, or called from their embryo state into full and living existences at any fortuitous

moment when their powers are needed, for its nourishment and vital functions. Whenever this may happen, their course may be traced from the very exterior point of appearance on the stem, to their first origin, by a pale line of parenchymatous matter, running to the very centre. This accounts for the rapid growth of suckers on the stumps of particular trees, especially of the willow and poplar, as also of some of our fruit trees after being cut down, and by an examination of a transverse section, this beautiful phenomenon may be perceived. When by accident or other cause a valuable variety of grafted fruit has been lost, no one expects to recover it by the protrusion of suckers or shoots from the stem; which should be the case did the annual deposition entirely alter the tree, as also he might reasonably expect, did the theory of Duhamel hold, that buds were preorganized germs, pervading every part of the plant and produced by the descent of the cambium, after its elaboration in the leaves.

Several instances of variation have been already considered, but among the more curious may be mentioned that of fruit. Particular varieties, it has been asserted, are more prone to this sportiveness than are others. The influence of soil, of exposure, air, and of many, almost trivial circumstances, may conspire in a great measure to produce these effects. That such is the case, almost every one's experience, can furnish instances of one and the same fruit grown on different soils, not only producing an earlier crop, but even where the ripening of the fruit is simultaneous, differences depending entirely on soil have originated dissimilar names. Undoubtedly on this account is it that our nomenclature of cultivated fruits is so deficient in accuracy, and so much needs investigation and study to reduce it to simple truth. Single and individual trees too, it is asserted, often produce on the same branches a considerable difference of quality in their fruit, so much indeed as to lead to the supposition that by subdivision or grafting, a permanent and peculiar variety might be perpetuated. Thus, slight differences, between branches such as exist in every tree, have been thought capable of producing permanent variations, through their particular organization. Extreme care in drawing conclusions, from such theories should be observed, because the modifying circumstances are so numerous, in producing what in fact are but transient or accidental deviations.

ART. IV. *On the Preparation of Flowering Plants, Fruits and Vegetables, for sale.* Communicated by Mr J. E. TESCHEMACHER.

To render articles for sale attractive to the eye at the first glance, to whatever use they may be afterwards appropriated, is the great art of a trader; and no articles of fancy require the application of this knowledge more than fruit and flowers.

If the French do not excel the English and the Dutch in the cultivation of many species of plants, at least they do in the elegant and graceful manner they prepare flowers for sale, in training the branches of plants naturally, in causing their juices to throw out shoots, flowers and buds in striking situations, in dwarfing some and forcing others into luxuriant growth — all which they effect by many little arts and secrets; and in the application of these, a host of florists (*jardiniers, fleuristes*) in Paris ardently vie with each other.

Those who have visited this celebrated capital and its flower-market, with the various horticultural establishments of Messrs Matthieu, Durand, Lemon, Fion, and others, where these little arts are practised in perfection, must allow that the French possess the talent of giving their flowering plants a more tasteful appearance, and, to use their own phrase, a more coquettish air than the gardeners of any other country.

One of the most common, as well as most universally adopted methods of acting on a plant by these gardeners, is *pinching off the buds;* and in describing the effect of this operation, I intend, besides my own experience, to add that of several of these French florists who have published something on this subject, particularly of M. Phillipar, gardener of the greenhouse at the Museum of Natural History at Paris.

When it is considered desirable to give a plant a dwarfish habit, and make it grow bushy and thick, it is effected by pinching out neatly and carefully the buds at the extreme end (top) of the branches: the result of this is to throw the sap back into the lower part of the plant, as it cannot find vent at the upper, and there it bursts out into numerous flower-bearing branches, instead of only forming one spike with blossoms at great distances. When these new buds are bursting out below, the art of pinching them out so as to leave others in proper situations, is put into use; a little practice and experience will soon give that facility and judgment which cannot be learned by the minutest description or instruction; but it is evident that this method is

less disfiguring to a plant than pruning, where the mutilated stump is exposed to sight until concealed by the foliage of the new shoots.

One example of this may illustrate, and it may be made with a plant which I hope ere long will be in every garden of the United States—the Gilia coronopifolia, noticed in the March number of the first volume of the Horticultural Register, under the name of Cantua coronopifolia.

In the open ground it would be a pity to mutilate this beautiful plant; but when grown in pots, for the greenhouse, if the centre spike is topped long before flowering it will send up numerous small spikes, clothing it from the surface of the pot, which will be covered with great abundance of its showy blossoms; whereas, unless this plan be adopted, there will be only one straggling, thick stem, with flowers at the top, looking naked and unsightly at the lower part.

In the arrangement of Chrysanthemum indicum, which is so ornamental in October and November, much is done by dwarfing the very tall sorts, so as to diminish the long, sticky branches, by means of early pinching out the buds at the top. This is the case, also, with Metrosideros and Acacia, which are certainly preferable when in pots, of a low stature and bushy, to being tall, thin and drawn up; they must then be pruned, and the shape will always remain bad; whereas a little experience in pinching out the buds will enable a gardener to throw out wood wherever he pleases. A great advantage of this method, when properly put into practice, is the dispensing with sticks or supports to plants, which however well made, have always a discordant appearance on the greenhouse stand.

One of the most proper periods to pinch out the tops of shoots, is when plants are repotted, and the roots are trimmed, because then the equilibrium between the roots and the upper part of the plant is thereby properly kept up.

When greenhouse plants are taken out for the summer, they should be occasionally turned round to prevent the growth of the roots through the hole in the pots, which would have to be cut off when they are returned to the house in the autumn, disfiguring the plant, by causing the tips of the young shoots to fade and die away.

Pelargoniums should only be thus trimmed and pinched after flowering. Heaths, Diosmas and Myrtles require this regulation to prevent their growing sticky.

Keeping the plants clean from dust, insects and brown leaves, the surface of the pots from moss and fringe, and the outside of them bright, is almost too obvious to be noticed. The sticks necessary for

support when indispensible should be green or brown shoots, so as to be as little conspicuous as possible; and in placing them, every regard must be had to the nature of the plant, whether it is upright and woody, trailing, or climbing; the ties with bass should be as small as convenient, and twisted to make it thin; the ends neatly cut off.

In France, when roses and other flowers are brought for sale in pots, the flowers are generally protected by pieces of white paper in the shape of cones (*cornets*) tied round them neatly, so that the sun does not scorch them, and they reach the houses of the purchasers without being spoiled. Under the buds and round the calyx or lower part of the flower a little cotton is stuffed between it and the stick, that it may be tied close without injury from rubbing. This is the method adopted in packing Auriculas, Polyanthus and other flowers for sending to the various exhibitions. They will thus travel many miles uninjured.

Herbaceous, perennial and biennial plants may always be kept for sale, at every period of the seasons, by transferring them from the seed beds into pots, so that even in the middle of the summer they may be turned out of the pot at once into holes prepared for them in the flower banks. There are very many advantages in adopting this system with herbaceous plants. Summer is the time when they show off their beauty, and if those who were delighted with them could carry away a plant at the time, while the effect of this beauty is on their minds, they would then purchase; but before the proper season arrives for transplanting, this effect is effaced or forgotten, and the very purpose of the nurseryman's showy garden, the sale of his plants, is lost.

Another advantage is, that those which are rather tender may be protected during the winter by moving them into the cellar, or in a pit, where they should be kept moderately dry; of course by keeping them in pots they become small in stature, but this is no eventual detriment, as they are soon restored to vigor in the open ground, particularly if planted in rich and congenial soil.

Many herbaceous perennials which are transplanted in the spring will not flower well the same year, but if they had been moved from pots the preceding summer or autumn, the fibrils of the roots would have taken sufficient hold of the earth to grow and blossom luxuriantly the following year; this is readily accomplished by having them thus for sale in pots; they can then be transferred in the summer, and have the great advantage of the autumnal rains to fix them in the ground.

In the extensive nursery of Messrs Loddiges, near London, a large stock of hardy plants is always kept on hand in this state, so that customers are never disappointed, and their example has been followed by many in the trade: rock plants are generally kept in pots. I have always been in the habit of keeping a reserve of perennials in pots for the purpose of presenting to amateurs and friends. The greatest pleasure, next to growing a beautiful flower, is that of disseminating it amongst those of similar taste.

But I must pass on to the second part of my proposed communication—the preparation of fruits and vegetables for sale: and in this part, I shall have to confine myself chiefly to the manœuvres practised for the London markets, which, although innocent, will probably raise a smile among some of your readers. Several have been published, but all are pretty well known there by the market gardeners, although they may be new here.

The great attraction of the grape, consists not only in the size of the bunches and of the individual grapes, but also in a beautiful white powder which covers them, called the bloom — to delineate which in a painting is considered indispensable, but requires great art in the artist. To preserve this bloom undisturbed, the bunches should be thinned when half their size, that the scissors may not rub any off when it is forming; and in houses where steam is sometimes admitted to moisten the atmosphere, great care must be taken that too much be not admitted at once to wet the grape, as water takes off this beauty, which, when once departed, can never be restored again by nature. Light and much air are quite necessary to produce a plentiful natural bloom; but if it is rubbed off and lost, it may be restored by suspending the bunches in a large close box, with a hole on one side, through which is puffed a quantity of very dry and finely powdered magnesia; this is done with an instrument called a puff-box, or with a circular brush charged with magnesia, which rubs against another; a quantity sifted through muslin or anything which will raise a very fine dust inside the box, without moving the fruit, will answer the purpose, taking care, however, not to cover it too much with powder, or in other words, not to overcharge nature.

Plums, particularly those of a dark color, are laid on small trays on a shelf in the same box, constructed of fine crossed wires so that the powder may reach every part. The same with peaches, figs and nectarines, and in fact all fruit which has naturally a bloom. In laying them out for show in dishes, much pains should be taken to decorate

them properly with leaves, particularly peaches, nectarines and round fruits, which are much set off by the contrast of green foliage; each fruit should recline gently as it were on a leaf, that is, it must not be pressed down. Leaves of a tender green are preferable for some fruits; for others, a darker color is more suitable; but those with beautiful and decided indentations, like the vine leaf and some of the mallow tribe, have the best effect. The black mulberry is good for decoration, but care must be taken to wipe off the juice which exudes from the foot stalk, otherwise it will injure the bloom. Variegated leaves are sometimes pleasing for this purpose, particularly those of the Aucuba Japonica. These leaves must always be laid with the stalks concealed. Where grapes are exposed for show in large quantities, the most imposing effect is produced by keeping the dark and light colored varieties in distinct masses; but where only small quantities exist, then the most pleasing appearance arises from contrast, by mingling both colors tastefully in the same dish. When grapes have to be conveyed any distance, the bunches should be hung in a box and several thin strips of whalebone or cane passed through holes in each side of the box, and through the bunches just under the forks of the fruit-stalk, to support the weight of different parts of the bunch, and to keep the bloom undisturbed.

Gooseberries should be placed in baskets or dishes ornamented with leaves; the different colored sorts mixed in equal proportions.

Currants ought to be carefully gathered, so that the bunches are not spoiled or broken; leaves neatly arranged round the edge of the basket dish, and in the middle, the fruit laid lightly in, the red and white properly mixed, with the largest bunches of each on the top.

Strawberries and Raspberries are to be decorated in the same manner; the latter fruit requires much care in picking, and should be eaten fresh, as it soon loses its peculiar flavor.

The Cucumber engrosses much of the gardener's attention in England, and great art is used in producing them of a fine color, with beautiful bloom, a straight form, and wanting none of those little prickles with which the skin of this vegetable is supplied and ornamented. To produce them in this state they must have plenty of light and as much air as the season of the year in which they are grown will allow; always supposing them to be cultivated in a frame or hotbed; the fruit must not be shaded by leaves, nor lie too close to the ground, otherwise it will not have that beautiful dark bluish green color so much desired, but will turn yellow underneath. To make

the cucumber grow straight, it should be laid when young in a wooden trough, with glass underneath, so that it cannot curl up. Fruit may often be made, in this way, to grow ten or twelve inches in length. To straighten them after they are cut, they should be kept in a cool, dry place, on a piece of board with holes made every half inch, and a back to place against the convex side of the cucumber; in these holes pegs are placed, which press the ends of the cucumber backwards, and finally straighten it considerably. To put on the prickle artificially, just moisten the spot on which it is wished to place it, with the smallest quantity of gum water, take up the prickle cut from another cucumber, with the point of a fine needle, and place it carefully on; when dry, lay round the base, with a fine camel's hair pencil, the smallest drop of liquid Indian ink. After this operation, the cucumber must be placed in the blooming box, to receive the finishing touch. Three such straight, fine fruit, well bloomed, placed in a basket on cucumber leaves, have a very handsome and attractive appearance. Some gardeners have been in the habit of producing an artificial bloom on fruit by exposing it to the fumes of sulphur; but this is neither so efficient nor so innocent as the fine dust of magnesia. A withered blossom adhering to the end of the cucumber, is generally thought requisite to perfect its appearance; when it has fallen off, another, taken from a fruit not quite fit to cut, is stuck on with a little gum and starch.

Many other artifices might be detailed, which add to the attraction of the products of the garden, and make them almost irresistible to those who find a pleasure and satisfaction in encouraging the industry and ingenuity of the gardener; but I fear I have already rather exceeded the limits assigned for a single communication.

ART. V.—*On the Selection of Hardy Herbaceous Plants, suitable for Ornamenting the Parterre, Border or Shrubbery.* Communicated by Mr JOSEPH BRECK.

IT is gratifying to witness the increasing taste for fine fruits and flowers, in our cities and villages, and to behold in every direction some small beginnings, at least, in the delightful art of Horticulture; which, if encouraged and persevered in, will make our beloved country like the garden of Eden; having an abundance "that is pleasant to

the sight and good for food." I shall feel myself happy if by my humble efforts, I can in any degree contribute to an object so desirable as increasing this taste. To effect this, it will be necessary to write, not for the professed amateur and horticulturist only, who, it is presumed are in full possession of all requisite knowledge, and already sufficiently excited by the success of their efforts to go on; but to those more particularly who are just opening their eyes to the beauties of the vegetable world, and taking their first steps in the road to the temple of Flora. To such it will be my design in this and in some future communications, to notice some of the most shewy herbaceous plants worthy of cultivation.

In my descriptions I hope I shall be excused if technical terms are used with explanations. It is necessary and proper they should be to the exclusion of common names, which are perplexing; as one plant in many cases has different names in different sections of the country. Batchelors buttons, for instance in one place is Centaurea cyanus, in another Gomphrena globosa, and in a third Hibiscus trionum; whereas the botanical language is universal.

I shall give the etymology of the generic names as they are explained by Loudon and other standard authors; many of which are of Greek or Latin origin, and given in honor of the discoverer, or from the qualities and habits of the plants.

The specific name refers to its peculiarities; as its manner of inflorescence; color, shape or odor of its flowers; shape, position and appendages of the foliage or stems; its location, time of flowering and height; or from the discoverer or some distinguished botanist or patron, &c.

The specific name may be compared with the christian name of a person; the generic to the surname; the order to a town; and the class to a state or kingdom.

I make these introductory remarks as there may be some, who without due consideration may think that in the use of botanical language, this is a useless and pedantic display of words.

Of all the hardy perennials, there are none, perhaps, of so easy cultivation, which are more pleasing than the numerous and highly ornamental family of Phloxes; yet but very few of the species are extensively known. The genus is exclusively N. American, and in the western and southern States is one of the most conspicuous ornaments of the prairies and woods. None of the species are to be met with in N. England; but in N. Jersey and Pennsylvania a few of

them may be found. It is said of an eminent British collector, Mr Drummond,* that on beholding a patch of Phlox subulata in one of the pine barrens in N. Jersey, he exclaimed "The beauty of that alone is worth coming to America to see, it is so splendid." With a good collection of Phloxes, the garden need not ever be destitute of beauty, as some of them are in bloom from April to October. Some produce a second crop of flowers if cut down immediately after the bloom is over, while others continue to display for months their untiring charms. It has been truly said by another writer, that "a collection of them properly attended to, would of themselves constitute a beautiful flower garden."

The late flowering sorts are much to be prized on account of their lively colors of purple, red and white, and form a fine contrast with the other autumnal flowers, which are mostly yellow. The vernal ones too are acceptable, though humble in growth, and delight the eye with their brilliancy and loveliness.

While many herbaceous plants require protection in winter, none of those I am about to describe need it, with the exception of the dwarf species, which are evergreen, the flower buds are formed in autumn, and should be slightly protected, or rather shaded. It is not so much the cold as the powerful March sun which does the damage; all that is necessary in most cases of protection is to prevent the action of the sun upon the plant when in a frozen state. Most of the species delight in a moist rich soil, but succeed tolerably well in almost any situation, provided it is not very light and dry. No plant is more easily propagated than most of the family. It is done generally by dividing the roots immediately after the bloom is over for the early flowering sorts, and in the spring for the late ones, or the roots may be divided at the season of flowering with success, if cut to the ground.

The generic name Phlox is from a Greek word signifying flame. The plant so named by the ancients is supposed to be an Agrostemma, a very different plant; our Phlox of course was not then known. It belongs to the class Pentandria (five stamens); order Monogynia (one stile); natural order Polemoniacæ, from Polemonium, its type.

* The sad intelligence of the death of this gentleman has recently been announced. His loss will be deeply felt by the friends of Botanical science.

"He had crossed from Texas to the peninsula of Florida, with the intention of exploring the botanical riches of that country; but finding the season unfavorable, he sailed over to Havana, intending to spend a short time there, but died soon after his arrival."

The character of the genus is a three celled capsule (seed vessel) Corolla (flower) [illegible] divided into five segments with a cohering tube more or less curved. Stigma (the top of the pistil or central part of the flower) trifid (three parted); a deeply small five cleft calyx (the lowest portion of the flower, or that which forms its outer covering in the bud, generally green.)

We will now begin with the earliest species, and proceed in the order of the time of their flowering.

Phlox subulata. The leaf is subulate or awl shape; that is, narrow at the base, and becoming more or less curved to one side at the point. This pretty species displays its showy pink flowers the last of April, and in such profusion as to conceal its yellowish green foliage, and continues in bloom for nearly a month, and is companion with the two following, and like them, from four to six inches high. It is known by the common name of moss pink. It can be so rapidly increased that it may be used to advantage for edgings, but requires some care to keep it in order.

Phlox stolonifera. (Creeping.) The plant puts forth suckers or shoots near the surface of the earth, which take root, something after the manner of the strawberry. Leaves ovate (egg shaped) brownish green; stem erect, bearing a few large deep red flowers which begin to expand a few days later than the preceding. A very lovely species and worthy of cultivation.

Phlox nivalis. (Snow white.) The flowers are brilliant snowy white, marked with orange in the centre, on the end of the branches, in bunches from three to five, and make their appearance from the 10th to the middle of May, and continue until the first of June. If the autumn is mild as was the last, it will produce a second crop, but not in such profusion. Leaves setaceous (bristly) shining deep green. This is the most tender, and is generally more or less injured without a little protection, and it is undoubtedly one of the most elegant of the family.

Phlox divaricata. Branches divaricate; that is, spread out so far from the stem, as to form more than a right angle with it above. This beautiful species flowers the last of May, very large, pale blue, on lax decumbent stems, one foot high. Leaves ovate lanceolate, (egg shaped at the base tapering off at the point like the ancient lance.) This may be considered one of the finest, but has not been so extensively disseminated as some of the tribe.

Phlox maculata. The stem is dotted with dark spots, from

which circumstance it receives its generic name, maculata, (spotted.) It is one of the most common sorts, and found ornamenting almost every garden; frequently known under the name of Flora's bouquet. The flowers are so pretty, one might readily imagine the fair goddess would not be indifferent to its charms. It begins to show its purplish red flowers the last of May, which are crowded on an oblong spike, and continues long in bloom: if cut down immediately after flowering, a second display may be expected in August or September. Leaves lance oblong (long lance shape); glabrous (smooth); margins rough; stems rough; two feet high.

Phlox suaveolens. Sweet scented. It has white, sweet scented flowers arranged in the same manner as the last; stem without spots. Leaves ovate lanceolate, quite smooth. The height and time of flowering the same as P. maculata, and by some considered as only a variety of it. It is one of the most delicate of the species and when grown with the last described, makes a fine appearance.

Phlox carnea. Flesh colored. This delicate species commences flowering the middle of June. After its first display it continues to flower sparingly through the summer and autumn. Leaves ciliated (eyelash haired) lowest setaceous, upper one linear lanceolate (narrow lance shape.) Branches from three to five flowered.

Phlox Listania. In honor of Lady Liston, but I cannot ascertain who her ladyship was. A beautiful new species with fine red flowers in June; a foot and a half high. Foliage broader than in most species; radical leaves rhomboidal; upper one ovate lanceolate.

Phlox Shepherdia. Probably in honor of Mr William Shepherd, curator of the Liverpool botanic garden. A beautiful species about three feet high, with purplish red flowers in long spikes or panicles. Leaves lance oblong; commences flowering middle of July.

Phlox acuminata. Leaves acuminate (taper pointed) ovate. Flowers the last of July, purple; crowded on its very regular lateral branches, forming very dense, flatish pyramidal heads, or panicles. Three feet high, very showy.

Phlox pyramidalis alba. White pyramidal. One of the most elegant of the species. Flowers pure white; begin to open the first of August, continue through the month in perfection, and frequently through September. The flowers are so arranged on the lateral branches as to form a beautiful pyramid; four feet high in favorable situations; leaves heart ovate, acute, smooth.

Phlox pyramidalis purpurea. Purple pyramidal. Another ele-

gant species, and resembles the last, except in color of the flowers which are fine purple; at the same time and height. In the morning when covered with dew, or in wet weather, the flowers appear bluish purple, but in fair weather red purple.

Phlox hybrida. A beautiful seedling found between masses of the white and purple pyramidal, and in appearance the same, excepting the color of the flowers, which are fine pink, shaded with purple.

Phlox paniculata. Flowers in panicles; (loose irregular bunch of flowers with subdivided branches); in this case the bunch is compact like the lilac; it has a very graceful appearance, the panicle inclining to one side of the stem. One of the tallest of the family; frequently exceeding four feet in a strong soil; stem smooth erect; leaves lanceolate flat; margins rough; flowers fine pink, continue in perfection through August.

Phlox carolina. From the Carolinas. A handsome species with ruby purple flowers in August, in subfastigiate corymbs (nearly flat tops, inclining a little to the pyramidal); leaves lance ovate.

Phlox tardiflora. Late flowering. Flowers white, arranged on long spikes; two and a half feet high; last of August and September. Leaves oblong lanceolate.

Phlox undulata. The margin of the leaves slightly undulated; lance oblong; stem erect, smooth, three feet high; the latest species flowering in September, and retains its beauty long after the commencement of frosts, and lingers to the confines of winter. Red, many of the flowers turn white, which gives its panicled corymbs or heads a variegated appearance.

These are all the species that I have cultivated. The following are said to be fine, viz: P. glaberrima, P. suffruticosa, P. americana, P. intermedia, P. reflexa, and P. pilosa. One of the most desirable of the family is P. variegata; the leaves are beautifully variegated. This has been imported repeatedly, and as often lost. I am not certain whether it is in any collection in this region or not, but think it is not.

It is a notorious fact that most of our beautiful North American plants from the west and south, have first been transported across the Atlantic to our English friends, and from thence find their way back to this country. The number of the species of Phlox have been greatly increased within a few years past, through the indefatigable exertions and persevering spirit of the lamented Drummond, Douglass and other distinguished botanists. More than sixty species are found in the English catalogues. Probably not half that number

are in any collection in this vicinity. Within the past year many new ones have been ordered, but unfortunately most of them were received in such bad condition, that but few of them were saved. It is gratifying to know that some have been added to our lists, and it is to be hoped that the enterprizing spirit of our amateurs will not be damped by past disappointments; but that soon we may have the pleasure of seeing all this extensive genus, flourishing in our own soil.

In the same natural family with Phlox is found the genus Polemonium, belonging also to the same artificial class and order. "Polemonium is from a Greek word signifying war. Pliny relates, that the plant which he called by this name received its appellation from having been the cause of a war between two kings, who could not agree which of them discovered its first virtues. It was also called Chilodynamia, from Greek words, a thousand, and power, on account of its extraordinary merit. The plant which possessed all these good qualities, is now forgotten. Its name has descended to a flower which ornaments the garden, but which preserves nothing of the virtue of its progenitors, beyond a slight vulnerary quality.".

P. cœruleum. Blue flowered. This is one of the old standard border flowers, and is known by the common name of Jacob's ladder, from its beautiful pinnately cleft leaves (leaflets arranged on each side of a common petiole or leaf stem.) Its generic character is a fine cleft campanulate (bell-shaped,) calyx; the corolla also campanulate, with a four or five lobed erect border, and having its short tube closed up by five staminiferous valves. The stigma trifid; the capsules roundish, of three cells, each cell many seeded; the seeds oblong, and somewhat triangular. Its lively blue flowers, nodding, on the ends of the branches. There is another variety with white flowers, each variety worthy of a place in the flower department, being perfectly hardy and of the most easy cultivation; flowers in June; two feet high.

[To be continued.]

ART. VI. *Cultivation and Management of the Buckthorn (Rhamnus catharticus) for Live Hedges.* Communicated by E. HERSY DERBY, Esq.

I HAVE great pleasure in complying with your lately expressed wish, that I should furnish for the pages of your useful and highly interesting Magazine, some remarks relative to the cultivation of the Ameri-

ican Buckthorn, or Rhamnus catharticus, for the formation of live hedges. I have, myself, long been convinced of the superior durability, economy, and efficacy of this method of enclosure, over those in more common use among us; and have had much pleasure in watching, for the last few years, its steadily increasing adoption by the farmer and horticulturist of our country. The rapid increase of our population, and the consequent vast consumption of timber for other and more valuable purposes, by increasing the relative cost of the old fashioned wooden fences, must eventually render the introduction of hedges here, advantageous, if not absolutely essential, from motives of utility and economy; while the lover of rural scenery will hail with pleasure the picturesque charm of their verdant beauty.

It is now about thirtytwo years, since I first attempted the formation of a live hedge as a boundary for my own pleasure-grounds. My first experiment was made with the English Hawthorn, the plant commonly used for the "trim hedgerows" of England, and particularly well suited to that moist climate, but poorly adapted to our dry summers; it is also liable to the attacks of the Borer, which in some instances has destroyed large portions of the hedge, and is almost invariably assailed early in August by mildew and blight, which rob it of foliage, and cause it to assume a wintry appearance. My next attempt was with the Triple Thorned Acacia, a native of our Western States;—but this plant not being adapted to our climate, was too tender to bear its changes, and suffered both from the heat of our summers and the severity of our winters, and the result, in both cases, was a decided failure. I also tried the Crab Apple Tree, but without better success.

In 1809 I made another trial, by setting out some young plants of the American Buckthorn, and this time with perfect success; this hedge, which is about twenty rods long, has never failed in any part, and is now a fine healthy fence, having, during twentysix years, needed no repairs but the annual clipping, which is easily performed by a common laborer. The plant is a hardy one, sending out many small branches, which naturally interlace. Encouraged by the entire success of this experiment, I have continued to enclose my garden and other parts of my grounds with the Buckthorn; I have now about one hundred and twenty rods in fine order, and am entirely convinced of the efficacy of this hardy native plant for an impervious hedge, and of its perfect adaptation to our climate, where it remains in full leaf from early spring until the severe frosts of a late autumn.

My method of cultivation, is, to place the plants of about three years'

growth in a single row, about nine inches apart, either in the spring or autumn; if the latter, I clip them the next spring within six inches of the ground, in order to thicken the lower branches, which is very important to the beauty of the hedge; the next spring I clip within two feet of the ground; and the third spring within three feet, with a little pruning at the sides each year, to form a regular surface.

Three years such management as I have described, will form a perfect and beautiful hedge, and it will afterwards need only such clipping as shall keep it within bounds, and suit the taste of the proprietor. The simplicity of this management, and the strength and hardihood of the plant, render success almost a matter of certainty; and I think the result cannot fail of being satisfactory to the cultivator. I have, within a few years, furnished and distributed into different sections of the United States, plants sufficient to extend several miles, and if the unqualified admiration of my hedges, expressed by those who visit my grounds, has any foundation in truth and sincerity, this plant has a decided preference over any other.

Salem, Dec. 21, 1835.

[The following, is from the pen of a gentleman who is travelling for his health and amusement, and is favoring us with remarks, suggested by the scenes and events which are presented in the course of his peregrinations.]

Art. VII. *Leaves from my Note Book.* No. I.

Pittsburg, Dec. 6, 1835.

Thomas G. Fessenden, Esq.—In compliance with a partial promise made to you before I started on my journey to the far West, I send you a few reminiscences and incidents, premising, however, that the season for beauty in horticulture and floriculture has already given way to the chill and dreary winds of winter, and, therefore, my remarks must depend, in a great measure, upon inquiry, rather than on the more pleasing and practical ground of actual observation. Notwithstanding, I hope I shall find something worthy of record, at this season while the beauties of Flora and Pomona, which combine to render your pages interesting, are taking a winter's sleep.

Behold me, then, on a gloomy morning in the month of November, on my first pilgrimage from our fair New England. Our journey to Providence was over a tract of country, as familiar to you as house-

hold words, naturally sterile, and having little to interest one who admires nature's beauties. The city of Providence, situate on both sides the Pawtucket, presents quite a fine appearance as you approach it from the east. I had not time, however, for a long ramble over it, and shall, if I return that way, reserve it for future remark. Every aspect of it seems to indicate activity and prosperity, and being a resting place on the way to New York, makes it much frequented by strangers. I believe it has not been much celebrated for its devotion to the art of Horticulture, which, I suppose, is owing to its rather unfavorable soil, though there are many beautiful seats in its vicinity, and a considerable quantity of fruit, &c., is brought to its market.

Newport, our next resting-place, is a large and pleasant town, thirty miles south of Providence, a great resort during the summer months, though at this season rather dull. It has the appearance of antiquity and decline. The streets are very handsome, being many of them ornamented by trees, and a great portion of the houses have large gardens, which give to the town a cheerful and beautiful appearance to one who can find beauty in a flower and a tree.

Having our usual accompaniment of dull weather, a thick fog at sea, our good captain comforted us by the assurance that the boat must lie there till it was clear. However, we made ourselves as happy as possible, by wandering into and around the town, and were very well rewarded by fine prospects and interesting and amusing rencontres. In one direction our walk brought us to the tower described in the "Red Rover," as "the Windmill," built of stone, on eight pillars, about three feet each in diameter, — the tower being about thirty feet. But as I must not linger so long on my road, I shall take the liberty of landing you at once in New York, after a pleasant sail up the Sound and East River.

Every one who visits New York is full of rapture at the splendid scenery of the Sound, and the East and North rivers; but I am such a Goth as not to admire them so very much more than the approach to our own beautiful "city of the hills." The scenery here is beautiful — so is the approach through the Islands to Boston, — certainly no one can help admiring the splendid prospect of the surrounding country — East and South Boston, and the country back, Dorchester and its beautiful seats, to say nothing of the approach on the land side through Roxbury, where the liberality and taste of such men as Lowell, Dearborn, &c. have formed seats unsurpassed by any in the country. However, in richness, variety or natural beauty — nature

has combined with art in rendering the vicinity of New York lovely and picturesque, and no one could fail of expressing admiration at such scenes as are here spread out before him — but still one can turn with pride and complacency to our own beautiful city and environs, and find much that is worthy of comparison with even this splendid natural picture.

I called, the next day after my arrival, at your friend Thorburn's Horticultural Repository, 11, John Street, where it has been removed from the original place in Liberty Street, which is now demolished to make way for the improvements everywhere going on in New York. It consists of two long, large rooms, a first and second floor. The first floor is devoted to seeds, &c. which are here packed, labelled, and sent off. The business seems to be carried on in a systematic and correct manner, and much is accomplished with little noise and bustle. The second floor offers a fine lounge for one who wishes to pass an hour listening to "fairy-like music," and feasting his eyes on beautiful paintings and engravings which hang on the surrounding walls. The aviary, at one end, is filled with many beautiful birds which fill the air with their songs — the native mocking bird, canary, &c. &c. all exerting their sweet voices in a mingled harmony, and fluttering as merrily as in their native woods. Gold and silver fishes are swimming about in large globes of water, seemingly contented and happy, if we may apply such terms to fishes, — and why may we not? The paintings and pictures are very beautiful and arranged with fine effect. This place is well worthy a visit by a stranger in the city, and I hope to see the time when your own establishment will vie with this in its ornamental, as it now does in its useful and curious attractions, and be a place of resort for those who are in search of the ornamantal in the animal as well as the vegetable creation. What more beautiful association than the bird and flower sending up sweet incense to their common creator, nature's God!

And Lawrie Todd — he who commenced with a single *geranium* (emblem of *preference*) — where is he? you may inquire. He is now enjoying the fruit of honest and persevering industry and enterprise, at Hallett's Cove, about six miles from New York. As I made a short stay in the city, I did not avail myself of the pleasure of calling on him, though I hope to do so when I return. I would give my best hat (not a bad one either for a traveller,) for a shake of his hard and honest hand, for I know it would be a heartfelt and cordial greeting. After my return to "mine inn," I looked over the "life of

Grant Thorburn," with much interest. I know of nothing more natural, unpretending and beautiful than his account of his first essays in a pursuit which brought him deserved wealth, favor, friends. Those who have not the work will feel gratified with an account of his first experience.

"One day, in the month of April following, I observed a man for the first time selling flower-plants in the Fly-market, which then stood in the foot of Maiden Lane. As I carelessly passed along, I took a leaf, and rubbing it between my fingers and thumb, asked him what was the name of it. He answered, a geranium. This, as far as I can recollect, was the first time that I ever heard that there was a geranium in the world; as, before this, I had no taste for, nor paid any attention to plants. I looked a few minutes at the plant, thought it had a pleasant smell, and thought it would look well if removed into one of my green flower-pots, to stand on my counter to draw attention. I remember after smelling the first leaf of the rose geraneum, and also when I received additions to my stock, how I was struck with wonder and amazement, at the power, wisdom, and goodness of God, in imparting to the *green leaf* of one plant, the fragrance of another, such as the Balm, Musk, Pennyroyal, &c. How condescending to our senses, how indulgent, as it were, even to our childish and playful fancies. It was thus my mind was struck, when I smelt the first leaf. Thinks I, it is strange that a *green leaf*, plucked from a plant no way similar, should possess all the flavor of the *flower* plucked from another."

And the spirit of this short extract pervades the whole volume, and makes its author in his old age an object of interest to all who admire a simple, childlike trust in an all-wise Providence, and who are fond of tracing the progress of perseverance and enterprise under the depressing influence of poverty and a humble sphere in life. How much better and more enduring is such a man's fame, than his, who earns it by the toils of war, or in the arena of politics!

There is one thing about the improvements in New York I very much like, and which, as you are a man of influence, I hope you will endeavor to impress on the Bostonians; — the disposition to ornament the streets with rows of trees, thus giving to them an air of freshness and beauty very much wanting in our large cities and in country towns, for nothing adds more to beauty than rows of trees along the public walks, which may be placed there for a trifling expense.

The Battery, St John's Park, Washington Square, and many other

public walks exhibit the taste of the New Yorkers in this respect, and their practice of making every open and beautiful piece of ground an object of ornament to the city, and a pleasant resort for the inhabitants, is worthy of observation. Apart from the beautiful scenery connected with these resorts, or in themselves alone, they cannot compare with our fine Common, of which Bostonians deservedly pride themselves, and which at a little expense might be made one of the most splendid places of promenade in the country.

Our ride to Philadelphia, over the Camden and Amboy railroad, and up the beautiful Delaware was truly delightful, especially the latter. New and beautiful scenes continually opened to view — with fine country seats, built in imitation of Gothic castles, with towers and battlements standing amid a fine growth of trees of every kind — and in other places fine farms laid out in regular squares, and well fenced, showing by large stacks of stalks still remaining in the fields a fertile and abundant soil — and again the distant mountain scenery, with small cottages at their base, such as we might well imagine to be the chosen abode of contentment and love. The fine growth of wood in some, and the fields green with fresh springing wheat in others, presented a scene which would have made a Yankee farmer's heart leap for joy.

The next day after our arrival at Philadelphia, I visited the Horticultural establishment of the Messrs Landreth, in Chesnut street. This, like the other regular establishments I have seen, is conducted with perfect system and regularity, and enjoys a deserved popularity wherever it is known. They have a seed-growing and nursery establishment of more than thirty acres connected with the Seed-store, about two and a half miles from the city, and which I shall visit on my return, as also Bartram's Garden, near Philadelphia, which the lateness of the season prevented at this time. I shall send a few more remarks in relation to this place in my next, if you think these cursory notes worth publishing in your Register. L'Ami.

Art. VIII. *Miscellaneous Matters.*

[From the Transactions of the Society for the Advancement of Gardening in the Royal Prussian States.]

On shortening the Tap Roots of Trees. The following principles are laid down :

1. An injury to any one part of a plant occasions a change in the developement of the other parts.

2. Roots and stems are always in a certain degree reciprocally proportioned to each other. [Roots produce branches, and branches reproduce roots.]

3. The tap root does not form a part of every plant, where it does so it is an essential part of that plant.

4. By shortening the top root, one or other of the following consequences will result: tender plants will be more easily destroyed by severe weather; all sorts of plants by dry weather, from their roots not being so deep in the soil: the wood of timber trees will be less durable, their trunks shorter, and their heads broader and less high; and fruit trees will blossom earlier and more abundantly, and their fruit will be larger and better flavored.

5. To transplant trees without injuring their roots is difficult in proportion to the age of the tree, and the extent of its roots.

6. When the tap root descends into a bad subsoil, it brings on diseases in the tree.

To heal the Wounds on Fruit Trees. When a tree is cut, or otherwise wounded, smooth the place with a sharp knife, and if cankered, scrape or cut it all out; then put half a pound of tallow to two pounds of tar, warm it over the fire till the tallow is melted, then add one ounce of salt petre, and stir it together, and lay it into the parts which you want to heal.—*Genesee Farmer.*

On Preserving Young Trees in Nurseries, &c. from Rabbits, Mice, &c. Damage is often done to young fruit trees and other trees by mice in winter, and it has been recommended to tread the new fallen snow, firmly about their stems, which will render it impossible for the vermin to make their way through the snow in order to gnaw the bark from the trees.

Vegetable Chimney Ornaments. In winter, an elegant chimney ornament may be formed by cutting the head or thick end of a carrot, containing the bud, and placing it in a shallow vessel of water

of a very handsome appearance, and heightened by contrast with the season of the year.

Botanical Experiments. Two young beech trees, planted in the same soil, at a small distance from each other, and equally healthy Young and delicate leaves unfold themselves, forming a radiated tuft were pitched upon as the subjects of the following experiments. They were accurately measured, and as soon as the buds began to swell in the spring, the whole trunk of one was cleaned of its moss and dirt, by means of a brush and soft water. Afterwards it was washed with a wet flannel, twice or thrice every week till about the middle of summer. In autumn they were again measured, and the increase of the washed tree was found to exceed the other two to one.—*Brattleboro paper.*

To clear Barn and Out Houses from Mites and Weevils. The following method is practised in Germany for granaries infested by mites and weevils. Let the walls and rafters above and below of such granaries be covered completely with quick lime, slackened in water, in which trefoil, wormwood and hyssop have been boiled. This composition should be applied as hot as possible.

Paint made with Potatoes. Take one pound of potatoes skinned and well baked; bruise them in three or four pounds of boiling water, and then pass them through a hair sive; to this add two pounds of good chalk or fine powder, previously mixed up with four pounds of water, and stir the whole together. This mixture will form a sort of glue capable of receiving any kind of color, even that of powdered charcoal, brick or soot, which may be used for painting gates, palings, or other articles exposed to the air.

To obtain good Timber. Bark the tree the year before it is cut down. By this means, the alburnum is converted into hard and durable wood.

Transplanting Peach Trees. A horticulturist informs us that he has lost several peach trees in consequence of the decay of the tap root. In transplanting, the tap root is usually and properly cut off, but is liable to decay, and the tree eventually to become hollow from the wound inflicted in taking off the root. He says that when the tap root, or any other root of considerable size is shortened, a composition should be applied to the wound; that he has found equal parts of tar

and yellow ochre an effectual application for that purpose. Any other composition which is proper for use in pruning and grafting trees will answer the same purpose.—*N. E. Farmer.*

To train Oxen to the Draught. Put a broad strap round their necks, fasten one end of a cord to it, and the other end to a large log of wood; permit the ox to drag it about as he feeds in the pasture before he is put in harness; by which his docility is much forwarded. —*Transactions of the Society of Arts.*

To destroy Rats and Mice. The following has been recommended for this purpose, and is worth the trial. Take equal quantities of powdered oatmeal and unslacked lime; mix them by stirring, without adding any liquid, and put a small quantity in a place infested, by rats or mice: they will swallow this preparation, become thirsty, and the water which they will drink will slack the lime, and destroy them.

Destruction of Insects. The leaves of walnuts steeped in water, and that infusion mixed with lime-water, soap suds and urine, are found very efficacious for destroying slugs and worms in the ground, and insects on trees.

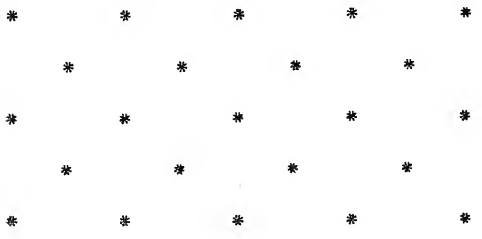
Mixing Soils. It was a maxim of Kliyogg, a famous philosophical farmer of Switzerland, that "every species of earth may be instrumental to the improvement of another of opposite qualities."

Tanner's Bark and Leaf Mould for Strawberries. In the last number of the Farmer I notice a communication by H. H., on the use of tanner's bark in the cultivation of the strawberry. I tried it some years since, and though a very good thing, it has some disadvantages: First, it is generally found to impart a disagreeable flavor to the fruit: secondly, it cannot be procured at all times, and then but in few places, unless at too much expense. I have this year tried a substitute, which I recommend in preference, as every wood or coppice will furnish the material.

Rake away all the loose leaves from a corner or hollow, where they annually settle, and gather the coarse mould beneath; or prefer the decayed wood from an old stump or fallen tree, that has decomposed, until it has become nearly in appearance like tanner's bark. It is without that astringent quality, and will answer in all respects, prevent weeds, preserve moisture, warmth in winter, food in spring, and

by selecting the wood from different trees, a variety of tints may be formed that will make a pleasing appearance when this chilly season deprives us of so much of our garden foliage. I subjoin my method of cultivating. In the fall, cover the beds slightly with straw, and burn *all* down: then dig in between the hills with a trowel or deep hoe, rake smooth, and replace with a fresh dressing two inches thick, for winter protection, &c. The hills ought to be *no* more than twelve inches apart, and two or three stems in a hill. While the fruit is setting, water morning and evening, with a table spoonful of salt to each pail of rain or river water; if well watered, it should be exposed to the sun some days. A bed planted *from* any good variety in *full bearing*, will, thus treated, always insure a crop. Early in September is the best time to plant, choosing the first made runner plants, or some offsets for immediate bearing. The runners will come in the second and third season.—*New York Farmer.*

Orchards in alternate Rows, or Quincunx order. Xenephon thus describes the gallant plantation of Cyrus at Sardis, as rendered by Cicero: "Arbores pari intervallo sitas, rectos ordines et omnia per pulchre in Quincuncum directa" — that is, rows and orders so handsomely disposed or five trees so set together, that a regular angularity, and thorough prospect, was left on every side, owing this name to the "Quintuple number of trees," as thus figured, viz:



"That the same was used in later plantations, is plainly confirmed from the commanding pen of Varro, Quintilian, and handsome description of Virgil, in his second Georgic. See the garden of Cyrus, &c. by Sir Thomas Brown, of Norwich, M. D."—*Farmers' Register.*

The Seckel Pear. In mentioning the fact, a few days since, that some of the fruit of the *original* Seckel Pear tree formed a part of the collection at the late Horticultural Exhibition held in this city, we stated that the tree was known as far back as 47 years. We are now

able to state that there are among us gentlemen who can trace its existence to a more remote period. The venerable Bishop White, whose memory is remarkable for its strength and correctness, says, that when he was a boy, about seventy years ago, there was a breeder in this city known by the name of Dutch Jacob, who was a great sportsman. At a certain season of the year he was known by his neighbors and others to bring home from his excursions very delicious pears, but he would never tell any body where he procured them. About that period, the London Land Company, which owned some land below the city, made a sale, and Dutch Jacob purchased the lot upon which his pear tree stood. It afterwards became the property of Mr Seckel, and now belongs to the estate of the late Mr Girard. The Seckel pear is now known all over the United States, and we presume in many parts of Europe, as one of the most delicious of fruits.—*Phil. Gaz.*

Influence of Color on Heat, the Deposition of Dew, and of Odors. Dr Stark, in a paper in Jameson's Journal, vol. xvii. p. 65, has shown, by experiment, that one principle operates in the production of all the above results. A black color, whether in solids or fluids, absorbs heat more rapidly, and parts with it most rapidly; dew is also deposited more rapidly on this color than on any other, and with proportionate rapidity evaporated from it. Odors, whether agreeable, offensive, or of infectious diseases, are, in like manner, absorbed with greater rapidity, and in greater quantity, in given time, by black colors; and discharged by these colors with proportionate quickness. The other colors are next to black in the order of blue, brown, green, red, yellow, and lastly white; which last absorbs and gives out heat, dew, and odor more slowly than any other color. These facts will afford valuable hints to gardeners for the colors of walls, of walks, of rockwork, of soils, of coverings for protection, and even of their dresses.—*Gard. Mag.*

Anatomized Leaves. The following observation on these beautiful exemplifications of the structure of leaves of vegetables, we copy from Maund's Botanic Garden, No. 125: "The exquisitely beautiful structure of the vascular system of leaves can be duly appreciated by those only who have seen specimens properly prepared. Marcus Aurelius Severinus, who published in 1645 a description of the skeleton leaf of cactus opuntia, is said to have been the first to adopt an artificial method of preparing these interesting objects of vegetable struc-

ture. Although we have seen directions for effecting this, we could not, confidently, publish them; but by the favor of W. T. Iliff, Esq. of Newington, we are enabled to gratify our readers. He has obligingly sent us beautiful specimens of leaves, completely cleared of their cuticle and pulpy matter, exhibiting the most exquisite network of vessels that can be imagined; and also the following directions for preparing them. He says, 'Many individuals who have seen the fibrous structure of vegetables, have expressed much admiration at their beauty, and regret at the difficulty attending the preparation of the same. I am induced, therefore, to state to your readers, that the difficulty rests with themselves. If the seed vessel of the datura stramonium or hyoscyamus niger, the calyx of the physallis alkekengi, or nicandria physaloides, are put in water, and allowed to remain, without an exchange of water, until decomposition is carried to the requisite extent, they may be freed from their cuticle and the pulpy matter; and after macerating them a short time in fresh clear water, they may be bleached by immersion in a diluted solution of chloride of lime, say one sixth of the chloride to five sixths of water. They must be well washed from this fluid, when whitened sufficiently, and quickly dried, either before a fire or in the sun. Care must be taken not to allow the destructive process to be carried too far, or that fibrous structure will become injured; nor allow the preparations to remain too long in the chloride, or injury will also arise. In selecting leaves for this purpose, those with the strongest fibre should be preferred. Their fibrous parts, and also the seed vessels and calyces alluded to, should be cleared by a camel's hair brush, or fine pen, from such portions of cuticle or pulpy matters as adhere too strongly to be removed by a small stream of water. The leaves of the ceratoria siliqua, ruscus aculeatus, and ilex, are, with the foregoing, the most easy to prepare. I have tried a variety of other methods, none, however, answers so well as the one I have explained, and therefore I communicate it without fear of its being attended with difficulty, if properly applied. Some of the specimens may require several months' maceration before the preparation can be completed.'"—*N. Y. Farmer.*

Fragrance of Flowers. It has been stated that the fragrance of flowers depends upon the volatile oils they contain; and these oils, by their constant evaporation, surround the flower with a kind of odorous atmosphere; which, at the same time that it entices larger insects, may probably preserve the parts of fructification from the ravage of the smaller ones. Volatile oils, or odorous substances, seem

particularly destructive to these minute insects and animalcules which feed on the substance of vegetables; thousands of aphides may be usually seen in the stalk and leaves of the rose, but none of them are ever observed on the flower. Camphor is used to preserve the collections of naturalists. The woods that contain aromatic oils are remarked for their indestructability, and for their exemption from the attack of insects: this is particularly the case with the cedar, rose-wood and cypress. The gates of Constantinople, which were made of this last wood, stood entire from the time of Constantine, their founder, to that of Pope Eugene IV. a period of 1100 years.—*Davy.*

Art. IX. *Faneuil Hall Market.*

We have commenced with this number, and shall continue under this head through all of the succeeding numbers, a report of the prices of horticultural produce in this market, with such observations as may from time to time be suggested to us.

The state of the fruit market will receive our particular attention. We deem it of great importance to have our market supplied with fruits of the very best varieties. It can be, and it ought to be; and to promote this end, we shall give, as far as practicable, the correct names of the valuable kinds that are exposed for sale, where they may be found, and by whom raised. This, we think, will excite emulation among those whose business it is to supply the market, and will eventuate in great good to the cause of horticulture, and of immediate reward to those concerned.

REPORT OF THE PRICES OF FRUITS AND VEGETABLES.

Apples, Baldwins, per barrel,	$2 00	Horseradish, per pound,	12½
Russetts, do.	1,75	Lettuce, Tennis ball, per head,	12½
Pears, Iron, per bushel,	1,50	Radishes, Early scarlet, per bunch,	12½
Cranberries, do.	1,50	Potatoes, Chenango, per bushel,	50
Cauliflowers, per head,	12½ a 75	Eastport, per barrel,	2,00
Celery, White solid, Celeriac and		Sweet, per bushel,	1,50
Rose colored, per root,	12½ a 25	Squashes, Valparaiso, per pound,	1½
Chesnuts, per bushel,	2,00	Canada,	2
Cabbages, Red Dutch, per doz.	75	Cuba,	2
Green Globe Savoy,	50	Sicily,	
Large Drumhead,	50	Shagbarks, per bushel,	2,00

THE

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Art. I. *Gardens, Hot-houses, &c., in the vicinity of Boston.*

[The following, with the exception of some notices of apparatus for heating by hot water, and the agricultural and economical improvements of Mr Cushing, which were appended by the Conductor, was written by Mr Joseph Breck, of Lancaster, Mass., who has the eye of a connoisseur, as well as the predilection of an amateur, for ornamental horticulture.]

To the lovers of Flora, nothing can be more acceptable than permission to visit some of the fine establishments which wealth has created in the vicinity of Boston, especially when stern winter has thrown his mantle of snow over the frost-bound earth, and his chilling blasts have compelled us to suspend the ordinary and pleasing operations of the garden. In a recent excursion, we had the pleasure of calling at some of these repositories of botanical and floral treasures. Although the main object of our visits was to notice the system of heating by hot water, yet we could not but admire the beauties which presented themselves to view as we hastily passed through the different structures of glass in artificial climates, so pleasingly contrasted with the rigors without.

Our first call was at the delightful summer residence of Colonel T. H. Perkins, at Brookline. The grounds are profusely ornamented by the numerous tribe of evergreen trees which always give delight to the eye, even at this inclement season. We have often admired the beautiful groups of the coniferous tribes planted by the hand of nature in their most congenial soil, in Maine, and wished that such might decorate the habitations of men; here our wishes were realized. How refreshing it would be, not only to the proprietors but also to the passing traveller, if this example was more extensively imitated; and

our mansions and cottages, instead of appearing like the heath of the desert, without an object on which the eye may rest with pleasure, were decorated with the rich variety of evergreen and other trees and shrubs, with which our forests and wastes abound, and which may be obtained with little or no expense, save that of collecting and planting.

We found here two extensive ranges of houses, each about three hundred feet in length. The old house is divided into four apartments; this we did not enter, but were informed that it is appropriated to the forcing of peaches and grapes. The new house, which has been erected within a few years, stands in front of the other, and is connected to it by high brick walls, which form a spacious area, devoted to forcing and other operations of the garden. The central part of the new house is more lofty than the wings, and devoted to flowers. The wings are divided into two apartments each; those on the right for peaches, the others for grapes. We were treated with much attention by Mr Cowan, the intelligent superintendant of the establishment, who gave us all the information desired respecting the heating apparatus, and also gratified us with a sight of the numerous and rare assemblage of plants under his care. At this season of the year, (December 24th) we did not expect so brilliant a display of flowers as would be a few weeks later, yet there were many beautiful specimens in bloom. Among the most attractive was the Camellia tribe, of which there were many plants, some very large, not a few of which were displaying their enchanting flowers. As we were not particularly acquainted with the different varieties, except the more prominent sorts, we cannot enumerate all that were in bloom. C. fimbriata arrested our attention by its pure white, delicately fringed petals, and is considered by amateurs a choice variety. The double white, red striped, and an exquisite rose-colored one, were among the more prominent ornaments of the house. The many vigorous buds gave promise of a succession of these rare flowers for months to come. Ericas, Primulas, Oxalis, Salvias, &c., were displaying their different charms, which we recognised as old acquaintances, together with many other unknown plants to which we were strangers, and with which we should be happy to become more familiar. The house exhibited a pattern of neatness, which, with the healthy appearance of the plants, gave conclusive evidence of the ability and attention of the head gardener. In the peach houses, we were highly interested by the masterly style in which the trees were trained, particularly those

planted in front and brought up under the glass: the old proverb was forcibly presented to the mind, "as the twig is bent the tree is inclined." We saw it literally fulfilled here, by the perfect manner in which the bodies of the trees were carried up under the rafters, while the branches were spread out to the influence of the sun as it willed the gardener. Having an appointment at the Messrs Winship's, we were compelled to cut short our visit, giving only a passing glance at the many interesting objects which were presented to our view.

At the well known establishment of the Messrs Winship, we found a large, commodious and well filled conservatory, recently erected in modern style. As the principal object of these gentlemen is to grow plants for sale, and to furnish bouquets, it is not, therefore, to be expected that so large and perfect specimens should be found as in private collections; as they are eagerly sought after and obtained by amateurs at almost any price. The numerous calls upon them for flowers, particularly at this season of the year, diminishes, in some degree, the splendor of the house. We found, however, much to interest us, and can confidently assure the public that they have one of the most extensive collections not only of greenhouse, but also hardy plants, in the country. It is with heartfelt satisfaction, that from the fact that this as well as other establishments of the kind are liberally patronised by the public, we are assured of a rapidly increasing taste for flowers in the community. The house appears to be constructed in the best possible manner to hold the greatest number of plants, and to display them in the most imposing style. We were again pleased with the perfect neatness of the house, and the fine order of the plants, which speak louder than words in praise of the head gardener.

After having partaken of the hospitalities of our friend Winship, he accompanied us to the elegant seat of J. P. Cushing, Esq., Belmont place, in Watertown, who gave us liberty to look over his grounds and conservatories. The approach to the mansion from the road is by a winding avenue through a fine grove of ancient deciduous trees. The first view of the garden and ranges of glass structure, as we emerged from the grove, was truly magnificent. The garden is a square, level plot, bounded on the north side by the conservatories, which, if we are not mistaken, are four hundred feet in length. On the east and west are high, substantial brick walls, to which are trained a choice collection of fruit trees imported the last season, already formed for the purpose, some of which are protected by glass. The southern wall is very ornamental and substantial, and so low

that the whole area and houses may be seen at a single glance outside the wall. Behind the central house, which is lofty, with an elliptical roof and front, rises the ornamental water tower, which in the distance appears like a part of it, but is, in reality, some rods in the rear. To the right and left of the central building are wings which drop in height a few feet from it, and from these wings two others extend themselves a few feet still less in height. The whole view is harmonious, and fills the mind with pleasure. As we walked through the garden, we passed a beautiful fountain, which, when desired, discharges its water from a marble urn which stands upon a granite pedestal in the centre of the reservoir. As the earth was thickly covered with snow, we could form no idea of the arrangement of the grounds; no doubt it corresponds in taste with everything else.

We entered the central house and found ourselves at once in a little paradise of flowers. The perfect arrangement of the plants, their beauty and odour, and the mildness of the atmosphere contrasted with the cold without, filled us with such emotions that some time elapsed before our eyes could be directed to any particular object. Mr Haggerston, the superintendant of the establishment, showed us every attention. It is not too much to say that he stands at the head of his profession, as all must confess, who have witnessed his skilful management, and the success which has attended his labors.

The Camellias are the first object on which the eye will rest. Here are some lofty plants, and although Mr Haggerston informed us that an unusual quantity had recently been cut, we thought there was a good display still. We were again delighted with a perfect specimen of C. fimbriata. C. warratah was also beautifully in flower, with numerous other fine varieties. We could not do justice were we to attempt a description of this splendid collection; and will therefore pass in to the stoves, or as we should call it, the torrid zone, where we were attracted by the gorgeous Euphorbia Poinsettii. This showy plant has been particularly noticed in Vol. I., p. 70. It is not the flower, but the large scarlet bractes, or leafy appendages to the flower, which attracts most beholders; but its curious anomalous flower, the botanist examines with the deepest interest. From the nectary, a singular opening in the flower, exudes a pure but dangerous nectar or honey. Vigorous plants of double red and double yellow Chinese Hibiscus, (varieties of Hibiscus rosa-sinensis) were in full splendor; we were informed that the double red had not been destitute of flowers for a year past. It is exceedingly ornamental, and said to be so

common in China that entire hedges are made of it. It is a great favorite of that people; its flowers, both in the single and double state, are often pictured upon tea chests, screens, and various fancy articles from that country. Thunbergia fragrans, an interesting little climbing plant, had just opened a pure white flower.

But the richest production in this department was a splendid specimen of a species of Amaryllis; reginæ, or a variety of it, we believe, but not positive: the interior of its brilliant scarlet, lily-like flowers, are finely marked or striped with white. Another conspicuous plant which we very much admired, (its name we have forgotten, but think it was a species of Gesneria) appeared in perfection; the leaves broad, ovate, serrate, pubescent, opposite and alternate upon the stem, with tube-shaped, brilliant scarlet flowers. Among the many curious and ornamental tropical plants we noticed, with no little interest, a good stock of pine-apple plants, in different stages of luxuriant growth. Little or no attention has as yet been paid to the cultivation of this luscious fruit in this region; but we see no reason why there should not be pineries as well as graperies, and presume that ere long they will be considered indispensable to every large establishment. We did not pay particular attention to all the various apartments of this extensive range, but learned that, with the exception of those we visited, they were principally devoted to grapes and peaches.

Behind the conservatories, is a range of forcing pits, built in the most substantial manner. Time did not permit us to look at them.

At Col. Perkins's hot-houses, &c., we saw in successful operation an apparatus for heating for horticultural purposes. Its utility has been tested by the experience of several winters. In a letter to Gen. Dearborn, published in the New England Farmer, for June 1, 1831, (vol. ix. p. 362), Col. Perkins has himself given the following notice of this apparatus: —

"The boiler and reservoir are of cast iron, containing each about eighty gallons. Their diameter is about three feet, and their depth twentytwo and a half inches. The house is eighty feet long in which they stand; the boiler at the east, and the reservoir at the west end; of course the length of the pipes that connect them is about seventy-four feet. These pipes are introduced or open into the kettles as follows, viz. — the upper end of the upper pipe is within three inches of the top of the rim; and the under edge of the under pipe is a little below the perpendicular or straight line of the side of the kettle, which brings it (as the lower part of the kettle is somewhat dishing) within two or three inches of the bottom.

"The pipes are of cast iron, four and a half inches in diameter within the bore, but the exterior of the pipe presents a surface of sixteen and a half inches, making in the two pipes a surface of thirtythree inches. These pipes are laid perfectly horizontal; of course when you fill your boiler, you fill your reservoir in the same degree; the proper point, when filled for operation, being an inch above the upper edge of the upper pipe. The pipes are computed to hold about 115 or 120 gallons of water, which, together with that contained in the two kettles, when filled to the proper height, say 140 gallons, makes 250 or 260 gallons of water to be heated before the full effect of the apparatus can be experienced throughout the house."

In the New England Farmer, vol. x., p. 156, are statements of improvements in Col. Perkins's apparatus, consisting chiefly in placing two upper pipes and one under pipe, in which the water circulates. In this, Col. Perkins explains the principles and advantages of this mode of heating, as follows:

"*The expansion of the water by heat*, drives the water from the boiler through the upper set of pipes into the reservoir, and from thence it is taken by the lower set of pipes again to the boiler, where it is heated, and is thus perpetually circulated, giving an equable heat, competent to the warmth required. The advantage of this mode of heating, over flues or steam apparatus is great; in flues, the fires must be carefully kept up through frosty nights, or your plants are in danger; with steam, though the heat is soon *up*, yet when the water is below the boiling point, the heat is soon *lost*. With hot water, not above 190 deg. Fah., left by the gardener at 8 o'clock in the evening, heated by anthracite coal, and with the dampers nearly closed, the state of the house, if ordinarily tight, will be found in the morning within a few degrees of the state in which it was left twelve hours before. This mode of heating houses was suggested and put in practise first by Atkinson, from whom I had my watering plans and suggestions. It is said they have been improved upon by Tredgold.* I have seen Atkinson's plan most successfully operated upon by gentlemen both on the continent and in Great Britain. There may be improvements; I know of none which I think such. It is thought one fire will heat the length of a house of seventyfive feet, of moderate height. The house I have heated is fiftysix feet, and the length of

* A description of Mr Atkinson's plan, and improvements by Mr Tredgold, furnished by S. G. Perkins, Esq., is given in vol. x., p. 161, of the New England Farmer.

the pipes 150 feet, being two upper and one lower pipe, and my pipe returned double on the ends of twenty feet, making the whole length 190."

The foregoing may serve to show the principles of hot water apparatus, now common and much approved of in Great Britain and some parts of continental Europe. Messrs Winship, at Brighton, and Mr Cushing, at his fine horticultural establishment, in Watertown, have hot-houses heated with hot water, by apparatus made and conducted on the same principles. At Mr Cushing's were several sets of pipes, boilers, &c. in operation, and giving the atmosphere of June in December to several extensive ranges of greenhouses, where beautiful and magnificent exotic plants were flourishing in all their native luxuriance.

We likewise saw at Mr Cushing's, agricultural improvements, buildings, imported stock, &c., worthy of a more minute description than we are able at this time to present. A large Dutch granary, or corn-barn, standing on tall pillars, gave not only a store-house for grain, safe from the intrusion of vermin, but beneath it, and under the pillars which supported it, was a convenient place for the deposit of leaves for manure, of which there were large quantities preparing for use. A root-house, with an apparatus for steaming, fitted according to the best modern improvements, added much to the economical accommodations of the farm buildings. Fine cows, of the most improved imported breeds, Ayreshire, Durham short-horns, &c., were reposing on beds of leaves, and by their sleek and glossy appearance, and apparent health and high condition, gave evidence of the care and judicious management of their attendants. A more minute account of this place would be very acceptable, and we hope, hereafter, to furnish it for the benefit of cultivators who wish to trace and profit by the progress of improvement in the principal branches of rural economy.

ART. II. *Bread Corn and its Substitutes, considered as the Staff of Life.* Communicated by Mr WILLIAM KENRICK.

GRANARIES. Bread has been justly denominated the *staff of life;* and corn is a term, which, by the European nations, is applied indiscriminately to every variety of grain which is used in the preparation of bread. But, with us, the term corn is applied almost exclusively to

maize or Indian corn. This plant is a native of the tropical countries, but produces good crops as far north as latitude 44 or 45 degrees, in the States which border on the Atlantic shores.

Wheat and rye, which are found growing wild in Tartary and Siberia, are cultivated even to the borders of the tropics; but rice is a tropical production, now naturalized in the temperate regions, its native country being Ethiopia.

Egypt in ancient times appears to have been the great store-house of the earth for bread. In Egypt, and in the times of Jacob, vast public store-houses or granaries were provided in all the chief cities of the country, and in these, during the years of great plenty, the corn was laid up to serve as supplies in the years of famine.

Dearths in the land of Egypt were produced by several distinct causes; or sometimes by a combination of two or more of them. Sometimes, by excessive and long continued drought, or by some unusual depression of the rivers at unwonted seasons. Sometimes, by reason of prodigious swarms of locusts, which there at times, as recorded in Scriptures, "covered the face of the whole earth, so that the sun was darkened, * * * and there remained not any green thing in the trees, or in the herbs of the field, throughout all the land of Egypt."

Egypt lies between the latitudes of about 23½ and 32 deg., and is indebted for its very extraordinary fertility to its warm and genial climate; but still more than all, to a soil fruitful beyond measure. The great river Nile, which takes it rise in central Africa, after traversing various countries and kingdoms, descends with its mighty waters through the whole extent of Upper and Lower Egypt, until it enters the Mediterranean sea, 2000 miles from its sources. In those interior countries, which all lie within the tropics, it rains incessantly during several successive months. These excessive rains are the causes of the annual rise of the river, and the consequent inundations which cover the whole of the land of the Delta, or Lower Egypt. When the waters of the Nile retire to their banks, they leave on the whole country which had been overflown, the rich alluvial deposit. Wheat and barley yield profusely; also rice and maize; and two or three crops are annually produced on the same ground. These are the combined causes of the amazing fertility of the soil, and of the surpassing riches and renown of Egypt.

The ancient history of that country is lost in obscurity; yet the remains of the ancient works, and of all that is wonderful in Egypt,

incontestably announce the existence of a former and mighty people, and a mighty empire.

Nor need we so much wonder; since the people of such a country, and where every needful want and the means of subsistence are so easily acquired, must necessarily have abundance of leisure. Nor need the people repine who inhabit the countries possessed of less favored climes, and of less exuberantly fertile soils, since the very causes of such unsurpassed fertility are the most destructive to human life.

Other plants have been found in tropical, and in other and different regions, which subserve to the inhabitants of those countries as the staff of life, and are equally useful to them as bread. In this class, we enumerate the following.

The Potato. The most important plant of all hitherto known and tried by the inhabitants of the temperate climates, is the potato: inasmuch as the potato produces, on an equal space of ground, so many more times the amount of farinaceous and wholesome food for the subsistence of man, than can be obtained from wheat, or Indian corn, or any other variety of grain.

The potato was introduced to Europe through Spain, from South America, and in 1553 it was by some called *Papas;* and since its introduction to Europe, millions have been added in consequence to its population; and those dreadful famines are prevented, which formerly were of such frequent occurrence. The potato was introduced to Ireland by Sir Walter Raleigh, in 1586, and soon after to England. And Ireland, according to the late Mr Barrow, contains double the population which it would have done, but for the introduction of the potato. A valuable and highly nutritive starch is prepared from the potato; and this, by a certain process, is converted into sugar.

Plantain and Banana. — The Plantain and Banana are herbaceous perennial plants of the same species, which differ somewhat in appearance, but are yet sometimes confounded. Dampier has called the plantain, "the King of Fruits." Some assign the nativity of the plant to Guinea, and some to the East Indies, and Egypt. The plantain rises with a soft, herbaceous, conical stalk, fifteen or twenty feet high, with leaves issuing from the top, six feet long and two broad. The fruit is produced on its summit in spikes, which sometimes weigh forty pounds.

The fruit is of the size and form of the cucumber but pointed at both ends; pale yellow, soft, sweet and luscious. It is used for tarts,

sweetmeats and confectionary. Also roasted, or broiled, or boiled, with salt beef, and salt fish or pork; it is preferred to bread.

Dr Wright has stated, that the island of Jamaica would scarce be habitable without the plantain, as no species of provision could supply its place. A plantation affords a succession of fruit for a whole year.

The *Banana* is shorter and rounder than the plantain. It is more mellow, and is eaten raw or roasted, in fritters, preserves, or marmalade; and the fermented juice affords an excellent wine. M. Humboldt has calculated, that the same ground which will produce four thousand pounds of bananas, will only produce thirtythree pounds of wheat, and ninetynine pounds of potatoes.

Arrow Root. — The Arrow Root, or *Maranta*, is a native of South America. The roots are tuberous and jointed. They produce a starch, one of the most nourishing of vegetable substances. A plant extremely productive; as two small tubers produced twelve bushels in two seasons, at St Helena. This plant will flourish in the Southern States.

Bread Fruit. — The Bread Fruit Tree is a native of the South Sea Islands, where it grows to the size of the oak. The fruit is round, the size of a melon, the skin covered with protuberances. The inner part is of the consistence of new bread, and as white as snow. It is roasted before it is eaten, and is of a slightly sweet taste. Two or three bread fruit trees will suffice for a man's yearly supply. There are several varieties, one of which is called *Jaco tree.*

Cacao, (*Cacao Theobroma.*) — The chocolate tree is a beautiful tree, sixteen to twenty feet in height, resembling the cherry tree in its form and leaves; a native of South America and of Mexico; it is splendid when in bloom. The fruit is an oval pointed pod, enclosing from ten to thirty compressed nuts, an inch in diameter, enveloped in a sweet and refreshing pulp. The nuts when roasted and ground, are moulded into chocolate cakes, a highly nutritious, wholesome, and delicious food. In France, small cakes of chocolate, sweetened with sugar, and of various fanciful forms, are prepared for eating. They are a portable food, of a nutritious quality, and delicious taste, and in great demand. Napoleon, on his retreat from Moscow, was once preserved from dying with hunger, by a few of these cakes which he carried in his pocket. Bryan Edwards, in his History of the West Indies, relates the case of a negro in Jamaica, who died at the age of 120; the last thirty years of which, he had lived on chocolate.

YAM, (*Dioscoreau.*) — The yam is a climbing plant, a native of the East and West Indies. The roots are very large, sometimes enormous and flattened in form. It is boiled or roasted like the pototo, and is a wholesome, nutritious, and palatable food. The flour or starch is used for puddings and for bread.

SWEET POTATO, (*Convolvulus batatas.*) — The sweet potato is a perennial, a native of the Southern States; a creeping vine. The roots are long tubers of a sweet, agreeable taste, when either boiled, baked, or roasted; and a nourishing and wholesome food. It is raised near Boston, from slips procured in New Jersey. These are started in a hot bed, and planted two each in an elevated hill, in a dry, warm situation, and rich soil. The hills should be six feet asunder.

BREAD ROOT, (*Psoralea esculenta.*) — The bread root, is a native of Missouri; a perennial plant, which, with cultivation, produces abundant crops. Its roots are eaten like those of the potato.

OXALIS CRENATA. — An ornamental plant from Chili. The flowers are in umbels, of a yellowish color, and beautiful. The stalks are succulent, acid, and are used as salad. The roots are tubers, and produced in clusters, and when boiled, they resemble a chestnut, and are superior in taste to the potato, and as easy of cultivation. This root, which is extraordinary productive, may be stored in cellars during winter.

ARRACACHA. — The arracacha is a native of South America, and is cultivated at Santa Fee and Caraccas. It is said to flourish best in the elevated regions of mountains, where the medium heat does not exceed 69°. Its main root divides into four or five large prongs; it is light, starchy, and wholesome. Neither this nor the two preceding plants are known to be cultivated with us.

Public granaries, as we have seen, are of very ancient date in Egypt; and some have supposed, that the ancient catacombs were originally designed as the vast depositories for the superabundant grain, rather than as mansions for the dead.

In Bishop Heber's travels in India, which have been lately published, I have found an account of a granary of an extraordinary kind, which he saw at Bankipore, a place in the interior, near the banks of the river Ganges. It was a high building, resembling a glass house, with a staircase winding round, from the bottom to the summit, and somewhat resembling in appearance the old prints of the tower of Babel. It was built for the granary of the district, in conformity to a law, which was made in consequence of a famine, which occurred

near fifty years ago ; and to mitigate or prevent a repetition of the like calamities, at a future period. The grain was poured in at the summit, and drawn out at the bottom. At the time the Bishop saw it, it had been emptied for some years; either from neglect or repeal of the law, or defect in its construction, or other causes, and had not long before been used as a powder magazine.

The plan appears to be original ; the floor should be elevated to the height of a story from the ground, and the grain may be drawn out at the bottom from numerous openings. Several times during each summer season, and in clear, dry airy days, the whole contents of such magazines should be drawn out, and winnowed, and carried up by suitable machinery to the top ; the whole being effected by the aid of the wind or other power. The middle should consist of a circular area and staircase, lighted from the centre above.

Public granaries for the relief of the poor in times of want, and of famine have been established and remained self-supported ; and their beneficial effects have been felt for ages.

A benevolent citizen of Berne, in Switzerland, having often viewed the privations to which the poor were subjected, in times of dearth, made provisions in his will, for the purpose of constructing an edifice, and endowing it with funds, for the relief of the poor in times of famine or scarcity ; a part of the edifice to be appropriated as a hall, to the use of the municipality of the city of Berne, in their public meetings. The cellars were to be appropriated for the reception of wine, and the spacious rooms contained in the several stories above, were for the granaries. Whenever the price of grain or of wine was one quarter *less* than the average price, of the preceding ten years, then the granaries were to be filled with corn, and the vaults stored with wine ; and whenever either the price of corn or of wine, had risen *one fourth above* the average price, for the preceding ten years, then the grain or the wine was to be sold to the poor, *at the average price ;* and in the proportion of half a pound of the former, and a pint of the latter, for each member of such families per day. This benevolent institution, which was founded more than a century ago, has continued as my account states, in full and successful operation to the present day.

Granaries should be constructed in dry, elevated situations. They should admit of ventilation, and once or twice during summer, the whole grain may be moved and aired by a winnowing machine ; this should be done in dry, airy days.

Granaries, or public magazines, should be established at the public charge in all those countries, which, either from a vast and dense population, or from any other cause, are liable to suffer at times the horrors of famine. These would serve to alleviate the distress of the husbandman, in those years, when, from the superabundant harvests, corn had become a *drug*, no longer bringing a remunerating price. In such times, the presence in the market of a public benefactor, and customers so able, and a withdrawal of a portion of the superabundant stock from the present consumption, would elevate at once to a better standard, the price of what remained, and have an effect, salutary and encouraging to the husbandman, by relieving him from want; thus operating as a perpetual bounty, and a guarantee, that the reward for his labors would never be lost.

When such national depositories have once been completely established and filled, they would be capable of sustaining themselves for ages with no additional aid from the public; or, even with good management, they might prove the sources of public revenue.

The providing a resource for the poor in time of need, being a duty which must always devolve on the public, — and public provision being thus made and provided in times of great plenty, and at the cheapest rate, as often as the price of corn should rise to a certain degree or point, *above* the average price, then the public storehouses should be opened at once to all the poor, who should be entitled to draw from this resource, daily, a certain allowance for themselves and their families, for which they should pay but the *average price*, or the average of years.

It has been the remark of eminent political economists, that when the average crops of grain or bread stuffs, which are raised throughout a country and all its dependencies, are *one fourth greater* than the average crops of years, the price usually falls in consequence, not merely one fourth, but more usually *one third, or one half*.

On the other hand, it has also been remarked, that when the average crops of grain of a country, and of all its dependencies, are *one fourth less* than the average production of years, the price is usually enhanced in consequence, in a far greater proportion, or nearly, or quite to fifty per cent above the average price of years.

With the mass of consumers, from their long established habits, the quantity of bread stuffs, or of corn consumed, is not reduced or altered from transient causes or in seasons of scarcity, but continues the same, until the time of famine comes.

Nonantum Hill, Newton, Jan. 15, 1836.

ART. III.—*On the Selection of Hardy Herbaceous Plants, suitable for Ornamenting the Parterre, Border or Shrubbery.* Communicated by Mr JOSEPH BRECK.

(Continued from page 27.)

THE annual Larkspurs are known to all; some of the species form one of the most common ornaments of the garden. A bed of the double dwarf rocket (Delphinium ajacis) in all its varieties of color, equals in beauty a bed of hyacinths, while the tall branching sorts (D. consolida) greatly enrich the borders, when sown in masses; the different varieties of white, purple, blue, pink and variegated distinct from each other. The single varieties are handsome, but the double sorts, elegant.

The perennial species are not so common, but deserve to be more generally known, not only on account of their beauty, but also for their hardiness and ease of cultivation.

The botanical name Delphinium, is from a Greek word, "a dolphin, on account of the resemblance between the nectary of the plant and the imaginary figure of the dolphin."

It belongs to the class Polyandria, (many stamens), order Trigynia (three pistils), varying, however, from three to five. Natural order Ranunculaceæ.

The character of the genus is a five petaled corolla, destitute of a calyx, with a bifid nectary, cornute, (horn shaped.) (The nectary is the part of the flower producing honey. The term is also applied in certain instances to any internal supernumerary part of the calyx or corolla;) in this case it applies to a portion of the corolla which projects behind in the shape of a horn. Siliques (seed vessels) one to three.

Delphinium grandiflorum. (Great flowered.) One of the most showy of the genus, sporting into many varieties. Its height is from two to three feet, and continues to give a succession of flowers from June to October; which are large, of a fine blue, purple or white, double and single, and often spotted or shaded on each petal with copper color on the dark varieties, or with green on the white. Leaves palmate, (hand shaped) many parted.

It is propagated by dividing the roots in the spring, about the time it begins to vegetate, or it may be divided with success in August. By sowing the seed, new varieties may be expected, which if done early, will flower in autumn. Nothing is more pleasant than to

originate a new variety. It must not be supposed, however, that there will be much chance short of a hundred plants. It has flourished with me in a variety of soils; it will, in fact, grow anywhere without difficulty, only requiring to be divided every few years, when the roots become large. It is said to be a native of Siberia and of course must be hardy.

Delphinium sinensis pleno. Double Chinese. This is one of the most magnificent of herbaceous plants. It can be propagated only by dividing the roots, as it does not produce seed; it is perfectly hardy, enduring the coldest weather without protection; it is best to give a little, however, as it will flower stronger for it. The flowers are of a most beautiful lively blue, in long open spikes, upon graceful, slender purplish stems, three feet high. From June to October it displays its beauty, and is indispensable in the formation of a perfect bouquet. Foliage palmate, many parted.

Delphinium elatum. (Upright.) Bee Larkspur. So called on account of the bifid termination of the nectary in the centre of the corolla, in connexion with the anthus having a fancied resemblance to a bee.

This species from its height, which is from four to six feet, is well adapted to the shrubbery; its long clustered spike of fine blue flowers making a fine appearance in that department. It is also suitable for the border, but should be planted at the greatest distance from the walk. Leaves downy, five lobed; lobes cuneate, (wedge shape) at the base, trifid cut. Propagated by seed or divisions of the roots.

A florist may perhaps prefer the double varieties to the single; but the botanist will differ from him, as the character of the flower is destroyed by its monstrosity, the nectary being converted into petals, as are the stamens in many cases.

There are many other species equally worthy of a place in the pleasure grounds, — which have not yet found a place even in our botanical gardens, that are very desirable. Among the number is D. puniceum, with scarlet flowers, from Siberia; D. ochroleucum, with pale yellow flowers, from Iberia; D. azureum, with light blue flowers, from Carolina, six feet high; D. tricorne, D. exaltatum, dark blue, indigenous to N. America, with numerous other species from Siberia, mostly with blue flowers.

As an ornamental annual, few exceed in point of show *Coreopsis tinctoria.* The only objection to it is, it makes itself too common, and has thereby acquired the name of Nuttall's weed. It was he who

introduced it from the "far West," where he discovered it in rich profusion in the Arkansas territory, near the Rocky mountains. Some of the improved varieties are elegant. The flowers generally are of a fine orange yellow with a brown centre; in some varieties the flowers are much larger, the rays of which are only bordered with orange, while the remainder with the disk is rich dark brown. Common as it is, it will always be considered as one of the standard ornamental annuals.

For elegance, none of the perennial Coreopsis can be compared with this; yet some of them are more desirable, as they are easily kept within bounds, producing little or no seed by which to extend themselves. The genus is mostly North American, and with the exception of a few species, produce yellow flowers; all those about to be described are perfectly hardy, requiring no protection whatever.

It is said by Nuttall, that there is a species in the open swamps of New Jersey, of low growth, narrow leaves, and rose-colored flowers; but I have never seen it in any collection. C. rosea, of Eaton, answers to his description; he does not say whether an annual or perennial.

"Coreopsis is from Greek words, signifying a bug and resemblance. Its seed is convex on one side, and concave on the other; it has a membranous margin, and it has two little horns at the end, which give it very much the appearance of some insect."

It is found in the class Syngenesia, (the union of the anthers, which the Greek name implies). The flowers are compound, stamens five, united by their anthers. Order, Frustranea, (florets of the disk, fertile; of the ray, sterile). Natural order, Compositæ. One of the most extensive and well defined classes of the Linnæan system, and remarkable for displaying their flowers in autumn. The genus Coreopsis is characterized by having a double calyx; each of many leaves, the exterior shorter and green, the interior equal, partly coriaceous, (leathery) and colored. The receptacle (that part of the fructification which supports the other parts) producing flat, chaffy scales. The seeds compressed, emarginate, and often bidentate (having two teeth).

Coreopsis lanceolata, is a fine species with lanceolate leaves, producing a profusion of large, rich yellow flowers upon long peduncles, (flower-stems), which begin to open in June, and give a continued succession until late in autumn; height about two feet. This is almost the only perennial which produces yellow, compound flowers so early in summer. A small root planted in April will make a large

plant by autumn. All the species are propagated by dividing the roots. They flourish in moist soils, but I have found them most luxuriant in a deep black loam inclining to moisture.

Coreopsis verticillata. Leaves verticillate (given off in a circle round the stem), opposite, sessile (without footstalks), ternate (in threes), or quinite (in fives): leaflets linear lanceolate, entire: rays of the flower acute, pale yellow: disk, or centre, dark brown. The flowers have a peculiar star-shaped appearance. It is said the florets are used to dye cloth red. It is a handsome shrubbery or border plant, continuing from July to October in bloom.

Coreopsis tenuifolia. Slender leaved. The foliage of this species very much resembles the last, with this difference, it is much more delicate and finer. The flowers are of the same shape, a deep shining yellow, having its disk also yellow; not more than a foot high; in bloom July and August. A handsome plant, suitable for the front of the border.

Coreopsis tripteris. Three leaved. A tall, handsome plant, suitable for the shrubbery, six feet high. Leaves on the stems in threes; lanceolate, entire; radical ones pinnate; flowers yellow; from August to October.

Coreopsis grandiflora. Great flowered. The flowers are not so large, however, as C. lanceolata, or so handsome. Its habits are different from the other species, having creeping roots, which throw up in every direction stems not more than one foot high, with compound, much divided leaves; leaflets linear. As an exception to the other species, this is somewhat tender, and requires protection.

There were as many as thirty species formerly included in this genera; all of which are more or less ornamental and suitable for the shrubbery or border. Latterly, some of the species have been distributed among the genus Actinomeris, Simsia and Calliopsis. In the last, C. tinctoria is now arranged.

One of the most obtrusive shrubby plants to be met with in waste ground throughout our country is *Spirea tomemtosa*, known by the common names of steeple bush, purple hardhack, &c., with purple flowers in crowded, sub-panicled spikes. However unacceptable this troublesome bush may be to us, it is named as being ornamental in England. Many species of the shrubby Spireas are prominent ornaments of our shrubberies, as S. opulifolia, S. hypericafolia, and S. sorbifolia; but the most desirable of all the family are some of the herbaceous sorts. "Spirea is from Greek, and signifies a cord.

Spirean is Pliny's name for a plant, the blossoms of which are used in garlands. That plant is thought to have been the Viburnum lantana." The flowers of S. hypericafolia are arranged the whole length of its flexible branches in sessile umbels, so as to form beautiful garlands of white, contrasting finely with its green, obovate leaves, which make a good back-ground to its snowy blossoms. To this species and some others the name is appropriate. This genus is found in the class Icosandria, "which by interpretation is" twenty stamens; their number, however, is so variable that upon these the class is not founded; but upon their position, which is on the calyx. Order, Pentagynia (five pistils). Natural order, Rosaceæ. Character of the genus, calyx spreading, five cleft; petals five; capsules one celled, two valved, opening inwards, one to three seeded.

Spirea ulmaria plena. Double Meadow-sweet. This most beautiful plant should not be wanting in the smallest collection. It is a native of Britain, and an improved variety of the single species. A large mass of it is very imposing; its fine double white flowers in proliferous corymbs, on erect stems two feet high, have the appearance of snow. From June to August. Leaves pinnate, downy beneath; the terminal leaf larger, three lobed; the lateral ones undivided. This and most of the species succeed best in a strong, moist soil, and are equally hardy, enduring the severest winter without protection. A variety has variegated leaves, which is not so common.

Spirea lobata. Lobed Spirea. A beautiful species, indigenous to some part of the country, but not in New England. Flowers red or deep pink, in proliferous corymbs; two feet high. It is not so long in bloom as the last species, but fine in its season, July. Leaves pinnate, glabrous (smooth); the odd leaf large, seven lobed; lateral ones three lobed.

Spirea filipendula. Drop wort. A very elegant species, a native of Britain, with tuberous roots like the Pæony. Flowers white, in corymbs two feet high. From June to August. Leaves pinnated, leaflets serrated; the foliage is beautiful.

Spirea filipendula plena. Double Drop wort. More desirable than the last, of which this is a variety; appearance the same, except the flowers are double, and not quite so tall a plant. Flowers continue through the season. The tubes should be divided in August, or early in the spring. The two last increase slowly, while the two first described extend themselves a little too fast.

Spirea aruncus. Goat's beard. From Siberia; three or four feet

high, with white flowers in panicled spikes, in June and July. Leaves supra decompound. There is an indigenous variety very much like it, var. Americana, with very long slender spikes.

Spirea trifoliata, is now attached to the small genus Gillenia, and with much propriety, as the most casual observer will at once perceive. It has but very little resemblance to the Spirea family; having a tubular campanulate calyx; its pink and white flowers more solitary and much larger, with a leafy appendage at the base of the peduncles, technically called stipules, which are linear; two feet high; June and July; leaves in threes. A very pretty North American plant, equally hardy and as easily cultivated as the Spireas.

There are some species and varieties not found in our collections, very desirable. Each new hardy, herbaceous or shrubby plant must be considered by every lover of flowers an important acquisition. It is to be hoped, then, that the following will soon be added: S. palmata and S. digitata, with red flowers. S. filipendula, varieties minor and pubescens. S. ulmaria, varieties denuda and tomentosa, with white flowers.

"Lychnis, from a Greek word, signifies lamp, in allusion to the cottony leaves of some species, which have been used as wicks to lamps." This ornamental genus includes the old one, Agrostemma, which is now abolished. It belongs to the artificial class Decandria (ten stamens). Order, Pentagynia (five stiles). Natural order, Caryophylleæ. Its generic character is an oblong, one leaved calyx; petals five clawed, with a nearly two parted limb; capsules five celled.

Lychnis chalcedonica is common in most gardens, and frequently known by the name of London pride; a native of Russia, well known and much esteemed as a border flower of easy culture; freely propagated from seed and division of the root. The flowers are brilliant scarlet, which makes it more valuable, as comparatively few of that color are to be found among hardy herbaceous plants. One of the most splendid decorations of the border is the double variety; not common except with the amateur or florist. It is propagated only by divisions of the root, or cuttings of the flower stem, and requires some care to prevent it from returning to the single state. "The cuttings may be taken off at any time when the shoots are tender and planted in a sandy loam, in a warm situation, but shaded and covered with a hand glass. When well established, they may be transplanted into the nursery department, or where they are finally to remain, and will flower strongly the next year."

There is also a single and double white variety. The double

white is still more rare than the double scarlet. All the varieties do best in a light, rich, loamy soil. It is necessary to take up and divide the roots every other year, or they will dwindle away. The best time to do this is early in the spring. A light protection is necessary to the double varieties, to insure a vigorous bloom. The flowers are fascicled (collected in bundles), level top or convex; two feet high; in June and July. The double varieties do not grow so luxuriant, and continue to give flowers until autumn.

L. fulgens, (splendid), is a hardy species from Siberia, with scarlet flowers; one foot and a half high; not common with us.

L. coronata, is a shewy species from China. The flowers are large, solitary, terminal and axillary, red, the petals torn; one foot and a half high; calyx rounded, clavate (club-shaped), ribbed, smooth. Unfortunately, this beautiful plant will not stand our winter in open ground; it therefore requires to be taken up and potted in autumn and protected in the house or frame. It thrives and flowers abundantly most of the season if planted out in the spring. It may be raised from seed or cuttings.

L. floscuculi. Ragged Robin. This is an old inhabitant of the flower garden, a native of Britain. The double variety is deservedly esteemed, is very ornamental, easy to cultivate, and flourishes in any common garden soil. It is propagated by divisions of the root. Flowers fine deep pink, dichotomous, fascicled; calyx campanulate, ten ribbed; petals torn, with an appendage.

L. viscaria with pink; *L. diurna*, with purple; and *L. vespertina*, with white flowers, all natives of Britain, are said to be handsome border flowers in their double varieties, but not much known with us.

L. coronari, formerly Agrostemma coronaria, is too well known under the name of Mullen Pink, to require a particular description. Its curious, downy, mullen-like leaves, with fine red flowers upon its dichotomous (forked) stems, and hardy habits, will always give it a place in the border among plants more rare. The varieties with white, red and white, and double red flowers, are also handsome, but not so commonly met with. The old plants are apt to die. New plants from seed should, therefore, be in progress of the single varieties, which are easily raised. The double must be propagated by divisions of the roots.

L. flos Jovis, or flower of Jove. It has red flowers, in umbellate heads; not so showy as some of the species, but worthy of cultivation on account of its remarkable downy leaves.

(To be continued.)

ART. IV. *The Planter's Guide; or, a Practical Essay on the best Method of giving immediate Effect to Wood, by the Removal of large Trees and Underwood; being an Attempt to place the Art and that of general Arboriculture, on fixed and phytological Principles; interspersed with Observations on general Planting, and the Improvement of real Landscape. Originally intended for the Climate of Scotland.* By SIR HENRY STEUART, BART., LL. D., F. R. S. E., &c.

(Communicated for the Horticultural Register.)

THIS work treats generally of the removal of large (forest) trees and underwood, but especially of the best method of giving immediate effect to woods. It enters with minuteness into the subject of transplanting trees, and of the subsequent care and management of them, whether detached or in plantations, in close or open dispositions. The whole treatise, though voluminous, extending in the American edition to a portly octavo, is valuable, and will repay a careful reading. The style of the work is also exceedingly simple and pleasing. In short, it is obviously the production of a highly cultivated man, and, at the same time, one possessed of a vast deal of practical information relative to the subject which he has undertaken to discuss.

According to Sir Henry Steuart, the first point to be considered in the removal of trees is the selection of the plant or subject. It should be at least from twentyfive to thirty feet high, with a girth of at least fifteen inches; endowed with those qualities that manifest health and vigor, and that will best enable it to shoot rapidly in an exposed situation, such as lawns, parks or other open grounds. These qualities he denominates the *protecting properties*. They consist in a thick, hard bark; a thick and stout stem; a wide spreading, well furnished and well balanced head, with branches growing, relatively to the height of the tree, near the ground, and extending equally and uniformly in all directions. These are the only subjects this experienced planter considers fit to be selected in order to insure a speedy and certain success.

The American reader will at once perceive that there are very few trees of this description in this country, or, indeed, in any other, unless originally planted by the hand of man in situations where the light and air could freely penetrate to all sides. Some trees may have been left accidentally in pastures or along boundary lines, but naturally they do not grow detached. On the contrary, they grow in close woods. And even where they succeed in suffocating the underwood,

they do not possess a single property which Sir Henry Steuart considers indispensable for a successful removal. They have a tender and smooth bark, a long, slender stem, few lateral branches, and a head ill furnished and of irregular shape. Take, for example, one of our forests, (or, as we call it, a wood) consisting of the gray, red, and one or two other kinds of oak, with an occasional hickory, white pine, maple, and perhaps a chestnut. These trees, standing within a few feet of each other, and starting at the same time, struggle upwards literally for a ray of light and a breath of air. The growth is, therefore, not only irregular — for the different varieties advance with different degrees of rapidity — but the developement of the plant is necessarily imperfect.

The finest trees we have in this part of the country, are probably those aged white oaks that occasionally and accidentally have been left in some of our ancient pastures. A tree of this description, if seated in a tolerably propitious soil, will be found to be fully and admirably developed, excepting always a slightly stinted vegetation on the north or stormy quarter. This is the only tree we have, which at all resembles the oaks of an English park ; and for the obvious reason that it is the only one which grows as they do. Now if any person will take the trouble to compare this pasture white oak with a tree of the same variety, and apparently of the same great age, growing in a close wood, not a property will be found in common either in the form of the trunk, or the arrangement of the branches. We have, it is true, in this part of the country, plantations of forest trees of many years' standing, but the trees in them, with hardly an exception, will be found to be totally unfit for removal, having no advantage whatever over the original forest trees, and growing, indeed, very much as they do.

But to return to the work. Trees growing in a close wood, the Scotch planter considers as endowed with what he terms the *non protecting properties* — or in other words, they are not furnished with such bark, branches and roots as will enable them to flourish in an exposed situation. They are, therefore, not deserving of a removal. As to the relative value of the protecting qualities, Sir Henry Steuart considers thickness and hardness of bark, stoutness and girth of stem, as of more importance than a copious supply of roots, and extent of branches as the least material. In other words, the ability of a tree to protect its own sap vessels, is the standard by which to determine the prospect of its success when removed. According to this view of the subject, it is therefore evident that a tree which has been growing

half a century in a sheltered and confined forest, will, when transferred to the open ground, gradually fail and ultimately perish.

We place great value on the remarks Sir Henry Steuart has made on the absolute necessity of selecting for removal only those trees that have been reared in open and exposed situations. We well know that plenty such can be obtained both in Scotland and England, for planting has been long and extensively pursued in both countries. But there are none, or very few indeed, here. The original forests having been extirpated, we have at length begun to plant, and in process of time we shall have trees fully developed, a sight that no forest can exhibit. Many thousand ancient trees assembled together in a vast wood, produce a sublime effect from their numbers, their size, the depth of shade, &c. They awaken deep, and to many, most pleasing emotions; but not on account of the beauty of the single trees. This is not the reason. On the contrary, the finest of those trees placed in a detached situation, would probably not produce a good effect.

In this connexion, we shall offer a remark or two as to the effect of shade on plants. All plants have their favorite soil, climate, and situation; but it seldom happens that more than two of these contingencies are united in the same. And though the greater part of plants, especially those of a low stature, are found in their native state growing to a great extent in the shade, yet we think it cannot be doubted that the same plants, when introduced to the full benefit of the light and air, will produce finer foliage, flowers and fruit. It is said that such and such plants, our beautiful laurels, for example, grow in their native condition in the shade. As to the literal fact, this is true; but at the same time, they get all the light they can. They perch themselves in the fissures of rocks, for the benefit of the leaf mould and moisture which there accumulate, and, generally speaking, under a deep and thick screen of leaves. Their progress is slow and feeble. But if it so happens that the trees about some of them have accidentally fallen or been cut down, a prodigious difference in the condition of the plants will be observed. Nature, we admit, is the rule and guide; but before we establish any given state as the natural condition of a plant, we should consider every circumstance attending it. Many now say that the Dahlia (a flower which, according to the laws of chemistry, requires more light to produce its colors in perfection than almost any other) should be grown partly in the shade: certainly not because this plant in Mexico is found on the north side of hills, and under a

dark and heavy foliage; for there the flower is not larger than a marigold. Still it is possible that at certain periods of the day, in July and August, our sun may act in a way too stimulating for the health of this plant. The same is probably true of every plant that grows in this climate, with the exception of Indian corn. There is at times a quality in the heat of the sun of that season of the year, not easily described, though readily understood by all that have felt it, which undoubtedly excites a greater action in the secreting properties of the leaf than the roots can supply. And no doubt, for the few hours of the duration of this heat, some sort of protection would be advantageous to a plant; but this is a very different thing from being placed habitually in the shade, or of being daily deprived of a large portion of the rays of the sun. Nature, we think, intended to screen the roots, not the foliage.

Having described the sort of tree Sir Henry Steuart considers as only fit for removal, we now come to the preparation of the soil in which it is to stand. This should be trenched sixteen or eighteen feet from the stem, in every direction, for a tree thirty feet high, and to the depth of eighteen or twentyfour inches. This soil should be thoroughly mixed with two or three horse-cart loads of a compost of lime and clay, or sand, or bog, according to the original quality of the soil. It is also desirable that the pit should be thus prepared one year previous to the transplanting. The tree also goes through a course of preparation, when the removal is executed in the best manner; that is to say, the roots are all cut round, by means of a trench, twelve or fifteen feet from the stem, one or two years preceding the removal, and a stimulating compost put above and about them, in order to induce them to throw out new fibres. These arrangements being completed, and the proper season having arrived, a suitable number of men, (at least six to a tree thirty feet high) get into the trench and begin to uncover the roots. Uncommon caution and delicacy are required for this operation, for one of the leading features in this planter's system is to remove the greatest possible mass and web of fibres and rootlets. This portion of the work proceeds slowly, for the principal part of it can only be performed by the hand, aided by a trowel or a sharpened stick. The roots being cleared and tied up in mats as the men advance towards the stem, a machine very much resembling the tongue and wheels on which large sticks of timber are moved in this country, is brought close up to the body of the tree, and lashed in the most open place to the trunk. The whole (tree and pole of the machine) is then pulled

down by ropes, either by men or a steady horse, and while drawn away, root first, is supported in a horizontal position by men stationed for the purpose. Such roots and branches as would strike the ground during the removal, are tied up. These, one would think, must be numerous, for the height of the axle tree in the largest sized machine, is only two feet nine inches. The tree is thus moved to its pit and planted.

The account of the above operation in the work itself, occupies many pages. We can only say, that Sir Henry Steuart treats many of the processes, particularly those that relate to the pulling down of the tree from its perpendicular to a horizontal position, and the tying up of the large roots and limbs, to prevent their being lacerated, as easy, simple and expeditious, which to us appear vastly hazardous and difficult. The whole expense of this operation, — the tree supposed to be moved one mile by two horses, and being thirty feet high, and fifteen or eighteen inches girth — is stated to be less than two dollars and a half, of our money. The Baronet gives the figures, and we have not a word to say; — but we are perfectly sure that the same amount of work could not be done in this country, and with the same degree of care, for fortyfive dollars.

Sir Henry Steuart, states it as a fact established by his own experience, (and certainly it is an important one) that the tap root may be destroyed, not only without perceptible injury to the tree, but that it is often reproduced. We have no doubt this opinion is correct. A tap root is probably provided by nature for the purpose of sustaining the tree in a more effectual way, than a root shooting horizontally. In other respects it resembles other roots. If, therefore, a tree should be properly supported by roots extending horizontally, a tap root ceases to be necessary. We think, also, that in some cases, the existence of the tap root is accidental. In numerous classes it is not found at all, though the nature of the growth would seem to require it quite as much as in those in which it is observed. Besides, the tap root follows the quality of the soil. It does not, in every case, strike directly down, but is much diverted in its course by the nourishment it finds in its way.

Sir Henry Steuart claims the merit of having introduced a new system in the art of transplanting. We think it would have been more correct to have said, a most judicious and admirable application of the old one. With the exception of a single process, which we shall presently mention, it does not strike us that there is anything

new, certainly nothing original in his operations; — at least not since the days of Miller; — we believe, indeed, we may add of Columella. The Baronet is, however, very severe on the English gardeners for their system (as he calls it) of mutilating trees; — of cutting in or shortening the branches according to the curtailment unavoidably inflicted on the roots. This is done on the self-evident principle, that there should be no more leaves for the purpose of elaborating the sap, than the roots can supply. It appears to us that this practice is obviously required by the system now universally admitted, of the mode in which the leaf acts in furnishing food for the plant. The Scotch planter does not controvert this system. On the contrary, he professes to found his own practice on it; and yet he condemns with a good deal of harshness, the proceedings of the English gardener, who, having this theory before his eyes, or being taught by observation and experience, not only that there cannot be branches and leaves without roots and fibres, but, also, that there is a constant dependence of the one on the other, naturally, and, as we think, philosophically, adapts the amount and extent of the first, to the condition of the last. In fact, Sir Henry Steuart does the same thing. He says, in substance, take up all the roots, and leave all the branches. And he is right. But it is not always possible to do this. Then we say, that if the root sends the sap into the leaf, and the leaf elaborates this fluid for the nourishment of the tree; — if this is good philosophy, it is equally good practice, that the part of the plant above, should be made to suffer as heavily as that under ground.

The only new point in the theory of this planter is, that he reverses the weather side of the tree on removal. A wind between west and south west, is undoubtedly the prevailing one in this climate, but it is far from being a wind adverse to the growth of the tree. On the contrary, as this is the sunny side, the greatest developement of the plant will be observed in that quarter. The north, therefore, if not the stormy point, is at least the side where the greatest collection of moss will be observed, and the most feeble prolongation of branch, and the least ample show of spray. The object of this planter in placing the most healthy side to the most unfavorable quarter, is to produce an equilibrium in the branches; — but even if this consequence should follow, it is evident that in a few years the equilibrium will be again destroyed. But if a tree does grow most luxuriantly on the warm quarter, is the bark better prepared to bear exposure to the cold point? The same may be said of the buds. The climate of

the tree is, in fact, changed. This arrangement appears at variance with the great principle of the system, that a tree should be so reared, as to have the ability to protect its own sap vessels.

The author calls his system the preservative one. Whether entitled or not to the compliment of the name, we think his work a very valuable one. He is obviously a very intelligent man. But if any person thinks that after reading this book he can proceed at once, and ornament in a single spring, the grounds about his house, with oaks, elms, maples, and other forest trees, thirty or forty feet high, at the rate of five or six dollars apiece, we can only say that the next spring will show that he has fallen into a woful error. The axe of an American laborer will soon clear away a wide wood for any man, but to remove and replant even a small portion of it, whether detached, in groups or in belts, will be found to be a work of prodigious care and expense.

The average height of the trees removed by Sir Henry Steuart appears to have been thirty feet, with a girth a foot from the ground of fifteen or eighteen inches. This is a good size, fit in fifteen or twenty years to make a fine tree; but it would never strike any one as being large. Yet trees even of this size, growing in open and exposed situations with well balanced heads and other properties considered by this planter as indispensable, are very rare in this country, at least in this part of it. Our oaks, &c. not only grow in close woods, but on land of which a large proportion consists of ledges of rock. The tree itself is therefore unsuitable, and it would be next to impossible to raise it with any tolerable share of roots. Indeed, we doubt very much whether three hundred trees of the sorts we have mentioned, suitable for transplanting according to the system of Sir Henry Steuart, and of an average height of thirty feet, could be found within ten miles of Boston. Therefore, as to applying this system on any scale beyond the removal of a few trees from one part of a person's grounds to another, our first objection is, that the trees do not exist. In the second place, even if found, they will be scattered about, miles from each other. It will then be necessary to drag them out of pastures or woods and along narrow town roads, where, from the bushes on the sides and apple and other trees projecting beyond the walls, it would be often difficult to move them with safety to the roots or branches, and always laborious and expensive. We say nothing of the cost of the various and numerous operations belonging to this system, none of which can be omitted, provided we

seek that success which appears to have followed the removals conducted by the author.

We have known trees from twentyfive to thirtyfive feet removed, generally, however, a short distance, and they have lived, but that is all that can be said for them. It takes such trees many years to recover from the effects of the removal, if they ever do it. Usually they have at least two thirds of their roots cut, mangled, or broken off, and an equal share of their tops lopped away. It is, therefore, out of the question, that a very serious if not fatal mischief should not be done to them. Trees thus wrenched out of the ground at such a vast sacrifice of roots, can never enjoy either a healthy or vigorous vegetation. They may annually make a tolerable show of leaves, and carry them tolerably well for several years, but they never fully recover from the shock, and at last fall into a decline and prematurely perish.

We have only to add, that in our judgment, the rules of the Scotch planter, are, with a single exception, excellent; and that those persons who desire to possess healthy and handsome trees should never venture on a larger size than they can remove, generally speaking, in the manner prescribed by him.

ART. V. *Some Remarks on Temperature Considered in Relation to Vegetation and the Naturalization of Plants.* Communicated to the Mass. Hort. Society by Mr A. J. DOWNING, of Newburgh, N. Y.

THE natural distribution of the vegetable kingdom over the face of the globe, as affected by various causes, and chiefly by the temperature of the different countries and continents, is one of the most interesting of all subjects. As the illustrious Von Humboldt has observed, it is "intimately connected with the physical world in general. Upon the predominance of certain families of plants in particular districts, depend the character of the country, and the whole face of nature; and the natural congregation of vast masses of vegetation of the same character in particular countries, has produced most important effects upon the social state of the people, the nature of their manners, and the degree of developement of the arts of industry."

The difference of vegetation, as exhibited in the torrid, the temperate, and the frigid zones, is sufficiently familiar to every one. The equinoctial regions, abounding with their splendid vegetation of lofty Palms, Bread-fruit trees, Plantains and Banannas, laden with huge masses of nourishing food, differ as widely from those portions of the earth lying in the temperate zones, where the vine flourishes in perfection, and the cereal grains furnish the chief means of subsistence to man, as the latter does from the arctic regions, where the grasses and cryptogamic plants still keep up the diminishing scale of vegetable life, and contribute to the support of a higher class of organized beings. It is probable that almost every country produces naturally in its vegetation, sufficient means for the subsistence of man; either directly, as in the torrid and temperate regions through the medium of delicious fruits, esculent roots and seeds, or indirectly, as is partially the case in the temperate and frigid divisions through animal life, which primarily subsisted upon vegetation in some of its forms. But man in a civilized state, especially in those countries where climate forbids nature to lavish her bounties in the greatest profusion, has refused to be satisfied with her supplies, and has delighted his taste and gratified his wishes by assembling around him, as far as possible, the productions of other countries, either to embellish his habitations, or satisfy his appetites. Hence many plants, which were exotics, have become so acclimatized or naturalized, as to afford the principal food of their inhabitants, and the staple productions of their soils. The vine and the fig, which are the boast of France, are not indigenous there. The orange, that produces its beautiful golden fruit in the south of Europe and our own country, is a native of Asia. Some of the commoner grains have followed civilized man in his migrations for such a length of time that it has now become difficult to say which was their native country. This is the case with wheat, millet and buckwheat, and many other grasses which it is supposed are indigenous in the oriental countries. How much *we* are indebted to other climates and other countries for our most valuable necessaries and luxuries in the vegetable kingdom, a single thought will convince us. Wheat, rye, and most of the other grains, cotton and rice, the staples of our soil have all been imported here; and our most delicious fruits, owe their origin to other lands. The peach is from Persia, the apricot from Armenia, the cherry from Pontus, and nearly all our finest cultivated varieties of apples, pears, plums, &c. from Europe.

These preliminary remarks lead us to reflect how much the arts of culture are indebted to the property which many plants have, to a certain degree, of becoming naturalized in a country where the variations of temperature differ from those of their own ; and it may lead us also to investigate the most successful methods by which such exotics, natives of warmer climates, as may be valuable to us either in a useful or ornamental point of view, may be so naturalized as to be either partially or entirely hardy and able to withstand the severity of our northern winters. That a large proportion of the vegetation of the tropics, can never become acclimatized in regions liable to severe frosts, is evident to every one ; but that a number of highly valuable plants, natives of peculiar situations in those countries, and more particularly those of the intermediate parallels of latitude, have been, and may be naturalized here, the history of Agriculture and Horticulture affords ample and abundant proof. Plants of rapid and bulky growth, succulent and tender stems, natives of the warmest districts, can never be for a long time exhibited in a state of vegetation here, except in an artificial temperature; but annual plants and trees and shrubs, with strong woody stems, particularly if natives of elevated tracts, as the sides of mountains and the tops of high table lands, may always be considered as affording probabilities of a capacity for naturalization in a colder region.

A method universally known, and which we are inclined to place foremost among the resources for the naturalization of plants, consists in sowing continually the seeds of the plant under trial, for successive generations and from seeds produced in the country into which the plant is introduced. This, though in many cases, a lengthy and somewhat tedious process, is, we believe, the same by which the most extensive and valuable naturalizations have been effected heretofore. The more tender fruits, as the peach, cherry, apricot and almond, have doubtless been rendered hardy in this way : each new generation possessing perhaps diminished vigor, but acquiring a more robust and hardy constitution. Although it would have been difficult, perhaps impossible, to have altered the contexture of the original tree if otherwise continued, — whether by cuttings, suckers, or layers — yet by reproduction from seed, each generation became a little more capable of withstanding the effects of a low temperature, until the desired result, was, in a measure, or wholly obtained. It is obvious, however, that the result brought about, is not the naturalization of the *original* species of tree or plant, but, as Professor De Candolle justly

observes in his "Physiologie Vegetale," of the *improved variety* produced from seed, and which has acquired in its contexture a diminished susceptibility to cold. The effects produced by this method of naturalization, are even more abundantly exemplified in the case of herbaceous and annual plants, than among ligneous trees and shrubs. As an instance of this, we may refer to the common Indian corn, which was undoubtedly originally a native of South America and the southern parts of this continent, but of which so many varieties have been produced by cultivation, that it may be said some particular one can be found naturalized and adapted to any parallel of latitude, from the equator to the 45°, and in Europe to the 55° of latitude.* This is often produced in annual plants, not so much by rendering the plant itself less sensible to cold, for in many cases this is scarcely at all effected, as by producing improved varieties, which shall ripen their seed and come to maturity in a cold climate, in half or even a fourth of the time necessary for that purpose, in the country where the species is originally a native. Thus the rice, so important an article of food to the natives of the East, was probably first cultivated in Ceylon and Java, whence it spread all over India, Japan, and the southern provinces of China, and the United States. It has also been introduced into Italy, Spain and the south of France, and we perceive that lately an improved variety has been found sufficiently hardy, to produce abundant crops in the comparatively cold climates of Hungary and Westphalia. Rice may now therefore be considered naturalized as far north as 46° in the old world. The luscious fruit of the melon and the cooling one of the cucumber, can scarcely be brought to maturity if the seeds are direct from the more southern climates where they are natives, but improved varieties have sprung up by culture, so perfectly naturalized as to produce abundant crop in almost every part of the United States. The horticulturist should never therefore reject even an annual plant, which will not come to maturity immediately without artificial aid in our climate, but if the subject is worthy of the pains, he should endeavor, by the aid of artificial shelter, if necessary, to procure the seed and sow it under the most favorable circumstances during several successive generations, when it will probably at last, produce him a variety which will withstand the severity of the climate, or come to maturity sufficiently early to escape the destructive effects of too

* Cobbett's Corn, which he brought to maturity in the short and cool summer of England, is, we believe, a very early variety from Canada.

great an abasement of temperature.* Considered in this light, the green-house may become one of the most useful, as well as ornamental and pleasing sources of enjoyment to the experimental horticulturist and the public generally.

We must not leave this part of the subject, without adverting to the advantages which may be obtained by artificial fecundations and impregnations, of highly ornamental or useful exotic plants, with more hardy species or varieties of the same genus; the produce of which may be highly superior varieties, having all the beauty or excellence of the tender species, and perhaps nearly the same robustness of constitution as the hardy one. We conceive it to be a method, by which, now that artificial hybridizing is so well understood, the most valuable results may in many instances be produced in a comparatively short space of time.

(To be continued.)

Art. VI. *Notices of Fruits, &c.*

Mr Fessenden — If the following observations, made during two short journeys in the autumn, are of any value, you are at liberty to use them.

The fall fruit, the past season, in the valley of the Connecticut river as far as Deerfield, the limit of my first tour, was generally abundant and good with the exception of peaches.

I found the Hadley pear, the original tree I think, growing in the garden of a Mr Montague, at Hadley. It is a fine melting pear, moderate size, covered with yellow russet, not much extended by grafting in that neighborhood. I could not ascertain whether it is the same with the Capsheaf, as is suggested as probable in the New American Orchardist of Mr Kenrick. Perhaps the description I have given of it will enable those acquainted with the Capsheaf, to determine.

* As a proof of the effects of a renewed reproduction from seed, we may mention that we planted, the present season, in a favorable situation, a quantity of seed of the Lima bean, direct from its native country, lat. 14 deg. S. — the plants produced, however, scarcely attained the period of flowering before they were destroyed by the frost, whilst the plants in their immediate neighborhood, the produce of a variety of the same bean, naturalized in the country, yielded as usual, abundant crops of matured seed.

The effects of the last winter in the destruction of fruit trees on the river, were very severe.

At Northampton, I made inquiry for Dr Hunt's Connecticut pear; but the widow of Dr Hunt, he having deceased, could not inform me respecting it, but presumed the tree had perished. If Mr Prince, who received it of Dr Hunt, can give information of whom, and from what place in Connecticut Dr H. received it, it would probably gratify some others besides me. Mrs Hunt kindly showed me her grounds, containing much excellent fruit; among others, the St Michael was loaded with fine fruit. Among them, also, was an apple of large size, striped with red, very fair, rather flat I should think, of a mild, tartish flavor, then fully ripe — about 15th September — which she called the *Boston Apple.* If it is known by any other name about Boston, or is described in the *Orchardist,* I wish Mr K., or some other of your correspondents, would give the synonyme.

At Kingston, New York, the extreme point of my other tour, I made some gratifying observations on the apples there cultivated. I had the pleasure of an interview with Judge Hasbrouck, from whom the Jonathan apple takes its name — incorrectly printed Harbrouck in the New American Orchardist. He informed me that the apple trees in that vicinity were very seriously injured the last winter. In addition to the apples named in Kenrick's Orchardist, on the authority of Judge Buel, two or three other kinds, probably natives of that region, are considerably cultivated there, viz. the Mouse apple, an excellent fall apple, and one pronounced as if spelt Koonrauchy, supposed by Judge Hasbrouck to derive its appellation from a common Dutch surname. This apple is remarkable for its property of long keeping.

The markets in New York were well supplied with fruit, especially apples and pears. (Oct. 1, to 10.) Among the apples not named in Mr K.'s Orchardist, there were two apparently deserving of cultivation, viz. the Pelican, a very large, fair apple for cooking; and the Pound Sweet, a very large sweet apple, yellow, with a red stripe. Of pears — the Seckel was fine; the Red Cheek and many others. It appears to have been a very favorable season for pears.

It is desirable that the Fruit Committee of the Massachusetts Horticultural Society, should embody the results of such a favorable season, of the information acquired, especially concerning the new pears, and give them to the public.

The garden and nurseries of the Messrs Prince, at Flushing, exhibited a splendid display of Dahlias. A specimen of Loan's Pearmain apple indicated the variety to be valuable; very fair, and of largish size, rather tart. M. S.

Berlin, Ct., Dec. 24, 1835.

[For the Horticultural Register.]

Art. VII. *Flowering of Hyacinths in Water, &c.*

T. G. Fessenden, Esq.

Sir — I send you the following recipe for promoting the flowering of Hyacinths in water, &c.

To one pint of rain water, add three ounces of nitre, one ounce of salt, half an ounce of salt of tartar, half an ounce of loaf sugar. When dissolved, strain and keep in bottles. Of this add ten drops to each glass, and renew every ten days.

To fruit the Banana — strip off all but the two upper leaves.

The Fernal Grape, which has been so much extolled, has been seen growing in great perfection during the summer of 1835, in a peculiarly favorable climate; it is an extremely shy bearer and was not considered to repay the trouble of its culture.

Yours, Respectfully, A Subscriber.

[For the Horticultural Register.]

Art. VIII. *A Query.*

Mr Editor — I would ask through the medium of your valuable Magazine, for the information of myself and others, what is to be done for those of us who have been caught the past autumn with our *bulbs*, not in the ground where they should be, but above ground. Will they bloom if they are planted as early as possible in the Spring? Information upon the subject will be of much benefit to many

Boston, Jan. 20, 1836. Amateurs.

[From Harrison's Horticultural Cabinet.]

Art. IX. *A Description of Roses.* By Mr T. Rivers, Jr. Nurseryman, Sawbridgeworth, Hertfordshire.

The following terms are used to express the form of the flower: —

Globular. — The outer petals encircling the flower till fully blown, in the manner of the Common Cabbage or Provence rose.

Expanded. — The flower rather flat, petals open; in some varieties showing the central stamens.

Cupped. — The outer row of petals erect, rather incurved, enclosing numerous smaller petals; the crimson Perpetual rose when first open will illustrate this term.

Reflexed. — The petals turned back, something like the French Marigold.

Imbricated. — The flower flat, petals laying over each other like the centre of a good double Anemone.

Compact. — Petals stiff, close and upright, resembling a double Ranunculus.

MOSS ROSES.

NAME.	COLOR.	FORM AND CHARACTER.
Blush,	pale blush,	globular and very double.
3 Crimson or damask,	light crimson,	expanded and double.
1 Crimson or ecarlate of the French,	very bright Rose,	globular, large and very d'ble.
4 Common,	rose,	globular large, and very d'ble.
1 Crested, rosa, cristata, or crested provence,	rose,	globular, very large and d'ble.
2 De la fleche, or scarlet Graciles,	bright carmine,	with fine crested buds. cupped small and double.
1 Mottled,	rose, mottled,	globular and double.
1 Mousseuse partout, or Zoe,	rose,	globular and double, the plant covered with moss.
1 Miniature, (Rivers),	bright crimson,	cupped, very small, semi d'ble.
3 Prolific,	rose,	globular and double, an abundant bloomer.
2 Pompone, or de Meaur,	pale blush	compact, small and very d'ble.
2 Perpetual white,	white, oft. strip'd	
Rouge du Luxemburg, or Ferugineuse,	with pink, deep red, with purple tinge,	blooming in clusters and sometimes in the autumn. cupped and double.
1 Spotted,	carmine, with pale spots,	expand semi double.
1 Striped,	pale, with red,	cupp'd, and but partially moss'd.
2 Sage leaved,	bright rose,	cupped and very double.
3 Single rose,	bright rose,	expanded and large.

1 Single lilac,	lilac rose,	expanded.
Single de la fleche,	carmine,	expanded.
—— Single (Rivers,)	very bright rose,	globular and distinct.
Vielliard's,		
2 White Bath, or Clifton white, the Mousseuse unique of the French,	pure white,	globular, d'ble. and very mossy.
2 White old,	very pale flesh,	globular and very double, but partially mossed.

This complete collection of twentyfour varieties of Moss Roses, comprises many that are beautiful and distinct, and some, perhaps, only fit for those amateurs, who think with me, that all Moss Roses are beautiful; one step farther towards a dark crimson Moss, is made in the Rouge du Luxemburg, which is very beautiful, and a most luxuriant grower. Most of the varieties prefer a cool soil, though Mossy de Meaux is perhaps an exception, as it seems to flourish better in light, dry soils. The white moss, unless budded on the Dog rose, (rosa canina) will not, in general, grow well; its sickly appearance in some situations, may be often traced to its being worked on some improper stock; if on its own roots, in rich soils, it will often change to pale blush. All are well adapted for standards; but to have them in perfection in warm, dry situations, in March put round each stem, on the surface of the soil, the fourth of a barrowful of manure; on this, place flints or moss, to take off its unsightly appearance, and make a little ornamental mound. This treatment will keep the soil cool, and make them bloom in a most superior manner, even in situations previously thought to be most ungenial to their culture. The manure should be spread on the surface in November, and lightly forked in.

PROVENCE, OR CABBAGE ROSE.

NAME.	COLOR.	FORM AND CHARACTER.
3 Anemonvelflora,	blush,	cupped, anemone like.
4 Blush,	pale blush,	globular, and very large.
4 Common, or Cabbage,	rose,	globular, large and very double.
1 Celery leaved,	rose,	globular and double, with curious foliage.
2 Curled,	bright rose,	globular and double with crisped petals.
2 Delice de Flandres,	lilac rose,	cupped, and double.
3 Dianthœflora,	pale rose,	curious, with fimbriated petals.
2 Evelina,	pale blush,	shaded imbricated and double.
2 Grand Bercam,	bright rose,	globular, very large and double.
1 Grand Agate,	pale flesh,	globular, large and double.

2 Illustre Beaute,	pale rose,	compact and very double.
3 King of Holland,	rose,	globular and double, with leafy calyx.
2 La Cherie,	bright rose,	globular and double.
2 La Simplicite,		
1 Lacken,		
2 Monstrous, or Bullee,	rose,	globular and double, with curious foliage.
2 Petit Cesar,	lilac rose,	globular and double.
1 Reine de Provence,	pale blush,	globular, large and double.
2 Royal,	bright rose,	globular and very large.
3 Scarlet,	carmine,	cupped and double.
4 Single,	rose,	expanded and large.
1 Striped or Vilmorin panache,	pale flesh, striped with pink,	globular and double.
4 Unique,	pure white,	globular, large and double.
2 Unique Striped,	white, with pink stripes,	globular and double, not always striped.
2 Wellington,	deep rose,	globular, very large and double.

The Provence Rose is the Rosa provincialis, of Miller's Gardener's Dictionary; the Rosa centifolia, of modern Botanists; the Rose a centfeuilles, of the French. These last are both improper names, as they seem applied to the leaves of the plant, rather than to the petals of the flower, as intended. A most distinct and elegant family, and excessively fragrant. The footstalks of the flowers are slender, and the flowers are large, so that when in bloom, the plant has a peculiar pendulous and graceful appearance. The Moss rose is evidently a variety of this, as I have raised seedlings from the single Moss, which have lost all their mossy appearance, and have returned to the habit of the Provence rose; it has been asserted that, in a single state, it is found wild in Provence and Languedoc, but I can find no botanical authority for the assertion.

(To be continued.)

Art. X. *Miscellaneous Matters.*

To preserve Peach Trees from Worms.—I have been a constant reader of the American Farmer, from the time of its first publication, and frequently referred to it in hopes of finding an effectual remedy against the attack of the worm on peach trees. I found at different times a number of publications upon the subject, and believe have tried the greater part of the remedies therein prescribed, without success. Finally, I concluded that the old method of cutting the worm out with a penknife, was the only one upon which any reliance could be placed, and have therefore been in the constant habit of preserving my trees in that way for years. I have, however, lately made an experiment, which I have every reason to believe is quite as effectual, and attended with much less trouble. About a year ago, after I had gone the rounds, laid bare the roots, and cleared my trees of the worm, I took some fine screenings of anthracite coal, and put about a quart or two to the roots of each tree; this was done to about the one half of my peach trees. Last fall I went round as usual to cut out the worms; those trees which had the anthracite coal screenings about their roots, were, without a single exception, clear of worms; the others had, as usual, a considerable number. I immediately applied the coal to the whole of my trees; and thus far, am well pleased with my prospects of success. I propose continuing the experiment another year, after which, I can speak with more certainty upon the subject; but the circumstance that half of the trees, upon which the experiment was made, although situated precisely like the others, having been found clear of worms, when the others were full of them, is strong evidence in my mind, that the remedy will prove effectual.—*Farmer and Gardener.*

Gardening.—I should wish to inspire all the world with my taste for gardens. It seems to me impossible that a bad man should possess it: he, indeed, is incapable of any taste: but if I, for that reason, esteem the searcher of wild plants; the active conqueror of butterflies; the minute examiner of shells; the sombre lover of minerals; the frozen geometrican; the lunatics of poetry and painting; the absent author; the abstract thinker; and the discreet chemist,—there is no virtue which I do not attribute to him who loves to talk of gardens, and to form them. Absorbed in this passion, which is the only one that increases with age, he daily overcomes those which derange

the calmness of the soul or the order of society. When he has passed the drawbridge of the city gate, the asylum of moral and physical corruption, to go and work on his lands, or enjoy them, his heart rejoices at the sight of nature, and experiences the same sensation as his lungs, on receiving the pure air that refreshes them.—*Prince de Ligne.*

Pruning Grape Vines.—Hardy vines may be pruned any time during winter. If the work is done in the earlier part, the wounded parts will have longer time to become dry and hardened and the sap vessels closed, so that there will be less danger of their bleeding in spring. This operation is best performed during mild open weather, which frequently occurs in winter. Many grape vines of the hardy varieties have been allowed to grow without control, and have consequently become too thick and numerous in the branches. All but the most thrifty of the last year's shoots should therefore be cut away, and increased thriftiness in the vine, and an improvement in the fruit will be the consequence.—*Genesee Farmer.*

Gooseberries.—Gooseberries require a dead and rich loam: the ground must be well manured and kept free from weeds; and be careful to plant none but those that are of a good kind. The best mode of propagating them, is by cuttings or layers. Early in the spring, spade carefully around the roots, turn over the soil, and pull out all grass that may grow near them. Prune them by cutting out every worn-out, decayed, or irregular branch—let none be permitted to grow across each other; but let all be pruned to some regular order—cut out all the super-abundant, lateral shoots of the last summer, close to the ground, or old wood, only retaining here and there a good one, to supply the place of casual, worn-out bearers. Never permit the extremities of the branches to stand nearer than 6 or 8 inches of each other. The best form for a well trained gooseberry or currant bush, is that of a wine glass.

Gooseberry Wine is made in the same manner as currant wine, except that one third less sugar is required. In picking the berries, take none that have fallen upon the ground, or that have been shaded and grown sour.

New mode of making Jelly.—Press the juice from the fruit: add the proper portion of sugar, and stir the juice and sugar until the sugar is completely melted; and, in twenty-four hours, it will become of a proper consistence. By this means, the trouble of boiling is avoided,

and the jelly retains, more completely, the flavor of the fruit. Care should be taken to stir the mixture until the sugar is completely melted, and fine sugar should be used.

The two following items were inserted in our last, but there being an accidental transposition in them, is the reason of their again appearing.

VEGETABLE CHIMNEY ORNAMENTS. In winter, an elegant chimney ornament may be formed, by cutting the head or thick end of a carrot, containing the bud, and placing it in a shallow vessel of water. Young and delicate leaves unfold themselves, forming a radiated tuft of a very handsome appearance, and heightened by contrast with the season of the year.

BOTANICAL EXPERIMENTS. Two young beech trees, planted in the same soil, at a small distance from each other, and equally healthy were pitched upon as the subjects of the following experiments. They were accurately measured, and as soon as the buds began to swell in the spring, the whole trunk of one was cleaned of its moss and dirt, by means of a brush and soft water. Afterwards it was washed with a wet flannel, twice or thrice every week till about the middle of summer. In autumn they were again measured, and the increase of the washed tree was found to exceed the other two to one.—*Brattleboro' paper.*

ART. XI. *Faneuil Hall Market.*

REPORT OF THE PRICES OF FRUITS AND VEGETABLES.

Apples, Baldwins, best, per barrel,	$2,00	Onions, bunch, per hundred,	3,50
Russetts, Greenings do.	1,50 a 1,75	Pears, Iron, per bushel,	1,50
Beets, Long Blood, per bushel,	75 a 1,00	Potatoes, Chenango, per bushel,	50
Cabbages, Green Globe Savoy, per doz.	50	Eastport, per barrel,	2,00 a 2,25
Red Dutch, do.	75	Sweet, per bushel,	1,50
Large Late Drumhead, do.	1,25	Parsneps, Large Dutch, per bushel,	75
Cauliflowers, per head,	12½ a 25	Radishes, Early scarlet, per bunch,	12½
Celery, White solid, Celeriac and		Shagbarks, per bushel,	2,00
Rose colored, per root,	12½ a 25	Spinach, Prickly Tuft, per peck,	50
Chestnuts, per bushel,	2,50	Squashes, Canada Crook neck, per pound,	3
Cranberries, do.	3,00	Valparaiso, do.	3
Horseradish, per pound,	12½	Large Yellow Crook neck, do.	3
Lettuce, Rose or Tennis ball, per head,	12½	Turnips, White Flat, per bushel,	30
Onions, Wh. Portugal, per bushel,	75 a 1,00	Ruta Baga,	75

ERRATUM.—In our last, page 6, 11th line from top, for "had reached those distant shores," read "had *officially* reached," &c.

THE

HORTICULTURAL REGISTER

AND

GARDENER'S MAGAZINE.

MARCH 1, 1836.

Art. I. *On the Genus Rosa, of the Natural Order Rosaceæ.*

By Professor John Lewis Russell.

There is associated with this interesting flower, an almost indescribable and instinctive feeling of real, refined pleasure, which scarcely any other, the humble violet excepted, can awaken within us. The Rose — the first glorious harbinger of joyous summer, and the lingering blossom of its sunny months; the Rose — whether wild or cultivated, single or multiplex, rambling and climbing in vagrant festoons over the thicket and rude stone-wall, or prim and upright, under the tutoring management of the curious and fastidious florist's hand, and rendered by the wonderful transmutations of scientific skill, the pride of his garden and heart; or the Rose beneath the window of the snug farm house, cultivated to afford a Sunday bouquet, or for its more valued worth in the simple pharmacopœia of village medicine of "healing herbs;" in every situation, and under every circumstance, it is decidedly the most universal favorite flower. Attracting the attention of mankind at an early age of the world, its exquisite beauty, delightful fragrance and many virtues, have immortalized its simple name in song, and immortalized it by connexion with the glorious, the beautiful, the lovely and the good, in nature and society. Who has not admired the elegant freedom of the sweet-briar, — its pale, simple blossoms, five delicate petals, and numerous stamens of rich gold, throwing up in a single season, a vigorous and pliant stem of six or seven feet, well secured from too rude an attack on its beauty, by strong bent prickles; and even in mid winter lending its aid, by its bright scarlet fruit, to grace the magnificence of

that frigid scene? And who, that has not gazed with wonder on the splendid productions of the florist's garden, indebted to the magic power of the Rose, for the charms of flowery June?

Interesting, therefore, as is the Rose to memory, taste, a love for rural scenery, or the triumphs of the garden, not less so is it to the student of the vegetable structure. The figurative language of Oriental description, the poetic beauty of the sacred scriptures, may have effected much in exalting its merits; even the envious distinction to blush, and bloom, and fade, as an ornament to human beauty yet more evanescent, though real, — the beauty of mind, beaming forth in matter, — of the imperishable soul in perishable physical structure, may have added to its charms, still the Rose, specifically and distinctively considered, has claims on our attention and study.

The Rosaceæ, of Dr Candolle, embraces a great variety of the most valuable as well as elegant individuals of the vegetable kingdom. They are the Icosandrian plants of Linnè, and are embraced under the fragments of his thirtyfifth and thirtysixth natural orders, *Senticosæ* and *Pomaceæ*. The combined elegance of this great natural order, induced one writer* to assign to them, as one individual group, the name of *Calophytes*, "plants of beauty."

Lindley has separated the fruits, technically so called, under the title Pomaceæ, and other botanists have subdivided this into types and subtypes, Pyraceæ, Prunaceæ, &c.

The number of species of roses, has been computed as upwards of two hundred, with almost numberless varieties from cross-impregnation and accidental variation. Inhabitants of every part of the world, with the exception of South America, they administer to the comforts and luxuries of man. Several attempts have been made to divide into distinct genera, so great a number of individual plants, differing from each other in many particulars, yet singularly uniting in the most important, the structure of flower and fruit. Everyone must have been struck with this, from such a cursory view as may be afforded, in comparison of the native Roses of North America; — the hardy and firm wood of the upright garden varieties; the smooth green stems of the Chinese and Indian, the flexible spines of the Moss Roses, and the still more singular organs of glandular secretion which invest their infloresence. Most of them are effectually armed with sharp aculei, ferociously bristling in "*Rosa ferox*," whence its savage, trivial name; like reflexed and extended claws on the native briars, "*R.*

* Bartling.

rubiginosa," or on the foreign white rose, "*R. alba*"; and investing stem, branch and petiole in the "*R. spinosissima,*" from which we have the charming varieties commonly known as the Scotch roses, so early, so productive, and so fugacious. "*R. Banksia,*" is as singular for an entire want of such armature, and "*R. rubifolia*" of the West, so much resembles the Bramble, (*Rubus*) as to derive from that circumstance its specific cognomen.

The leaves of the Rose are compound and stipulate, and though the leaflet may materially differ in form and size, yet such is their general character. One very remarkable exception is known, a native of the north of Persia and the desert of Songari, in Chinese Tartary. In this species, we have simple leaves, destitute of stipules, and hence Lindley saw proper to form a new genus under the title of Lowea. This remarkable abnormal deviation from the general structure of the foliage of the Rosaceous plants, is peculiarly interesting as well as remarkable. In the Botanical Register (1261) may be found a figure, and some important observations. The structure of the flower is that of a veritable Rose, while its foliage presents the anomaly of a simple leaf, and not the appearance merely of such an organ by the abortion of every foliole, the terminal excepted; for there can be traced no sign of articulation with its petiole, which should be present were that the case.

The "*Rosa multiflora,*" so distinguished as a foreign variety of climbing Roses, is likely to meet with a compeer if not a rival, in a semi-double variety of our "*R. rubifolia,*" the vigor and luxuriance of which, as a species, is so well known. A native seedling of the above description was shown me last summer, found on an island in the Ohio River, but not being in blossom, I could only trust to the account of my informant for the splendor of its flowers. Should this prove permanently a multiplex variety, it must take the place of the *multiflora* for outdoor culture, being perfectly hardy. And should it not rival the far famed wonders of the *Greville* of notorious repute, yet the patriotic love for native merits, will undoubtedly do much to introduce it to favor.

The facility with which the Rose is cultivated, renders it within the power of everyone to increase his collection of its choice varieties. I know not whether budding is so much practiced by our florists in this country, as it appears to be in Europe, judging from the plants sent to, or imported by, our cultivators; but I trust that I shall be excused for suggesting what is new to me, though perhaps well enough known to those who have attended more fully to the manual

operations of the science of Floriculture, relating to that easy and oftentimes only available method of procuring or saving a rare variety. Late in the summer of last year, I inserted into the stems of the "Maiden's blush" Rose, several buds of curious new varieties, which I did not before possess. I found considerable difficulty in properly lifting the bark, by the usual cut of the T, and had recourse to an experiment of cutting off the head of the stem, then opening the bark by a longitudinal incision and pushing down the bud. After securing it in the usual method, I was surprised at the rapidity of granulation and union of bud to stock, and the superior growth of the evolved branch over those inserted in the ordinary way. It will be perceived that this was, in effect, grafting under the bark as used with scions of the pear, with this difference, that the scion of the pear may have several eyes, whereas, this was but a thin longitudinal section of wood and bark and *one* eye, such as is always used in ordinary budding. The success of the operation has suggested to me the expediency of a more extensive experiment next Spring, and trusting, if not known or practised, it may be interesting to the florist, I have ventured to lay it before you, while a zeal to advance the good of Floriculture will excuse my error, if any has been committed through ignorance.

The fruit, or seed of the Rose, is an achenium, contained within the enlarged and juicy urceolate calyx. In sowing these seeds for new varieties, they are sometimes separated, and sometimes the calyx or *hips* are simply bruised. Perhaps were each hard, stony seed punctured, or a small aperture otherwise made, opposite, or not interfering with the embryo, they would vegetate much sooner than they ordinarily do, and thus facilitate their reproduction.

ART. II.—*On the Selection of Hardy Herbaceous Plants, suitable for Ornamenting the Parterre, Border or Shrubbery.* Communicated by Mr JOSEPH BRECK.

(Continued from page 60.)

MANY of our beautiful native herbaceous plants are almost wholly neglected, that deserve more particular attention, which, if introduced into our pleasure grounds and borders would greatly add to their beauty and interest. We see and admire them in their natural habitats, but do not seem to realize, that if transferred to our gardens

they would flourish with increased splendor. There are some, I know, that appear to defy the art of man, and dwindle and die under his fostering hand, and seem destined to "waste their sweets upon the desert air." Among these are the beautiful family of Gerardias, containing four or five interesting species.

I have repeatedly taken them from the forest with all possible care, and done my best to make them thrive, but all in vain. I have succeeded no better in my efforts to raise them from seed. But it is not so with the beautiful plant that ornaments our brooks and rivulets in the months of July and August with its unrivalled scarlet blossoms. This is *Lobelia cardinalis.* It is a mistaken notion that it will not flourish only in wet ground. I have taken it up when growing in water and planted in a soil, that was far from being moist, with good success. It was introduced into England in 1629, and to this day is duly appreciated. Justice, who published a work on gardening in 1754, in describing it, says; "It is a flower of most handsome appearance, which should not be wanting in curious gardens, as it excels all other flowers I ever knew in the richness of its color."

"Its generic name is in honor of M. Lobel, author of various works: he was born in Lisle, in 1538, became physician and botanist to James I., and died in London in 1616." The genus is known by its five cleft calyx; its irregular corolla; the tube slit on one side of the limb, two lipped and three parted; anthers cohering, and somewhat curved; stigma (the summit or extremity of the pistil) two lobed; capsule two or three celled, two valved at end. Class, Pentandria, (five stamens); Order, Monogynia, (one pistil); natural order, Campanulaceæ.

This large genus contains more than eighty species. The predominant color of the corolla is blue. The most desirable for the border that are much known, are *L. cardinalis*, *siphilitica*, *fulgens*, *splendens* and *speciosa.* The three first will stand the winter very well with some protection; but the two last must be potted in the Fall, and kept in a frame, or in the cellar, and planted out in the Spring.

Lobelia cardinalis has an erect stem three feet high, with broad, lanceolate, serrate leaves; flowers in terminal spikes pointing one way. The roots of all the above named species are composed of many white fleshy fibres.

L. fulgens. The fulgent cardinal flower, is a native of Mexico, and was introduced into England in 1809. Leaves narrow lanceolate, toothed, revolute at the edge; stem pubescent, (downy) three feet high; its bright scarlet flowers in terminal racemes.

L. splendens. The splendid cardinal flower is also a native of Mexico, introduced into England in 1814. Leaves narrow lanceolate, toothletted (furnished with little teeth), flat at the edge; stem quite smooth, three feet high; flowers brilliant scarlet in terminal racemes.

L. speciosa. The shewy cardinal flower, "is a new and very late introduced variety; it was found growing among the other varieties, in a flower border in Scotland, and is supposed to be a hybrid between siphilitica, and either fulgens or cardinalis; its rich purple blossoms form a fine contrast with the bright scarlet ones of the other varieties." The leaves like fulgens; stem also pubescent.

L. siphilitica. The blue cardinal flower is a native of Virginia, and introduced into England in 1665. "It has its specific name from its supposed efficacy in the cure of the siphilis, among the North American Indians. Sir William Johnston purchased the secret from them, but Woodville says its virtues have not been confirmed by any instance of European practice." Stem erect, simple, hirsute (covered with stiffish hairs,) two feet high; leaves lanceovate, sub-serrate; raceme leafy, with flowers of a bright sky blue; calyx hirsute, with reflexed sinuses.

The treatment is the same for all those enumerated. I had them in great perfection the last season, having a soil and situation well adapted for their growth, with a little preparation. The soil naturally is a black heavy loam, upon a clay and gravel subsoil, a little springy, and never very dry. On the spots designed for their location, I threw four or five shovels full of river sand, and two of partly decomposed night soil compost, and had it thoroughly incorporated with the soil, for two feet round, which made it quite light, and placed the plants in the centre. They began to flower in July, and continued to throw up vigorous stems with an abundance of flowers, until October. Their growth was so luxuriant that it was necessary to tie up to slender rods stuck into the ground, a number of times to prevent them from being broken by the wind. Cardinalis and fulgens were more than three feet high: the others between two and three feet. They may be easily propagated, by laying the stems in July and August, or dividing the roots in the Spring.

"Van Mons observes, that *L. cardinalis* perishes in sandy soil, but becomes strong and multiplies in loam, while at the same time, it produces the most brilliant colors in the former.

The same thing may doubtless be predicted of the other species;

it being a well known law of nature as to living beings that their energies are concentrated in proportion to the obstacles thrown in the way of their expansion."

The following account of the cultivation of *L. fulgens* is from Loudon's Encyclopædia of Gardening; the same treatment with the other species will undoubtedly produce the same effect.

This plant has assumed a character of uncommon magnificence, under the management of Hedges, which is thus detailed by Sabine: "In October, he takes off the suckers, which are thrown up from the roots of the old plants, and puts them in small pots, one in each pot, and keeps them in a cold frame, until the middle of January. He then removes them into a cucumber frame, when the heat is kept up to 65 degrees of Fahrenheit's scale, by linings of hot dung; a pine succession stove of the same temperature, will equally suit them. In the middle of February they are shifted into pots a size larger, and at the end of March or the beginning of April they are again moved into larger pots, and in the middle of May they are the third time shifted; the pots to be used for this last shifting are twelves. As soon as the plants are well rooted, after the last removal, they are carried into a peach house or green house, in which they continue until they flower and are hardy enough to bear the open air. When they are preparing to throw up their flower-stems, and during their growth, it is necessary that they be kept very moist, which is effected by putting pans under the pots, and keeping the pans constantly filled with water. The plants thus managed, begin to flower early in July, and the spikes continue to blow and are covered with flowers through the Autumn. The compost used in the pots is formed of equal parts of brown or yellow loam and leaf or bog mould, to which is added sand, equal to one fourth of the previous composition, the whole being well mixed together."

The following are the dimensions of a plant managed as above directed: "The base of the stem was near six inches in circumference; the height of the centre spike was five feet and a half; the shoots from the bottom and sides of the main stem were in number seventeen, rising together round the principal stem to the height of about four feet and a half. Hedges states, that the plants were, in the two preceding years, much taller than that now described. Some few plants were observed to be rather shorter, and to have a more bushy appearance; this is produced by stopping the centre stems after the last shifting, by which the side shoots become more vigorous

and fuller of flower, and in this state they form handsome companions to the flowering plants of *Campanula pyrimidalis*, whose beautiful spikes of blue flowers agreeably contrast with the brilliant scarlet of the Lobelia."

Lobelia inflata, or bladder-podded Lobelia, is probably familiar with every one, at least its name. Its virtues are so highly praised by some, that we are almost led to suppose, that it is a sovereign remedy for all diseases that flesh and blood are heir too. Lobelia, hot-drops and steam, work wonders. This plant has become so notorious, that fields of it are cultivated by the Shakers at Harvard. Small fields, I ought to say, but enough, in all conscience, one would suppose, to throw the whole country into a vomit. The plant is an annual of not much interest, with small blue flowers, and inflated pods or seed vessels, common in dry pastures and road sides. The whole plant is a violent emetic.

Lobelia spicata. Synom. pallida. A beautiful indigenous species, common in most pastures and by the road sides, with lively pale blue flowers in long terminal spikes, in July. Stem upright, smooth, a little hairy, one and a half foot high. Leaves spatulate, obtuse at the end, tapering at the base, slightly toothed or crenate, pubescent at the edge and underside, sessile. I have never seen this species cultivated, but have no doubt but what it would be very much improved, and prove a valuable acquisition to the border.

L. amœna is a desirable species, found in the Southern States, and not in collections with us. It is represented as having a many flowered one sided spike of beautiful blue flowers; stem erect, very smooth, three feet high ; leaves broad, lanceolate, serrate ; divisions of the calyx entire ; inferior divisions of coral ovate, acute. It would probably endure our winters as well as fulgens with protection.

L. dortmanna. Water Lobelia. "From Dortman an apothecary, who first sent it to Clusius. A beautiful aquatic, with leaves reflected into an elegant curve at the end, and the fine blue flowers in loose spikes." This plant would be suitable to ornament the aquarum, or pieces of water, where introduced into the garden. Bigelow gives the following minute description. "Leaves linear; two celled, entire, stem nearly naked. A very singular aquatic plant. The leaves grow in a single tuft at the bottom of the water. They are from one to three inches long, recurved, blunt, and of a fleshy appearance. On cutting them across, they are found to consist of two empty parallel tubes. The stem rises out of water, bearing a few remote pendulous

flowers, of a pale blue col or. Segments of the calyx acute persistent. Tube of the corolla prismatic, its segments lanceolate. Capsule superior and inferior, tipt with style, two celled. Seeds numerous, ovate, compressed, black. The whole plant gives out a milky juice on being broken. Found in Fresh Pond (Cambridge,) July.

L. verbascifolia. Mullen leaved Lobelia, is a tall species six feet high, from Nepal, said to be hardy. It is not in any collection in this vicinity to my knowledge; but would be a valuable acquisition to the border or shrubbery. It has coarse rugose leaves, and a long spike of fine red flowers.

L. tupa, is a splendid gigantic species from Chili, but probably too tender for open ground cultivation, unless kept through the winter in the green house. I have seen it in flower, and thought it was exceedingly rich. The flowers are brilliant orange scarlet, and when in perfection eight feet high.

[For the Horticultural Register.]

Art. III.—*Leaf from the Diary of a Naturalist.*

It was a delightful afternoon for a winter's day, such as often precedes more inclement weather, and closes long and unpleasant storms of wind and rain, that I walked out on the bare and rocky hills near S——, to mark the progress of the season, and enjoy the pure fresh air. The deep snow had melted from the hill-sides, and lay only in drifts in the ravines, while the dark rocks were yet dripping with the effects of the late thaw. But nature was shining in her accustomed beauty, and presented to the sensitive mind, impressions at once delightful and instructive. I found myself not the only admirer of this bright gleam of sunshine and beauty. A little insect, of the elegant family of *Chrysomeliadæ,* I observed near a green tuft of moss, apparently crawling forth from a long wintry sleep of many weeks, and wondering at the mild, bland weather which had visited his tenement. The moss and the insect I regarded with pleasure, and could not help reflecting on the innumerable sources of instruction and delight, which are everywhere perceivable. As I passed onwards, other and different species of Cryptogamic plants presented themselves, — feathery Filices, velvet or silken Musci, coriaceous and curiously tinted Lichens; the withered stems of the past glories of more gaudy

flowers, the singularly fantastic, or elegantly developed spray of some noble tree, the evergreen, unfading richness of the hardy Pines.

And, reader! I gathered botanical specimens for my further observation and study, living and growing specimens, on the 12th of January! So early in the season of the new year, the "Polytrichum commune" had assumed its silken tufted calyptra, and elevated its delicate fruit stalk to half its natural developement. I had never seen it in this state so early before, although one of the first mosses which evince renewed vitality. And there were its deep green leaves saturated with moisture, and expanded in perfection, its starry, barren perichœtia on one stem, and fertile thecæ on another, with an occasional intruder of a singular stalk of "Cenomyce pyxidata," with its tiny vegetable cups for invisible fairies, and such like mimic, mirthful gentry of ancient days. A Lycopodium, with its axillary conceptacles shining like particles of golden dust, seemed reviving to the kindly influence of moisture, and lent its aid to amuse a few idle moments at home, in the use of the microscope.

Do not a few hours of sunshine and mild air in mid winter, give us some faint idea of the beauty of an arctic spring? Methinks the transition from intense cold and barren snow covered plains, to the vivid green of the shooting moss, or the renewed growth of the gray but useful Lichen, and then the intensely colored flowers which thrive best in such short summers, must possess a thrilling interest. Even a Canadian spring is wonderful in its developement, and we can scarcely believe, that ten days past the earth was clothed in virgin whiteness, which now is breaking and budding forth into living green.

"Mysterious round, what skill, what force divine,
Deep felt, in these appear — a simple train,
Yet so delightful mix'd, with such kind art,
Such beauty and beneficence combined;
Shade unperceived, so softening into shade;
And all so forming an harmonious WHOLE,
That, as they still succeed, they ravish still."

J. L. R.

Art IV. *On the Formation and Structure of Buds.* Communicated by Mr Joseph Breck.

At this season of the year, when vegetation is suspended, and the earth is clothed with its fleecy vesture of snow, there is but little to interest the casual observer; yet the lover of nature will always find something to gratify the inquiring mind. Who that has considered the formation and structure of buds, and examined their various appearances in their dormant as well as in their progressive state, by the aid of a microscope, but will acknowledge the wisdom and contrivance of nature's God, and confess that in this, as in all his works, however insignificant or unnoticed they may be, his power, wisdom and goodness are wonderfully displayed.

Various have been the theories of distinguished vegetable physiologists concerning the formation of buds; and although their structure has been examined with much attention, yet little was known of their physiology until the experiments and observations of Knight were made known to the public. Some have supposed they were originated in the bark, while others have contended that they spring from the medulla or pith, and that every bud may be traced by a white line through every concentric layer of the wood, till it touches the medullary sheath. "If this were true, buds must be preorganized germs, and can be deposited only in the first year's growth of the stem or branch." Mr Knight has established the doctrine that they are generated in the alburnum or sap-wood. He says, "I am much inclined to believe that they are generated by central vessels, which spring from the lateral orifices of the alburnous tubes." "By interrupting the circulation in the alburnum, buds may be artificially produced; and nature has provided means for their reproduction, in those cases where they may have been accidentally destroyed. Several curious facts on this subject may be obtained by an examination of the potato, which, like other tuberous roots, are studded with them."

How buds are formed, we must leave to those who have devoted themselves to the subject. To trace so wonderful an operation of nature, requires a perfect knowledge of vegetable physiology, close attention, and powerful magnifying instruments; and even then, who can comprehend or explain all the mysteries that are progressively developed in what is called a simple bud.

Buds are formed the summer previous to their expansion, in the axil of the leaves, with the exception of the terminal ones, or those

formed on the roots which produce suckers. "By the aid of the lens the rudiments of the bud may be perceived in the axil of about the third leaf in the succulent stem of the common lilac, in early spring, when just expanding its leaves. As the bud advances in growth, it gradually assumes somewhat of a pyramidal form; and the organization of the germ, or new branch and leaves within it, commences. Towards the end of summer, the lobes begin to appear as opposite scales, from amidst which the apex of the germ, covered by other scales, is observed obtruding." "The progress of the organization advances a little in autumn; but is not perceptible during winter, and it is not until the following spring that the embryon branch is very conspicuous. As the season advances, the bud lengthens, and at the moment of its opening, the young branch is seen projecting, clothed with its leaves, which, gradually unfolding themselves, display in their axils the rudiments of future buds, destined to run the same course, and become in turn the parents of another series."

Buds are of two kinds — leaf buds and flower buds. Those that produce leaves are generally long and pointed, but assume various shapes, according to their internal arrangement. The flower buds, with the exception of those in aments, are mostly short and round. Each leaf bud may be considered a distinct individual, containing within itself the rudiments of a branch or tree, which, if planted in the earth under favorable circumstances, will develope itself as such; or it may be transferred to another tree, as in the well known process of budding, by which the stock is converted into a tree, possessing all the peculiar qualities of the parent tree from which the bud was taken. Those who have performed this interesting work, cannot but have noticed how easy are the operations of nature in producing the union between the stock and bud. Mr Knight states that "a line of confused organization marks the place where the inserted bud first comes in contact with the wood of the stock, between which line and the bark of the inserted bud, new wood, regularly organized, is generated. This wood possesses all the characteristics of that from which the bud is taken, without any apparent mixture with the character of the stock in which it is inserted. The substance which is called the medullary process, is clearly seen to spring from the bark, and to terminate at the line of its first union with the stock."

The analogy between buds and bulbs is so close, that some physiologists arrange them together. Some herbaceous plants produce true bulbs in the axil of their leaves, as may be seen in the Tiger Lily,

(*Lilium tigrinum*) which, when mature, detach themselves and fall to the ground, having their rootlets or fibres already formed for drawing their nourishment from the earth. The same may be seen in *Lysimachia bulbiferum*, and also in other plants that might be named.

The embryos of bulbousplants, as the Narcissus and Hyacinth, protected by their numerous coatings, resemble very much the embryo of buds protected by their lobes and scales. Bulbs like buds are formed the season previous to their developement. The bud like a bulb, if properly managed will throw out its rootlets when planted in the ground, and produce a perfect plant.

From these facts, it will appear that the analogy is good in some respects. There is, however, one important difference; the bulb contains within itself all the important functions for supporting itself. Whereas the bud without a portion of the liber and extraordinary care, will almost invariably perish.

Having been much amused of late in dissecting and examining buds of various kinds, by the aid of a microscope, it has been my desire that the attention of others might be drawn to this interesting subject; as we see in their various shapes and different protections of scales, gum, varnish, wool, hair, &c., the providence of God exhibited, in shielding their tender embryons from the rigor of the climate, and the care he exercises over the most minute but important operations of his hands. The same wonderful variety may be observed in the formation of buds as in everything else; every species differing from each other in some particular. The following observations were made about the first of February; their appearance, however, is nearly the same, until about the 10th or 20th of March, depending upon the season, and the character of the tree. It will then be noticed that interesting changes are daily taking place, especially in the aments of the Willow, Poplar, Alder and Hazlenut; each of which, though concealed from the naked eye, display their ever varying beauties in unrivalled splendor.

The buds of the Horse Chestnut, (*Æsculus hippocastanum*) may be considered as among the largest and most perfect specimens for analyzing. Those on the terminal branches are large, of an oblong shape, swelling in the middle, and abruptly tapering to a point at the end; its numerous imbricated scales lie close to the bud, the whole of which is covered with a thick coating of varnish, that renders it impervious to moisture. The bud cut lengthways with a sharp knife, shows the rudiments of the leaves and stem closely imbedded and compressed in

a woolly substance. But the appearance of the bud when cut transversely, below the swell, presents the most curious aspect. In the centre may be seen the future stem with its medulla or pith, and its tubular cells surrounded by a layer of partially organized alburnum, and bounded by the liber; in four circles round the stem the future opposite leaves, completely folded, may be discerned, of a brownish, pale green: the spaces between the circles and the covering of the bud are solidly filled with cottony substance, which by the aid of the microscope assumes the appearance of coarse wool. The whole is encircled by eight or ten coatings of scales, appearing like strips of India rubber wound around it — and, as we should suppose, as impenetrable to water. When the leaves and stem evolve from the bud, this woolly substance may be seen upon them in great abundance. It is remarkable that the whole growth of this tree in length is finished in the short space of a fortnight.

The Shagbark or Shellbark, (*Juglans squamosa*) may be distinguished from other species of the Walnut, by the shortness of the two outer scales of the bud, which extend but half their length. The buds of this tree are also large, and of a fine form, but very different from the Horse Chestnut, being entirely destitute of gum, varnish, or of wool. It is swollen in the middle, and terminates at the apex in an acuminate point: after taking off the two dry, loose scales, we find the bud enveloped by successive coatings, each coat solidly wound around those within. The outer coat, when magnified, resembles coarse seal-skin with the hair on; each successive one being clothed with softer hairs, until the embryo leaves and stem appear encompassed with the finest silk.

The flower buds of Sweet Viburnum, (*Viburnum lentago*) are terminal, about one inch long, round and full above the base, rapidly tapering off and ending in a long point; its outer covering consists of two dry scales, a little pubescent, closely united by seams on each side, from the base to the apex; beneath this are coverings of a similar description. By removing carefully these protections, the cyme of flower buds with their stems will be perceived, of a globular shape, but entirely destitute of any farther defence, semi-transparent, of a greenish white. At the base of the bud, and opposite, are two very small leaf buds of an oblong shape, not more than one sixteenth of an inch in length. Besides these, ten or a dozen incipient buds may be discovered encircling the base of the flower bud, ready to burst into activity in case of accident to the others. The lateral leaf buds are

opposite, about one eighth of an inch long, laying close to the stem, and covered similar to the flower buds; beneath the buds and on the scar occasioned by the petiole of the fallen leaf, may again be seen the ample resources of nature in the formation of numerous minute protuberances, which are no less than the first rudiments of buds.

The ament of the Swamp Willow, (*Salix eriocephala*) is enclosed in a single scale, ready to burst upon the first intimations of Spring. Upon removing this outside covering, we find the embryons secured from the severities of the season by a long silky substance. When the ament is cut transversely, we find the centre to consist of medulla or pith, partially formed alburnum, surrounded by a minute ring of liber; to which are attached closely imbricated, and thickly studded scarlet bractes or scales, thickly clad with numerous silky hairs, many times their length; beneath each bracte, are seen two minute green globules, which are the rudiments of the anthers, this being the barren ament, or from the male tree.

The aments of the Hazlenut, (*Corylus americanus*) are without an outer covering; but its imbricated scales are furnished with a woolly down and lie perfectly close.

The little aments of the common Alder (*Alnus glutinosa*) are also destitute of the brown outside scales. When viewed through the microscope, they look like the cone of the White Pine; the scales are fleshy, close, and covered by a resinous substance.

The bud of the *Ailanthus glandulosa*, which although it contains the rudiments of a leaf of the largest size, is but a small projection upon the surface of the stem; the outer covering is a pair of opposite, dry, hairy scales; the germ is enclosed by numerous alternate, opposite scales.

More inconspicuous still are the buds of the Catalpa, which are formed in a depression of the wood, having the appearance of a rose partially expanded; the yellowish brown scales representing the petals. When reduced to a point, the bud presents nothing but a mass of inorganized matter; probably the formation is not complete until Spring; it being one of the latest trees to evolve its buds.

The buds of *Bignonia radicans* are formed very much like the Catalpa; a little more elevated from the surface of the stem, but a very indistinct trace of an organization.

Well formed buds may be considered as indicating a hardy tree, while those of an opposite character the reverse. It is said that "in mild, or even in warm countries, buds have no scales, as they do not

require them. Those trees that form an exception to this observation can thrive indifferently in any climate; so that the rule holds good in all distinct cases. The scales are considered by many as imperfect leaves."

"Some have fancied that they have seen the rudiments of every part of the tree concealed in the bud."

We believe, however, that such observers must have not only powerful magnifiers, but also extraordinary vision and acuteness of perception.

Art. V.—*On the Culture and Uses of Salsify.* Communicated by Mr J. W. Russell.

G. C. Barrett, Esq.

Sir — For the purpose of insertion in the Horticultural Register and Gardener's Magazine, I herewith present you with a few brief remarks on the culture and uses of Salsify, (*Tragopogon porrifolius,*) the cultivation of which cannot be too highly recommended; more especially to those who make it their business in supplying the Boston market with choice and rare productions.

Salsify is a native of England, and is universally esteemed there to be very wholesome and nutritious. So much so, that there are but few families that have a garden, who are without a profusion of this delicious culinary vegetable. The root, which resembles a parsnip in appearance, is white, long and tapering, and is the part most valued for culinary purposes. It is boiled and eaten like a parsnip, or parboiled, cut into slices, and fried, and dished up for the table as a sauce for boiled fowls, turkeys, &c. When sliced and fried in batter, it very much resembles in taste the oyster, whence its local name, Vegetable Oyster.

The leaves resemble those of the *Leek* in their appearance. The young tops taken from the roots in the Spring of the year, and tied up into small bunches and boiled, much resemble in taste asparagus. A few of the roots placed under a green house stage, and slightly covered with soil, would soon start to grow, which might supply the table with a good substitute for asparagus through the winter months. I am aware of every *Gardener's* understanding this subject thoroughly.

Nevertheless, this may meet the eye of some person that has not become acquainted with the growth of this particular plant, and from the perusal of this communication, might be induced to give it a fair trial, which is all that is necessary to insure *success*. And it is very probable that others having the same facilities would be stimulated to do likewise; because any person who has ground that produces fine parsneps and carrots, will be enabled to grow Salsify to great perfection. It is an astonishing fact, that this admirable article of food, so much wanted and so easily cultivated, should have been so long neglected. That Salsify is sometimes found in the market for sale, I do not attempt to deny. However, I am warranted in asserting this much: that the *demand* for this inestimable root, if good, is far greater than the supply. For I am credibly informed that there are hundreds of families in Boston, that would annually lay in a winter's stock, if it could be obtained. A deep, mellow, friable, soil is the most desirable for its growth. If it has been highly manured two or three years before wanted for this purpose, so much the better; as there will be no occasion to manure the ground at the time of cropping. The seed should be sown the first week in May in shallow drills a foot apart, covering it about an inch deep; and patting the soil close down upon the seed should not be neglected, as it is indispensably necessary for its well doing. When the plants are three inches high, thin them out to five or six inches apart, observing to keep the ground clear of weeds by frequent hoeing. In October the roots should be carefully taken up and packed in sand or soil, in a dry cellar, and can be used from October to April.

Mount Auburn, Feb. 8, 1836.

[For the Horticultural Register.]

Art. VI.—*Result of Experiments.*

Mr Fessenden — Had the results of the experiments which I made in conformity with the intention stated in my communication inserted in the Hort. Reg., Vol. I. p. 131, et seq. been satisfactory, they would have been communicated to you at an earlier period; but accident, and the extraordinary wetness of the season, prevented me from forming any conclusive opinions. However, to redeem my pledge I now send you the following statements.

On the 28th of last April, I sowed on a rich, deep, sandy loam, per-

fectly level, two rows of Knight's tall Marrowfats. These rows were each twentysix yards long, and about four feet and a half distant from each other. The seeds in the eastern half of the northern row, and the western half of the southern, were sown in the usual way, and earthed up twice. The remaining halves were sown in drills, six inches deep, and covered about three inches, leaving a hollow of three inches, during the whole growth of the plants. The last mentioned, came up a day sooner than the others, but I could see no difference in their subsequent growth. Much rain had fallen between the time of sowing and the 25th of May, when all the plants were remarkably vigorous. On this day, a workman who was carting manure into the garden, carelessly left a gate open, of which three vagrant cows took advantage, incontinently devoured more than one half of this crop of peas, and other grievous damage did, to the serious derangement of my experiment and good temper. The plants in the concave rows, were the greater sufferers, though the beasts were tolerable impartial in their selection. Contrary to my expectations, the cropt plants soon rallied, overtook those which had escaped decapitation, and ripened their seeds about the same time. The produce of all was abundant, the vines from nine to ten feet high. After a most careful examination, I was unable to decide which of the two modes of planting was preferable ;* but, as they were equally good in an unusually wet season, we may fairly conclude that had the contrary been the case, the crop in the concave or hollow rows, would have collected and retained most moisture, and consequently have been most productive.

I believe the old practice of earthing up potatoes is now very generally admitted to be injurious. A carefully conducted experiment which I made last year, proved the correctness of this opinion. My unearthed rows produced ten per cent more, and the potatoes were of a more equal size and of fairer sample.

I planted Mangel Wurtzel at one foot, one and a half, and two feet distances apart. The aforesaid four footed trespassers consumed a great part of all these, but of the survivors, the average size of the plants, one foot from each other, was as great as that of the roots which were farther separated. The whole crop was excellent; several roots weighing from ten to fourteen pounds. The soil was remarkably rich, and had only been two years in cultivation.

I intend this year to plant fifteen acres of Capt. Chandler's early

* The crop was gathered from time to time for family use.

twelve rowed corn on a deep, warm, light loam, rather sandy, which has never yet been ploughed, and will endeavor to ascertain, by experiment the most advantageous distance at which the hills of this species can be planted in such a soil. The result shall be sent to the New England Farmer. I am, Sir, respectfully yours,

February 12, 1836. QUIVIS.

ART. VII.—*Some Remarks on Temperature Considered in Relation to Vegetation and the Naturalization of Plants.* Communicated to the Mass. Hort. Society by Mr A. J. DOWNING, of Newburgh, N. Y.

(Concluded from page 72.)

THE choice of situation and aspect is another important consideration in the naturalization of plants. We never place a plant of a delicate nature in aspects exposed to the utmost inclemencies of the weather — in situations open to the fury of the coldest winds, or the raging of the most boisterous storms. We naturally seek on the contrary to place them in a sheltered situation, in an aspect favorably disposed to catch the genial rays of the sun in summer, and to prolong as much as possible the duration of that favorable season. Hence the use of walls and trellises, and the choice of particular aspects best calculated to favor the object in view. In England, many fruits, require a wall, to come to maturity, which ripen perfectly with us as standards, and although walls are as yet but little used here, we can easily imagine that many partially tender trees and shrubs, might be brought to perfection upon them which the inclemency of our winters forbids us to cultivate in the open air.

Apart from shelters of this description, the character of the soil and situation, demands the utmost attention. Soils that are of a cold, clayey and heavy texture, particularly if they retain water, are totally unfit for the growth of tender plants. They should be planted in a light, friable and porous soil, as dry as the peculiar constitution of the plant will admit, for not only is a wet soil more liable to be deeply frozen, but also the exposed parts of the plants which grow in it. Even hardy and naturalized trees are often severely affected by the cold in a soil saturated with moisture. The philosophy of this is well known to every physiologist. In moist soils, the plant is surcharged with watery fluid, the annual depositions of wood are large, but not

firm and well calculated to resist the intensity of cold; the leaves are longer completing their articulations with the stem, and as a consequence of this the young shoots are continued longer in a growing state, and remain succulent and unripened at the approach of winter, when the first severe frost destroys their vitality. Beside these facts, it is well known that water (and the sap of plants in its primary state is but little more) is a better conductor of heat and cold, than either the woody fibre of trees, or the particles of air which occupy in some measure the place of watery fluid, in a well ripened branch. Susceptibility to injury by frost in ligneous plants, is therefore increased with the presence of watery fluid, and diminished by the presence of firm well ripened annual layers of wood. A knowledge of this fact is of the greatest importance to the agriculturist, in the selection of soils and situations for crops which are but imperfectly naturalized. We may illustrate this by remarking, that plantations of the Chinese Mulberry, (*Morus Multicaulis*, a tree that is justly exciting the greatest attention in this country, and which deserves every effort at complete naturalization,) which were situated upon dry gravelly soils, even if in cold aspects, withstood almost perfectly the extreme rigors of the last winter in the Eastern States, when extensive fields of the same tree, in moist soils, were entirely cut down to the ground in a great majority of instances.

In Europe, the advantages of a dry soil for the naturalization of plants are well known, both theoretically and practically, and many plants that formerly required the protection of a green-house, are by the proper choice of dry and porous soils, inured to the severity of ordinary winters. So well is this subject understood in England and France, that Camellias and Oranges have, in favorable situations, been quite naturalized. In the latter country it is quite remarkable how many comparatively tender exotics, generally protected in green-houses, are preserved perfectly in large barn-like buildings, without the aid of fire, during the whole winter. "The secret of this," Loudon observes, "lies in the dryness of the air of France, and in the gardener having previously *by withholding water, matured the growth of the leaves and ripened the wood;* in short in his having reduced the plants to a dormant state before housing them." In cases where it is desirable that the utmost pains should be taken, as in the case of new and rare shrubs, creepers, &c. the gardener will facilitate the object in view by trenching the soil and artificially producing a dry subsoil by underlaying the surface mould with a strata of stones or

very coarse gravel: thereby checking too vigorous a growth, causing a small but firm annual deposit of wood, and placing the vegetable in a state of rest long before the winter frosts commence.

A variation of this mode of naturalizing, consists in placing many tender kinds of herbaceous plants, and small shrubs upon dry rock-work or aggregations of stones mingled with soil, where they are found to thrive perfectly. We observed in the Botanic Garden at Cambridge, Mass. an *Azalea indica*, and a species of *Erica*, that had braved the exceedingly low temperature of nearly 30 deg. [Fah.] below zero, the past winter, having been planted for several years previous in a mass of rock-work, where they had annually matured their wood in the most perfect manner. Those persons who are acquainted with the comparative delicacy of these plants, in a climate so cold as that of Massachusetts, will appreciate at once how thoroughly they had become naturalized by this simple process.

Naturalization by external protection, next deserves our attention. It is a common practice to protect many shrubs and trees with a covering of straw or mats at the approach of winter, during their young state, knowing that as they become stronger and more bulky in size, they will also acquire additional hardihood. This is an effectual practice in its way, and we believe that considered as an auxiliary in naturalizations, some useful hints may be gathered in relation to it from recent discoveries made in the physiology of plants. It was formerly the opinion of some *savans*, among others Hunter, Schœpf and Salome, that vegetables having a circulating system of fluids and a sort of respiration analagous to those of animals, ought to have therefore, and had, a property of developing a certain quantity of caloric or heat within themselves. Recent experiments, however, made by Schutzer and Halder, and more latterly by Dr Goeppert,* of the Botanic Garden of Breslau, seems to have proved, that "vegetables appear to retain a certain medium temperature, which cannot however be considered as originating from heat evolved by the functions of the plant, but can be satisfactorily explained by a reference to the *bad conducting power* of the vegetable fibre, and the wood by which the temperature of the surrounding ærial strata, penetrates but slowly into the interior of the plant."† What we would wish to deduce directly from this is, that many woody plants, on which it is proposed to try acclimatising experiments by external protection, might in many instances with more

* *Uber die Wærme-Entwicken lung in den Pflanzen, &c.*, Breslau, 1830.

† Jameson's *Philosophical Journal.*

chance of success, be reared under shelter *until they attained considerable thickness of stem* and induration of wood, when they would from their increased non-conducting capacity, be much better able to withstand the cold, if protected a few seasons, than the same species, if reared from infancy in the open air. As an illustration of the advantages which size and diameter of stem give to tender trees in withstanding rigorous cold, we may mention that we saw in the nurseries at Philadelphia the following trees, viz.: *Acacia julibrissin*, *Pinckneya pubens*, *Magnolia grandiflora*, and *G. eliptica*, *Gordonia pubescens*, *&c.*, of some twenty or more years growth, that had survived uninjured during the past winter (unparalleled for depression of temperature for fifty years past), the extraordinary low temperature of 12 deg. or more below the zero of Fah., or 44 deg. below the freezing point. That this was owing in a great measure to their having become naturalized in that locality, there can be no doubt. But the ordinary lowest temperature of Philadelphia is some 20 or 25 deg. above that of the last winter, and we conceived that these trees survived so perfectly the increase of cold only by virtue of their large size, thickness of bark and wood, and the consequent thickness of non-conducting substance, to protect the juices of the plant and the vital organs from the effects of frost.

The simplest and perhaps most effectual method of preserving plants by external protection, is to be found in the well known practice of enveloping either the whole or a portion of the stem and branches with a covering of dry straw, pieces of Russia matting, or moss and hay, firmly bound with straw ropes. For small plants, boxes or empty casks, with a light in the top, (or which is preferable, in the north side,) are often used. The branches of evergreen trees, as the pine, hemlock and spruce, where they can be procured, are excellent materials for this purpose. It is, we believe, customary in some parts of France where the fig is extensively cultivated, to bend the branches down to the earth every autumn and cover them with a thin layer of soil: in this way the fig, though a tender tree, can be cultivated to a great extent in the northern districts.

We strongly suspect, after all that has been said of protection externally against the influence of cold, that the evil effects which plants suffer, arise not so much from the *congelation* of the exposed parts of vegetables, as the *rapid and hasty thawing* to which they are often exposed in this climate by the sudden influence of the sun after continued cold. Who has not witnessed some tender tree on the north

side of a wall, some few herbaceous plant in the shade of a hedge or fence, or even the grass in the northern exposure, preserving their greenness and vitality through the chilly season of winter, when their equally tender neighbors exposed to the sun, have suffered severely, and even perished entirely? The cause of all this is probably that the sudden glancing of the warm sun upon the frozen branches, leaves or roots of the tender vegetable, *causes a sudden dilation in the crystals of ice* that are formed in those parts, which consequently in their expansion distend and rupture the spiral vessels, and other parts filled with semi-fluid matter, and destroys those organs of the plant necessary to its vitality; in short, something takes place analogous in its effects to the bursting of the blood-vessels in the animal system. This is very striking in the splitting of the stems of large trees that occasionally happens in cold climates, and is often attended with a loud noise.

In all northern countries where the earth receives an annual coating of snow, the husbandman is well aware how beneficial to his fields is this protecting mantle of nature — so much so, that in this country it is a common saying among farmers, that a covering of snow is equal in its beneficial effects to a coat of manure. The benefits in many cases are not exaggerated, for the snow not only prevents the loss of the internal heat of the earth by radiation, and thus protect vegetation upon its surface, but it has also a powerful influence in shielding the exposed parts of plants from the alternations of freezing and thawing, and the injury they would receive from the sudden action of the sun when in a frozen state. The results are not less beneficial, upon a smaller scale, to the horticulturist, while it affords him also a hint of the efficacy of slight coverings over plants near the surface of the earth, as in this manner many of the herbaceous and stemless plants of the south may be preserved in security during our winters.* We should not forget to mention in this brief essay the idea, first put in practice we think by the enlightened M. Soulange Bodin, of the Horticultural Institute near Paris, of attempting naturalizations by grafting partially tender species of plants upon hardy species of the same or a kindred genus, able to withstand the effects of cold.† The success of his experiments at the time the results were made known was flattering. His method was to graft upon large

* A great number of the beautiful varieties of China Roses, Carnations, &c., may be preserved in this way by slight coverings of straw, even in the cold climate of Canada.

† Annales de Fromont, tome iv. p. 309.

robust stocks, at some considerable distance from the ground, availing himself thereby of the protecting properties of the stock, and of the power which he conceived it to possess of maintaining its temperature by the communication which its deep roots had with the warmer soil. We believe this mode of naturalization might be very effectual south of the Potomac, where the soil is never very deeply frozen, in acclimating trees and shrubs of still warmer climates, and we recommend it to the notice of the horticulturist in all cases where practicable in this region.*

It is proper to remark here, that persons about to make experiments in naturalizing plants, should, when they choose a locality, endeavor to avoid all low valleys, especially if abounding with springs or streams of water, as the most unfavorable of all situations for the attainment of the object in view, on account of their being more subject to early and late frosts in autumn and spring, and to intense coagulation in the depths of winter. Extensive slopes, however, by the sides of large rivers and other bodies of water, are excellent sites for the purpose. Some of our large inland lakes, those immense bodies of water which are rarely frozen over, have an astonishing influence in ameliorating the severity of the winters in their neighborhoods, and many tender trees and plants might be naturalized in their vicinity, and thus become adapted through their progeny to much colder situations.

Such are the principal facts already known, which should claim the attention of all persons whom pleasure or interest may induce to attempt the naturalization of plants in this country. Although it is a practice which has hitherto proceeded nearly at random, and has been rather the amusement of the amateur cultivator than an object of careful attention, we are persuaded that with a portion of the assiduity directed toward it, that the other branches of horticultural science have received, it may become the means not only of a great increase of gratification to the horticulturist, in the acquisition which the garden will receive of beautiful and valuable flowering trees, shrubs and vegetables, but also that it may to a certain degree be productive of very considerable advantages to the agriculture of our country. The United States embrace almost every desirable variety of climate, and we believe that in time the greater majority of useful and beautiful productions of the vegetable kingdom may be successfully produced

* We observe the Messrs Prince & Sons advertise trees of the Morus Multicaulis grafted upon the White Mulberry, which they state to be hardier than if upon their own roots.

in our own territory. We confidently anticipate the period when the vine and the silk culture shall be carried to maturity in the extreme northern portions of our country, as the olive, the cocoa, the palm, the plantain and banana, the cochineal-cactus, and even the tea-plant, will in time, undoubtedly, flourish in perfection in the southern portions of it. With so extensive a range of climates, the field for experiments is equally extensive; varieties of the different productions may be originated, suitable for numerous localities and latitudes; and soils and situations may be chosen, best adapted to the naturalization and cultivation of the different plants. Nature has already furnished us with the most extensive variety of vegetation to be found in any temperate region, and it is only necessary for art to second her intentions and our country may boast of all that is most delightful and gratifying to man among the products of the soil.

In the mean time we look to our horticultural and agricultural societies, composed as they are of the learned, scientific and practical portion of the community, who are devoted to these subjects, for the increase and dissemination of information relating to them; for the report of such experiments and facts as have already been made and ascertained, and the encouragement of new and more extensive trials and experiments in the different sections, soils and climates of our fertile and highly diversified country.

[From Harrison's Floricultural Cabinet.]

ART. VIII.—*A Description of Roses.* By Mr T. RIVERS, Nurseryman, Sawbridgeworth, Hertfordshire.

(Continued from page 75.)

PERPETUAL OR AUTUMNAL ROSES.

NAME.	COLOR.	FORM AND CHARACTER.
Blanche Lamoroux,	purple shaded rose,	cupped and very double.
1 Billiard,	rose,	expanded and double.
1 Belle d'antonine,	pale flesh,	expanded and double.
1 Belle Italienne,	deep rose,	cupped, large and double.
1 Belle de Trianon,	lilac rose,	cupped and double.
Camailleux remontante,	lilac rose,	cupped and double.
1 Clair Duchatelet,	purplish red,	globular and double.
3 Crimson perpetual.		
Rose du roi, or Lee's.		
Crimson perpetual,	light crimson,	cupped and very double.

1 Constancy,	pale flesh,	cupped, very large and double.
Diaphane,	crimson,	globular and double.
1 Delice d'hiver	bright rose,	expanded, large and double.
1 Desespoir des amateurs,	lilac rose,	compact, small, and very double.
Flore,	bright rose,	compact and very double.
Ferox,	purplish deep rose,	globular, large and very double.
4 Four seasons, blush,	rose,	cupped semi double.
3 Four seasons, white,	white,	expanded and double.
2 Four seasons, Monstrous, or Bullee,	pale rose,	globular and large.
2 Four seasons, thornless,	pale rose,	expanded and double.
Gloire des perpetuelles,	deep rose,	compact, large, and very double.
2 Grand perpetual, or Fabert's,	bright rose,	globular, very large and double.
1 Grande et Belle,	deep purplish rose,	globular, very large and double.
1 Henriette Boulogne,	pale blush,	compact and large.
1 Jean Hachette,	lilac rose,	globular, large and double.
2 Josephine Antoinette,	rose,	cupped and very double,
2 La Mienne,	deep rose,	compact and very double.
2 Louis Philippe,	dark purplish crimson,	expanded and very large.
1 Lodoiska,	pale blush,	globular, large and double.
1 Madame Feburier,	rose,	cupped, large, and very double.
1 Ma Delice, or Douce Melee,	pale rose,	cupped and very double.
Maria Louise,	pale rosy centre,	globular and large.
1 Pompone four seasons,	pale flesh,	compact, very small, and double.
1 Pulcherie,	purplish red,	globular and double.
1 Preval,	pale rose,	expanded and double.
4 Pæstana or scarlet four seasons,	bright crimson,	cupped semi double.
2 Perpetuelle d'Angers,	very pale fl'sh,	expanded and very large.
3 Palmire, or blush perpetual,	pale rose,	compact and very double.
Perpetua nova.		
Panache de Girardon, or striped perpetual,	flesh striped with red,	cupped and double.
1 Palotte Picote,	pale flesh,	compact and double.
2 Portlandica carnea,	pale rose,	cupped semi double.
2 Portlandica grandiflora	deep rose,	globular, very large and double.
2 Queen of perpetuals,	pale flesh,	cupped and very double.
Royal perpetual,	bright rose,	compact, very large and double.
1 Saint Barthdemy,	purplish rose,	cupped and semi double.
4 Scotch perpetual,	blush,	cupped and double.
3 Stamwell perpetual,	pale flesh,	expanded and double.

Sixth of June,	deep rose,	compact and very double.
1 Triomphe de Vitry,	bright rose,	expanded and double.
1 Volumineuse,	blush,	globular, very large and double.

This division rapidly increases in interest. I have not attempted to arrange them according to their Botanical affinities, but merely as to their habit of blooming in the autumn; most of the pale flowered varieties, with pubescent leaves originated from those old damask roses, the red and white monthly, Stamwell and Scotch Perpetual, from the Scotch rose hybridised; the crimson Perpetual, or Rose du Roi, from the Portlandica plena. This superb variety was raised from seed in 1812, in the gardens of the palace of St Cloud, by the flower gardener, M. Jucket, under the direction of La Compte Lelieur, the Royal Gardener, and by him named Rose du Roi. The Rosa Pæstana, which I suspect is the parent of some of our fine varieties, is mentioned by Eustace in his Classical Tour, as growing among the ruins of the Temple of Pæstum, and enlivening them with its brilliant autumnal flowers. A clump or border of Perpetual roses will soon be indispensable in every well furnished flower garden. They are perhaps the most desirable of all the pleasing families of Rosa. Like their prototypes, they are highly fragrant, and, if possible, more so in September, October, and November, than in June. As every shoot in most of the varieties produces bloom, the soil cannot be too rich; for with these, luxuriant growth will be sure to give abundance of flowers. A good practice would be to cut off all the bloom buds in June, and shorten the shoots to about half their length, then water them with manured water in July and August; this will make them shoot and bloom most luxuriantly all the autumn.

HYBRID CHINA ROSES.

NAME.	COLOR.	FORM AND CHARACTER.
2 Adolphe Cachet,	purplish red,	cupped and very double.
3 Adsire,	rose,	cupped and very double.
2 Ancelin,	purplish rose,	globular, very large and double.
2 Adelaine de Bourbon,	mottled bright rose,	reflexed, large and double.
1 A fleur Marbre,	mottled dark crimson,	compact and very double.
2 Bon Genevieve,	purp. crimson shaded,	imbricated and very double.
4 Pizarre de la Chine,	crimson purp.,	globular and double.
1 Brennus,	red carmine,	cupped, very large and double.
2 Belle de Bengale,	bright rose,	globular, small and double.

4 Brown's superb blush,	blush, red centre,	globular, very large and double.
3 Brown's celestial,	pale blush,	globular and very double.
4 Blairii,	bright rose,	globular, and blooming in large clusters.
Beauty of Billiard,	scarlet,	globular and double finely shaped.
1 Beranger,	bright purplish rose,	cupped and very double.
Coccinea superba, or Juillet 29,	scarlet,	cupped, very large aad double.
1 Coupe d'Amour,	very bright rose,	cupped and very double.
2 Clair de Cressac,	cherry red,	cupped and double.
2 Camuset Carne,	bright rose,	cupped, large and very double.
2 Coronation,	shaded purple,	imbricated and very double.
2 Chatelaine,	rosy lilac,	globular and double.
2 Carmin feu,	brig't crimson,	cupped and very double.
1 Cardon,	purp. crimson,	compact and very double.
2 Celine,	rose,	cupped and very large.
2 Carre de Boisgelin,	shaded purple,	expanded and very double.
2 Coutard,	bright rose,	globular, large and double.
2 Colonel Fabvier,	bright rose,	cupped, large and very double.
1 Cymodocee,	scarlet,	globular and double.
2 Delaagee,	purple,	cupped, large and double.
2 Duchess d'Angouleme de Lisle,	shaded rose,	compact and very double.
1 Duke of Devonshire,	pale rose, lilac stripe,	imbricated large and double.
1 Daubenton,	bright crimson shaded,	cupped large and double.
2 Duchess de Montebello,	brig't crimson,	reflexed and double.
2 Duc de Choiseul,	purplish rose,	globular, very large and double.
2 Duc de Choiseul ponctue,	rose, spotted white,	globular and very double.
Eliza Flemming,	rose,	cupped, small and very double.
1 Encharis,	brig't crimson,	cupped and very double.
2 Ethereal,	purple,	imbricated and double.
2 Fulgens, or Chalton,	fiery crimson,	globular, large and very double.
2 Fleurette,	bright rose,	cupped and very double.
1 Consalve Cardon,	brig't purplish,	imbricated, large and double.
1 General Pajol,	delicate rose,	cupped and very double.
2 General Thiers,	dark velvet crimson,	reflexed and very double.
General Lamarque,	black crimson,	globular, large and double.
4 George the Fourth, (Rivers'),	velv't crimson,	globular, large and very double.
1 Hybrid Gracilis,	rosy purple,	compact and double.
1 Hybrid Blanc,	pure white,	cupped and very double.

Hybrid Celestial,	bright red,	globular and double.
1 Hybrid Stadtholder,	pale rosy centre,	cupped, large and very double.
3 Holmes' Mandarin,	rosy lilac shaded,	cupped and very double.
1 Hypocrate,	deep rose,	cupped, very large and double.
King of Roses or hybrid panache,	rosy lilac white stripe,	globular, very large and double.
1 Legouve,	purp. crimson,	globular, large and very double.
1 La Seulisienne,	pale blush,	compact and very double.
4 La Tourterelle or Parny,	dove color,	cupped and very double.
1 La Harpe,	deep rose,	globular and double.
1 Lady Stuart,	delicate blush,	globular, very large and double.
2 La Ceusette,	bright red,	cupped and double.
1 Lara,	deep purplish rose,	cupped and double.
1 Leontine Fay,	rosy lilac,	globular, very large and double.
1 Lilac Queen,	deep lilac,	imbricated and very double.
2 Las Cassas,	bright rose,	globular, very large and very d'ble.
2 Las Cassa d'Angers,	bright red,	globular and very double.
2 Morning Star,	purplish red,	cupped, very large and double.
2 Monteau,	dark purplish crimson,	globular and large.
2 Miaulis,	dark purple,	globular and double.
2 Miralba,	black crimson,	compact and very double.
2 Ne plus ultra, or Gloire des hybrids,	fine bright red,	globular, large and very double.
3 Oberlin,	brig't crimson,	compact and very double.
2 Pirolle,	purp. crimson,	cupped and double.
2 Pourpre Panache, or Adelaide,	dark crimson shaded,	compact and very double.
1 Princess Augusta,	purple crim.	expanded and double.
Queen of Beauty,	fine scarlet crimson,	cupped, large and very double.
1 Reine de Belgique,	rosy lilac,	globular, very large and double.
1 Riego,	rosy lilac,	cupped and double.
1 Rosine Dupont.		
3 Roi de Prusse,	violet purple,	cupped and very double.
2 Susette,	dark crimson,	reflexed and very double.
3 Sebastiani,	dark crimson,	globular and double.
1 Souvenir d'une Mere,	bright rose,	cupped, very large and double.
2 Triomphe de Laffay,	pure white,	cupped and very double.
2 Thornless Violet,	dark velvet crimson,	cupped and very double.
1 Triomphe de Guerin,	delicate pale rose,	globular, very large and double.
1 Triomphe d'Angers,	brilliant crim., oft'n strip'd,	globular, very large and double.

2 Toutain,	velvet purple,	cupped and very double.
1 Titus,	violet purple,	globular and very double.
3 Victor Tracy,	dark crimson,	cupped, very large and double.
2 Victor Hugo,	rosy lilac,	globular, very large and double.
2 Volney,	rosy blush,	imbricated and very double.
4 Wellington, (Lee's),	purp. crimson,	globular and double.

From the very distinct habit of these Roses, they have generally been called par excellence Hybrid Roses, but as we have been careful to insert none but what are between the China Rose, (*Rosa indica*), and Rosa Gallica, we now call them Hybrid China Roses, a distinctive name quite necessary, as Hybrids from other Roses are every season coming into existence. They are all very beautiful, and have that pleasing, glossy, sub-evergreen foliage, peculiar to the China Rose, but make a great deviation from that family, in not being perpetual bloomers; in this division are some of the most beautiful Roses known, and among them, George the Fourth, which I raised from seed, may rank among the best, these are also all very robust, and will grow and bloom well in the most unfavorable Rose soils. Their peculiar habits and vivid colors, render them particularly well adapted for standards.

ART. IX.—*A Visit to Mr Cushing's Conservatory.*

SIR — Having just visited the Conservatory of J. P. Cushing, Esq., Belmont Place, Watertown, it appears to me that a short notice of some of the treasures of the vegetable kingdom, now in floral splendor there, would be interesting to many of your readers, both in this vicinity and in the more distant parts of the United States, to which I am aware the circulation of your Register extends.

Astrapea Wallichii, placed by De Candolle and Don in the *Dombeyaceæ* tribe of the family Byttneriaceæ; but by Lindley, in the same tribe of the family Sterculiaceæ. It is a native of Madagascar. Don says, "Astrapea and some genera related to it are amongst the most elegant plants in the world," and in another place, "Astrapea Wallichii is one of the finest plants ever introduced into Britain; when in flower nothing can exceed it in beauty." The expectation produced by this language is certainly not altogether satisfied by the appearance of the flowers, which are of a light scarlet color and hang

pendant on a long elegant stalk (peduncle); many crowded together in an umbel, this being girded round by a many leaved involucel has the resemblance of a hanging scarlet ball; which although shewy cannot be termed elegant, inasmuch as the flowers are so close to each other that their separate forms cannot be distinguished — it is however a rare and valuable specimen, and well merits a place in this extensive and choice collection of tropical plants. No doubt, in its native region, where the tree is about 20 feet high, these numerous scarlet globose umbels hanging in every direction must form a glorious sight.

Combretum purpureum. Combreteæ tribe of Combretaceæ. This truly beautiful amongst the ornaments of the stove had two or three out of nearly a dozen of its panicles of bright scarlet flowers in perfection, it is a quick growing climber, revels in heat, and when in a healthy state, like this specimen, must always be the chief attraction in every collection; like its predecessor it is a native of Madagascar, and has not been many years introduced into Europe. Having seen and admired it there on its first appearance, I was highly gratified to recognise it here in so flourishing a state.

That magnificent flower, *Solandra grandiflora*, was on the point of opening in all its splendor; those who have seen Bignonia radicans, now called *Tecoma*, can form some idea of the shape alone, but this flower is three or four times larger and of a delicate whitish yellow.

Amaryllis regina, aulica or vittata and formosissima, with Crinum amabile and Euphorbia Poinsettii, just in departing glory, Tritomia crocata, Oxalis, Justicia speciosa, several rare pelargoniums, jasmines, roses, Peonia moutan,and many other beautiful flowers, whose names have escaped me, filled up the stove. A few pots of vines, on the coiling system, looked healthy and were just bursting into bloom.

The Conservatory in the centre was not less ornamented with flowers; Rhododendron arboreum, shone conspicuous. Azalea indica alba and phenicea, Schizanthus, Cineraria, Eupatorium, Roses, Antholyza, are but a few of the delights with which it was thronged. The delicious scented Iris persica now in full beauty and fragrance in my parlor window would not have been inconspicuous, however, amongst all these beauties. We have seen several imported here; when more known it will no doubt become common, as it is a cheap bulb in Europe.

The Camellias were rather scarce; from the appearance of the plants, the cause was probably rather the liberality of the owner than the fault of the plants or the gardener.

To those who are able and have the taste to form and enjoy such establishments as this, stern winter is deprived of half its rigors, shorn of half its length and tediousness. I felt as happy as if entering on the joys of spring, until the deep deep snow on leaving this assemblage of charming plants, recalled me to my senses. I could not but remember the line of Cowper, the poet,

"Who loves a garden loves a greenhouse too."

Yours, THEOPHRASTUS.

ART. X. *Notices of Foreign Works.*

WE have before us, ten numbers, for 1835, of the Botanic Garden, an interesting work, edited by B. Maund, F. L. S. Published in London.

This beautiful little work is issued in monthly numbers; each number containing the description and colored figures of four ornamental hardy plants, occupying eight pages. It has been in existence eleven years, and we should infer, from the remarks of the editor, well sustained. Two extra pages were added three years since, called the Auctarium, "as a means of registering miscellaneous directions and discoveries, which could not conveniently be combined under the regular subjects of the work."

The last year, a Floral Register, containing two pages more, was added. The object of this, was to give "monthly, every requisite particular of nearly twenty newly introduced or interesting plants, belonging either to the stove, the greenhouse, or the open ground." Each of these plants is illustrated by a wood cut.

Its typographical execution is of the highest order. The figures are mostly reduced in size, drawn from living plants, and colored in a most exquisite manner, true to nature. What adds value undoubtedly to the work, it is "patronized by Her Most Gracious Majesty the Queen." We have no doubt but what the patronage of some of our own "Nature's Queens" would be extended to it also, if they could but see a specimen of the work. We are not more pleased with the mechanical part of the work, than with the pleasing style of its contents. The dry details of botanical descriptions are avoided as much as possible, and relieved by remarks that lead the mind "from

nature up to nature's God." The following extracts will give the reader a specimen of its character.

"*Silene laciniata.* Jagged-petal Catchfly. Class, Decandria. Order, Trigynia. Natural order, Caryophylleæ. Native of Mexico. Height, 1½ feet. Flowers in July and August. Perennial. Introduced in 1823." The flowers of this plant are red; its petals, deeply cut into four segments. "The genus Silene acquired its name from the salvia like fluid that is found on some of its species.

The *Silene laciniata* is an ornamental plant, but not very hardy. Its habit is best adapted, during summer, to a warm border, and to a dry frame protection during winter. In the greenhouse it is liable to be drawn and become weakly. As it produces seed but sparingly, cuttings should be struck every summer, and planted in fresh sandy loam, mixed with a small portion of decayed leaves. Many species of Silene possess much beauty: indeed, the whole may be considered very interesting, notwithstanding some of them have rather diminutive flowers. It is a most extensive genus, comprehending, according to Don's system, not less than two hundred and fifty six species. Its near relation, Dianthus, has also an hundred and twenty five species, and Arenaria has an hundred and forty seven: hence, it appears that from three genera, alone, of the natural order Caryophylleæ, a collection of more than five hundred plants can be formed.

It may not be unimportant, occasionally, to view the extent of the means, and fertility of the sources, whence the botanist can draw his gratifications.

In considering the great number of plants thus united, as we have just seen, by such close affinities, yet each one distinct from its congener, the mind can but be strongly impressed with the magnificence of that design of the divine Creator, of which we here catch a glimpse in the detail of so inconsiderable portion of his care. It must be kept in view that nature, in the aggregate, presents us with unity of design. We usually examine isolated scraps, to compare their differences; when, however, we consider all creation is comprehended under one regularly graduated whole; that it exhibits, step by step, a progressive developement, from the lowest quality of inorganic matter, up to man, the most perfect of animated earthly creatures, how utterly incapable are we of tracing these gradations, and almost invisible distinctions, through the ascending scale of creation.

These considerations should be impressed on the mind of the young naturalist. None can comprehend all the laws of nature, but the out-

line of her work is more obvious. We may read the index to her operations, although the details are not unfrequently in secret characters. The whole may be seen as composed of an alphabet of simple elements — elements which combine into matter as letters into words: matter combines into beings, as words into sentences; and again, as series of sentences make chapters, so series of beings constitute classes, and of these the incomprehensible book of creation is compiled, and perfected by the hand of the original Lawgiver."

We find in the July number a figure and description of *Acanthus spinosus*. Class, Didynamia. Order, Angiosperma. Natural order Acanthaceæ. Hardy perennial. Three feet high. A native of the south of Europe, having been cultivated nearly two hundred years as an ornamental border plant, with purple and white labiate flowers, and spiny leaves. Its description, but more particularly the tradition connected with it, will be read with interest, undoubtedly, by most persons.

"This generic name is derived from the Greek, Akantha, a spine; a name sufficiently applicable to the plant under consideration. Its specific name has also the same reference.

All the species of Acanthus are plants of tolerable strong growth, with roots that strike deeply into the soil. Some of them are very tenacious of life; springing from portions of the root which happen to be broken from the main plant. In this way it may be readily propagated, a circumstance that would naturally lead us to expect its more general distribution in gardens and ornamental grounds.

The tradition connected with the Acanthus, regarding its having given the idea of the capital of the Corinthian column, should not be forgotten. Whether this be correct or otherwise, it is unnecessary to inquire; certain it is, that architecture owes much of its beauty — much of its perfection, to flowers, foliage and trees. Nature in the garden, in the park, and the wide expanse of country scenery, affords one of the best assistant schools of pure taste; not only to the architect in his outlines, and in his enrichments, but to artists connected with almost every branch of manufacture in which embellishment is demanded."

The history of the origin of the Corinthian order, which might possibly be contrived to give an interest to the invention, though so often repeated and so well known, may, nevertheless, be here told once more as a pleasing anecdote on ancient manners.

"A young maiden of Corinth having died, her mother or nurse collected in a basket the toys which she had been fond of while alive, and carried them to her grave, where she left the basket covered with

a tile, to preserve its contents from the weather. The basket happened to be set upon the root of an Acanthus. The plant being thus depressed in the middle, its leaves and stalks spread outwards, and grew up around the sides of the basket, till they were bent down by the tile which lay projecting over its top. At that time, Callimachus the sculptor, chancing to pass by the grave, and being pleased with the agreeable appearance of the foliage, and novelty of the form, he converted it to the purpose of architecture; and having made some columns of a more delicate proportion than had been used before, he adopted the basket and leaves of the Acanthus for the capital; and thus established the symmetry and ornaments of the Corinthian order.

"It is by no means improbable that architecture may have owed the origin of its arch, pointed and circular, to the natural outline of trees. The wooded avenue, and rows of forest trees not unfrequently represent arches of the most magnificent character; the contemplation of which can never fail to interest and to gratify the cultivated mind."

Gilia tricolor is figured in the number for August. Class, Pentandria. Order, Monogynia. Natural order, Polemoniaceæ. This pretty annual, originally from California and introduced into England in 1833, has already found its way into many of our own gardens, having been cultivated the last season by ourselves and others.

"This is one among the prettiest hardy annuals, not only of recent introduction into the country, but that is known in our gardens. It is, too, the more pleasing from the variation of tint seen among its delicate flowers, some of them being white."

Pretty as this flower is, we fear it will not find favor with most cultivators; something more showy is wanted to suit the common taste. The flowers are disposed in panicles, with a yellow eye, surrounded by a purple ring, bordered by pale blue or white. It does not exceed one foot in height. "From its humble stature and neat growth it is peculiarly suited for culture in masses; a style of planting showy flowers which produces a striking effect, where it can be pursued on a tolerably extensive scale."

The following are figured and described in the various numbers:

Lathyrus rotundifolius. Round leaved Lathyrus. Class Diadelphia: Order Decandria. Natural order Leguminosæ. This is said to be a showy, free flowering perennial species very little known, which has been cultivated for some time in the Oxford Botanic Garden. Like Lathyrus latifolius, its peduncles are many flowered, but not so tall a plant, being about two feet high. The flowers are deep pink, inclining to purple.

Many of the plants figured in the Botanic Garden, although they are hardy in England, would not stand our winter. We feel confident that it is not the case with this, and hope we shall speedily see it in our collection.

"*Lobelia Tupa.* Class Pentandria. Order Monogynia. Natural order Lobeliaceæ. A native of Juan Fernandez. Height six feet. Flowers in September and October. Introduced in 1824." The flowers scarlet orange. "Several varieties of this very handsome ornamental plant have lately appeared in our gardens. They grow with great luxuriance. Much has been said regarding its virulently poisonous effects, but these statements have wholly emanated from the 'Journal des Observations,' of Feuillee, who travelled in South America. He says the smell of the flowers cause severe vomitings, and the milky juice of the plant, if it touch the eye, occasions blindness. The first assertion is, certainly, incorrect."

There would be no probability of keeping this most beautiful plant in the open ground, as it is more tender than most of the species. Those that have green-houses will find no difficulty in preserving it, and perhaps, it may be kept in a cellar in pots through the winter.

Campanula grandiflora. Class Pentandria. Order Monogynia. Natural order Campanulaceæ. This beautiful Campanula we have in our collection, flowering for the first time last season. It is about a foot high, producing its large deep blue, open bell shaped flowers in June and July. It increases slowly at the root and yields but few seeds; it will not, therefore, be very plenty with us at present. The most congenial soil is peat and loam, in a cool situation. Very hardy, as we might suppose from the fact, that it is a native of Siberia.

Campanula excisa, is another perennial species of this large genus, of humble stature, with fine blue drooping, deeply cut corollas; from Switzerland; five inches high. "This beautiful little species produces an abundance of flowers. It is well suited to the foreground of the parterre, and to artificial rock-work."

Campanula hederacea. Ivy leaved Campanula, is still more diminutive than the last, its height not exceeding three inches. Flowers in June and July, erect, small, light blue. A close growing plant; its foliage forming a green tuft on the surface of the soil. A sandy peat and loam soil is recommended as a suitable soil, with a rather shady situation. This little plant is a native of England.

Nuttallia papaver. Class Monadelphia. Order Polyandria. Natural order Malvaceæ. This is a new perennial from Louisiana, flowering from July to October. The flowers of the figure are a purple

crimson, and resemble in shape and color *N. digitata*, which we have seen at Cambridge Botanic Garden. The genus was named in honor of Thomas Nuttall, Esq. formerly professor of botany at Cambridge. We give the following extracts from its history, &c.

"Seeds of this very showy plant were first sent by Mr Drummond, from the Southern States of North America, to this country, and distributed among several collections; and although this took place so lately as the year 1833, yet in the last year, 1834, it might have been found in almost every nursery of repute in Great Britain. Such are the rapidly increasing means by which the rapidly increasing taste for botanical pursuits is met and gratified. It is productive of pleasure, in every point of view, to see so healthy a national appetite, receiving daily, as it were, such delightful and wholesome stimulants from foreign lands, — novel as well as exotic." "Every new plant is received as a new and unthought of gift, and carries with it all its consequent delight."

"The Nuttallia papaver is, indeed, a very splendid accession to our gardens, and we have not the least doubt but it will be received as an inhabitant, and not as a visitant only. It is at present, so much a stranger, that we scarcely can offer any certain rules of management. It appears, however, to be of very easy culture, when grown in pots, in a mixture of loam, peat, and sand; in which it will flower freely, from July through autumn. It produces several flowering stems from the crown of the root, and may be divided, and thereby increased, with facility; which cannot be effected with other species of this genus.

"There can be no doubt but plants turned into the borders in the spring, will flower in great luxuriance during a great part of the summer, and also perfect seeds if artificially fertilized. Till its habits and powers of resisting cold are thoroughly ascertained by experience, it will of course be prudent to give it a little protection against frosty weather. It appears, notwithstanding, to be hardy, and, it may be hoped, will prove so; still its habitat would lead us to suspect that it is fully proof against the inclemency, or rather variability, of our climate. It would be advantageous, in several respects, if foreign collectors would register both the latitude and altitude of the native situation of every newly discovered plant. As men of ability are engaged in this pursuit, such advantage is of easy attainment."

Geranium pratense, (flore variegata). Class Monadelphia. Order, Decandria. Natural order, Geraniaceæ. We do not recollect ever seeing this fine variety of English meadow Crane's bill, but from the figure and description imagine it to be very desirable.

It is said that "its flowers partake of a degree of delicacy by which it greatly surpasses in effect its more common blue congener. Its flowers vary much in the portion of color which they display, some being nearly all blue, whilst others are produced completely white."

Geranium angulatum. Angular stalked Crane's bill. This species is a native of Europe, and has been cultivated since 1789. A perennial of easy culture, eighteen inches high, with a profusion of pink flowers in June. We have this in our collection.

"The Geranium angulatum, from its numerous flowers, is highly ornamental. It may be appropriately planted among low shrubs, or strong herbaceous plants; and it will succeed in rather shady places, which renders it oftentime a desirable plant. Divisions of the roots afford sufficient increase."

Linum monogynum. One styled flax. Class Pentandria. Order Pentagynia. Natural order Lineæ. A hardy perennial with white flowers in July and August; eighteen inches high, from the South of Europe, cultivated since 1831. Said to be a delightful species; its habits are luxuriant, and its numerous flowers showy. It proved hardy in the Birmingham Botanic Garden, in a bed of sandy peat. It must be raised from seeds or cuttings, as it does not admit of frequent division.

Our own beautiful little Houstonia cœrulea, is very prettily and correctly figured in this work; but from these half a dozen flowers, we could obtain but a faint idea of its beauty as it is seen profusely scattered over the ground, with its dense tufts of delicate pale blue flowers in early spring, "adorning every mossy bank or shorn meadow, and presenting themselves in all directions, like the eyes of Argus; seeming almost as handfuls of pale scattered flowers of the Lilac which had come too early to maturity."

Art. XI.—*Answer to Query.*

In reply to the query on page 74, last number, — they will bloom if planted early; or it will be better to place them in a box or boxes with earth, in a warm cellar, and transplant in the spring. I have succeeded this way, and have every year removed Hyacinths, &c. even after the formation of the flower buds. It should be done with two transplanting trowels, retaining as much earth as possible round each root.

A Subscriber.

ART. XII.—*Flowers in Bloom in February, in the Green House of the Messrs Winship, Brighton.*

Acacia armata,
" longifolia,
" lophanta,
Alonsoa acutifolia,
Aloe variegata,
Arctotis laciniata, vel superba,
Azalea indica alba,
" " purpurea pleno,
" " phœnicea,
" purpurea,
Bryophyllum calycinum,
Calla ethiopica,
Camellia alba simplex,
" alba pleno,
" anemone flora,
" atrorubens,
" Granvilli,
" hexangularis,
" pæoniæflora,
" sasanqua rosea,
" variegata,
" rubra pleno,
" pompone, or Kew blush, with other varieties.
Canna angustifolia,
" coccinea,
Chloranthus inconspicuous,
Cineraria cruenta,
" platinifolia,
Cyclamen persicum,
Daphne odora,
" variegata,
Diosma alba,
" liliata,
Epacris grandiflora,
Erica arborea,
" verticillata,
" herbacea,
Erica mediterraneana,
" elegans, or speciosa,
Eupatorium elegans,
Heliotropium peruvianum,
" grandiflorum,
Hoitzia coccinea,
Hibbertia volubilis,
Hyacinthus botryoides,
" moschatum,
Hermannia althæifolia,
Indigofera australis,
Justicia cerulea,
" paniculata,
Jasminum revolutum,
Kennedia monophylla,
Lupinus arboreus,
Melianthus major,
Mesembryanthemum barbatum,
" linguæforme,
Ornithogalum grandiflorum,
Othonna pectinata,
Oxalis elongata,
" rosea,
Pæonia papaveracea,
Passiflora alata,
Pittosporum tobira,
" undulatum,
Plectranthus fruticosus,
Primula sinensis,
" v. alba,
Rhododendron arboreum,
Ruellia persicæfolia,
Rubus rosæfolius,
Salvia africana,
" fulgens,
" splendens,
Sparmannia africana,
Teucrium fruticans,
Tradescantia discolor,
Westringia rosmarinacea,
Vinca rosea,
Verbena cerulea.

Art. XIII.—*Miscellaneous Matters.*

Clarification with Charcoal.—The effects of charcoal in clarification are both curious and important. They were first noticed by M. Lowity, of Petersburgh, and have for the most part been amply confirmed by succeeding observers, although the precise cause of these remarkable changes has not been satisfactorily ascertained. All that is essential for this purpose is, that the charcoal should be in fine powder and very dry; hence the only preparation requisite is to pulverize some well burnt common charcoal, and then heat it in a covered crucible to a glowing red, till it ceases to give out an inflammable vapor. If it is not employed immediately, it ought to be kept in a ground stopped glass bottle, and may then be preserved unimpaired to any length of time. The effects of this prepared charcoal are very striking. Being mixed with common vinegar or any kind of wine, a thick froth rises to the surface, and the liquors after filtration are found to be as limpid as water. The filthiest and most putrid ditch water is in like manner rendered perfectly clear, inodorous and insiped; and rancid oils are also deprived of their smell and taste by repeated filtration through this prepared charcoal. Hence also its peculiar efficacy as a dentifrice; it is sufficiently hard to remove concretions from the teeth without injuring the enamel, while it neutralizes and destroys for a time any fœtor which may arise from a carious tooth.—*Rees Cyclopedia.*

Cherry Tree Gum.—The gum that exudes from the trunk and branches of the cherry tree is said to be equal to gum arabic. Hasselquist relates that during a siege more than one hundred men were kept alive for two months nearly, without any other sustenance than a little of this gum taken into the mouth sometimes and suffered gradually to dissolve.—*English pa.*

Vital Principle of Seeds.—A small portion of Royal Park of Bushy was broken up some time ago, for the purpose of ornamental culture, when immediately several flowers sprung up, of the kinds which are ordinarily cultivated in gardens; this led to an investigation, and it was ascertained that this identical spot had been used as a garden not later than the time of Oliver Cromwell, more than one hundred and fifty years before.—*Monthly Mag.*

Erratum. — In the last number, page 74, for "Fernal Grape," read Ferrol

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ART. I. *The Cultivation of Forest Trees.* Communicated by Hon. H. A. S. DEARBORN.

OF all the numerous studies, which can occupy the human mind, that of nature is the most interesting, important, boundless and exalting. The immense expanse of the firmament, and the vast rotundity of the earth, are the capacious fields of inquiry — each presenting innumerable subjects, for the most sublime contemplation, extensive research and elaborate experiment. The astronomer traverses the infinite region of space, and from the most distant star, points, with the finger of an Anaxagoras, to heaven. Reason, upborne on the wings of science, proclaims the harmonious revolution of the celestial orbs, as conclusive evidence of an omnipotent and beneficent God, reveals to aspiring man the immortality of his own soul, and gives assurance of an eternal existence beyond the skies.

Transcendently glorious are the wondrous conceptions, the mighty efforts of intellect, and the momentous results of those gifted philosophers, who thus "look through nature up to nature's God." But they pursue a route of moral grandeur, which none, save of the loftiest genius, can presume to tread. Still, there is left the extensive realm of natural history, in which those of the highest endowments, as well as the humblest individual, may discover objects of the deepest interest, commensurate to the capacities and tastes of each, in all the gradations of talent, fortune and rank. And, what gives peculiar value to this instructive and delightful study, is its intimate connexion with the condition, and appropriate adaptation to the various pursuits of the

husbandman. He resides in the midst of the natural productions of the earth, whose construction and elementary materials are constantly being exposed to observation, in the daily excursions and operative labors, incident to cultivation. The mountain precipice, the deep channel of the torrent, and the furrow of the ploughshare, offer perpetual means for investigating the geology and mineral resources, of a considerable extent of country; while the vegetable and animal creations constitute the very objects of his attention, and the chief sources of his subsistence, prosperity and wealth.

If it has been said, with as much truth, as vigor of expression, that

"An undevout astronomer is mad,"

why may it not be alleged, with equal propriety, that a resident in the country, who is not a naturalist, must be deficient in vision, or obtuse in perception. There is some one, of the many subdivisions of this copious science, which each may select for inquiry and experiment, as best accords with his taste and ability, and which can be prosecuted with pleasure and advantage, as subsidiary to the general improvement of his estate, or to those rural embellishments, which the refinements of the age have rendered indispensable.

As it may be pertinently asked, why our country does not present more palpable illustrations of the prevalence and influence of the views, principles and sentiments which have been expressed, it becomes necessary to attempt a partial explanation.

Natural History long lingered in the rear of the other sciences, and was never cultivated in any country, until an exalted state of civilization had been developed. Among the ancients, none of its departments were thoroughly explored, and but partially illustrated. In zoology, but little has been transmitted, other than imperfect descriptions of some of the most extraordinary animals, with exaggerated accounts of imaginary quadrupeds, birds, fish and reptiles. The minotaur and unicorn, the phœnix and griffin, the python and dragon, were enumerated, as veritable realities, among the wonders of creation.

The only authors, whose works have descended from the ages of antiquity, that can be considered worthy of being named with a Linnæus, a Buffon and a Cuvier, are Moses and the elder Pliny; but the former was brief in his descriptions, and generally presents a mere poetical nomenclature of the inconsiderable number of the animal and vegetable productions, which were peculiar to the small portion of the globe, with which he was acquainted. The other illustrious

naturalist had formed no systematic theory, by which the classes, orders, genera and species were intelligibly arranged. Neither of the great divisions were treated scientifically, and there was more of fancy, than the results of exact observation, in the descriptions, by which a curiosity for the marvellous was excited, rather than a taste for the advancement of useful intelligence induced. To afford entertainment, appears to have been the predominant object of those writers, who made the most extensive researches, and instruction, but a subordinate consideration. All was generalized, and instead of facts and accurate information, vague and traditionary statements were so profusely intermingled, with idle speculation, that philosophy gained but scanty additions, to her accumulations of truth.

While we go back to the splendid eras of Grecian and Roman history, for the most perfect examples of eloquence, poetry and the arts, — explore the wide spread ruins of their intellectual grandeur for the most brilliant gems in letters, the most recondite investigations in the exact sciences, and the most captivating lessons in morals, as well as for all those wondrous efforts of genius, talent and erudition, which illumined the ages of Pericles and Augustus, — we must descend to the eighteenth century, to find definite and satisfactory instruction, in relation to the natural productions of the earth. If a few individuals acquired distinction at an earlier period, their laborious researches were but little known, and it is only within the last fifty years, that their more successful and eminent rivals in the same career, have been duly and generally appreciated. How many persons are there still living, who can well remember, when the terms zoology, botany and geology were seldom heard in this country, and were only understood by a very small number of isolated individuals, who, in retirement, prosecuted the study of those sciences, rather for self-gratification, than for those great purposes, to which they are capable of being rendered subservient; and now, what section of the Union is there, that cannot boast of institutions, expressly founded for their cultivation, or where numerous and zealous pupils are not following in the refulgent wake of a Bartram, a Bigelow, a Cleaveland, a Silliman, a Say, a Harris, a Wilson and an Audubon?

To Sweden, France, Germany and England, is the world indebted for those adventurous cultivators and successful founders of that taste for natural history, which now so universally prevails, and has produced such important results. The far reaching mind of Linnæus, left no field unexplored in the animal, vegetable and mineral kingdoms.

With an industry as vigilant and untiring, as his capacious genius and ardent temperament were inquisitive and active, that illustrious man, in the emphatic language of Chatham, "trampled impossibilities under his feet," and cheerfully devoted a whole life, in perfecting his magnificent work on the SYSTEM OF NATURE. This gave the first effective impulse to botanical inquiry, which has ever since advanced with rapid strides.

The study of Zoology was suddenly excited by the glowing eloquence of Buffon, whose powerful influence has never ceased to be felt, where greatness of intellect and the eloquence of literature are admired. No writer has done so much to render natural history entertaining, and to elevate its rank among the objects, on which the human mind is employed.

Germany, so prolific in authors, and so distinguished for her eminent men in all the branches of literature, science and the arts, may justly be considered as the birth place of mineralogy, and the cabinet of Werner as its cradle. Less than sixty years have elapsed, since the promulgation of that eminent miner's theory, and we now behold his disciples in every section of our republic.

As the vegetable realm is the most important to man, in all the stages of his progress, from the savage to the highest state of civilization, it has justly claimed more attention than all the others.

As a science, merely, botany is a most interesting study, but when rendered tributary to the useful and ornamental arts, in all their relations with national industry and domestic economy, its immense importance is conspicuously revealed. A knowledge of plants, in the most extensive meaning of the term, is so intimately connected with all our pursuits, our wants, our comforts, our enjoyments and our very existence, that it were difficult to enumerate the infinite variety of purposes, to which it may be applicable. To the farmer, gardener and florist, an acquaintance with the distinctive characteristics, by which the genera and species are recognised — with vegetable physiology, and with the habits, nutriment, soil and mode of cultivation, best adapted to each kind, is indispensable to successful experiment, where more exact and extended information is as much the laudable object of pursuit, as the advantages to be derived from the products obtained. Still there is a practical intelligence, relating chiefly to the art of rural tillage, which, to a certain extent, may dispense with botanical theories and scientific instruction, and yet accomplish many of the great purposes of agriculture, and produce, highly important

results. It is therefore proposed, to call the attention of the husbandman, as well as of every class of citizens, who admire the country, or have a taste for picturesque scenery, to the rearing of Forest Trees, as one of those peculiar branches of culture, in which industry, enterprise, and mere operative skill, may achieve all that is desirable, so far as a profitable or a pleasing effect is intended.

The first law ever promulgated was concerning trees, and the next is as ancient as Moses, which prohibited their destruction, even in an enemy's country. As an illustration of the extensive knowledge of Solomon, his biographer states, that "He spake of trees from the cedar of Lebanon to the hyssop that springeth out of the wall."

By the earliest decrees of Rome it was a capital offence, "*alienas arbores incidere*," and the Lex Aquilia, as well as the Twelve Tables, contained regulations for the preservation of forests.

All history teaches us in what high estimation groves were held by the most flourishing nations of antiquity. The majestic cedars of Lebanon were distinguished by the holy psalmist, as "the trees of the Lord."

It was under an oak, that the venerable progenitor of the Israelites received and entertained his divine guests; and when he confirmed the league of Beersheba, he there "planted a grove and called upon the name of the Lord;" thus consecrating it, as a place of devotion, as was the universal custom in the east, until all ceremonial worship was confined to the tabernacle or the temple.

Our Saviour, the prophet Elijah, and John the Baptist, frequently retired into the wilderness for profound meditation and prayer. Quintillian observes: "Groves were, of old, the temples of the gods, and men at this day consecrate the most superb trees to some divinity; nor do we more adore our glittering shrines of gold and ivory, than the groves in which, with a deep and awful silence, we worship them. From hence, temples began to be erected in such places, and there was scarcely a grove without its temple, and almost every temple was surrounded by a grove."

Socrates, Plato and Democrites entertained their auditors under the spacious avenues of trees, which the gardens of the Academy and those of the other public edifices afforded. Thucydides composed his incomparable history, in the Scaplan groves, and in Cicero's discourse on Oratory, the interlocutors were seated under the lofty plane trees of his Tusculan villa.

Groves were consecrated to all the distinguished divinities of ancient mythology. The Aricinian was sacred to Diana, and those of Helicon and Parnassus to Apollo and the Muses. Neptune was honored in the Helicean, while the Lebodian, Arsinoan, Paphian and Sinonian were dedicated to all the gods.

Besides these sacred purposes, to which the most superb forests were appropriated, the memories of heroes, and other illustrious men, were thus perpetuated, and the groves of Achilles, Hector, Bellerophon and Alexander are celebrated in the literature of antiquity.

Pliny, who lived in the palmy days of Rome, observes, that the people in the country, imitating the simplicity of their pious ancestors, consecrate the most beautiful trees to their divinities, and we do not less revere the sacred woods and the religious silence which there reigns, than our magnificent statues of the gods.

The Minturnesian grove was esteemed so venerable, that strangers were not permitted to enter it; and when Xerxes was passing through Achia, with his immense army, he expressly forbade any violence to be done to a grove dedicated to Jupiter.

Thus it appears, that from the earliest ages, forests were consecrated to holy uses; not only by superstitious nations, to their deities and heroes, but to the true God, by the patriarchs themselves, who frequented such places to serve him, and to celebrate sacred mysteries, prayers and oblations. From thence the Druids of Britain, Gaul and other Celtic nations had their origin, and there scarcely exists a modern nation, which can boast of civilization, that does not evince a deep reverence for the stately forest, the umbrageous valley, secluded wood and mountain groves. Why, then, are the citizens of the United States less interested, even in the mere embellishments of woodlands, than their European contemporaries? Are not the principal causes, which have rendered our respect for forest trees less intense, to be sought in the peculiar history and position of Americans? We have been, for more than two hundred years, the pioneers of a wilderness and have not advanced, in the more refined arts of civilization, with a rapidity, quadrating with our progress, in those of absolute necessity and substantial utility. There is a refinement of the mind, not dependent upon the extent of intellectual cultivation, general wealth and universal prosperity, but is more the result of a long succession of ages, during which the gradual progress of information, diffuses an ameliorating, chastening and elevating influence over the whole mass of the population. Distinguished attainments, a delicate per-

ception of the beautiful, in the creations of nature and the productions of art, and universal propriety and gentleness of manners, can only be induced by the revolution of centuries. Time has a most potent agency in this great work of national reformation, when united with the instructions of philosophy, the ardor of honorable ambition, the enthusiasm of the student and the excitement of general competition. Then and then only, all that genius, talent and learning can achieve, will be accomplished, and the most attractive and imposing attributes of the human character fully developed, richly embellished by the loftiest principles of morals, and sanctified by the most sublime sentiments of religion.

When our forefathers landed upon these shores, the primary and most important object was, to prepare the earth for the rugged pursuits of the rudest agriculture, and the partial destruction of that interminable forest, which overshadowed the whole continent, was indispensable; but the work of devastation has been wantonly continued, by each generation, with but little regard to the wants, comforts, or embellishments of the future. So immediately was the idea of a wilderness associated, with the deprivations of subsistence, the enjoyments and protection of society, and the terrors which it enveloped, that trees ceased to be objects of admiration to our pilgrim forefathers, and their extermination was deemed as indispensable for security, against ferocious wild beasts and the savages, to which they were a mighty fortress, as for the purposes of agriculture. These causes continued to operate so long, that not merely a disregard, but an absolute antipathy to trees, ultimately became almost universal; they were the chief obstructions in the progress of colonization, and the beauties and grandeur of forests were invisible to those, who were compelled to uproot the lofty pine, the graceful elm and majestic oak, ere they could establish a home, obtain the means of existence, and be secure, from the appaling incursions, of vindictive and remorseless enemies. The effects of this primitive system were experienced, long after the motives which rendered it necessary had ceased, and custom became as efficient in its deleterious consequences, as were the reasons in which it originated; and even upon the borders of the ocean, where the immense domain, of extinguished barbarous tribes, is thickly populated by flourishing States, it still predominates, — if not in all its former energy, yet to an extent, which is so sufficiently apparent, as to be justly obnoxious to rebuke, and requires frequent appeals to, even the most intelligent, to co-operate, in strenuous efforts, for counteract-

ing the disastrous consequences. The object has now become worthy of the most serious consideration; but before a great change can be effected, example must give potency to theory, and practical illustration confirm the inductions of reason. That native spirit of enterprize, which but slumbers from the absence of excitement, must be aroused by the hope of advantage, the pleasure of the pursuit, or the actual enjoyments, which intelligence and industry may realize, in this vast field of adventure. A national taste for rural pursuits should be inculcated, fostered and extended, by individual exertion and public patronage. It is essential to the completion of those characteristics, which designate the age, and properly belong to our actual condition as a people, from the elevated place we occupy, in the ranks of civilization.

It is notorious, how much has been accomplished in other countries, by the instructions of the illustrious in letters, the experiments of the most elevated in rank, the munificence of the affluent, and the enlightened policy of government. Bacon, Milton, Temple, Pope, Addison and Shenstone, zealously endeavored, both by precept and example, to awaken their countrymen to a just perception of the beauties and magnificence of rural scenery, and the necessity of vigorous efforts being made, for enhancing the value of private estates, embellishing the great avenues, squares and public grounds, and improving the general aspect and comforts of the whole country, by extensive parks and other plantations of forest trees. With Evelyn, they deplored the waste and cheerless appearance of large portions of their admired isle, — the denuded condition of the once celebrated forests of Sherwood, Dean, Woodstock and Windsor, and eloquently appealed to the patriotism, intelligence, taste and interests of the princes, nobles and gentry of the realm, to unite in advancing this interesting and valuable species of cultivation; and now, there is scarcely a land proprietor in England, Wales, Scotland or Ireland, who is not ardently engaged, in clothing the bleak hills, barren downs and long neglected moors of his domain, with superb groves of timber and ornamental trees.

The importance of establishing new parks and public squares, either within, or near all the cities and large towns, has recently been a subject of Parliamentary inquiry; and a very interesting and able report was made, by a committee of the House of Commons, in which it was urged, as a measure indispensable to the health, comfort and innocent recreation of the inhabitants; and especially to the indus-

trious classes, who were confined most of their time, by mechanical, manufacturing or other occupations, requiring exclusion from the open air, — and this, too commonly, in the most narrow, densely populated and insalubrious streets.

Notwithstanding great expenditures had been made during the last half century, by enclosing and planting with trees, several capacious parks and public squares in London, the committee earnestly recommended, that others should be commenced on extensive plans, not only in that city, but every considerable town in the kingdom. They considered such places of general resort, for exercise and innocent recreation, so necessary, that they should be speedily provided, either by the national government, the various municipalities, or the liberality of the affluent; that this was demanded from motives of humanity, as well as a regard to the best interests of the country, as being not only eminently conducive to the general health, the improvement of the morals and the refinement of the manners of the people, but as administering, in an especial manner, to the happiness of those, who, after days of unceasing labor, have no other means of participating in the rural enjoyments, or of ever indulging in that solitary yet tranquilizing morning or evening walk, which the green fields, hawthorn lanes, refreshing groves and shaded avenues of the country afford, to a large mass of the population, and which is so desirable to all.

So important are forest trees considered in France, that they are protected from destruction by severe penal laws, while the most liberal encouragement is afforded by the government, for their multiplication. Agricultural Societies, experimental farms and national nurseries have been established in all parts of the empire, under the immediate patronage of the sovereign, for the purpose of exciting a general interest, favorable to the growth of timber, as much as for all the other branches of rural industry. There, as has long been the case in Great Britain, seeds of trees are collected from every portion of the globe, which are capable of being cultivated in the diversified climates of that country; and there may be found, in the national parks and on the estates of many large proprietors of land, all the forest trees and shrubs, which are indigenous to the United States. The Michauxes have traversed every section of our republic, in search of plants, to enrich the valuable collections of their native land.

We must follow the example of older nations, as the condition of our country approximates to that, which rendered it indispensable elsewhere. It is not merely for the purposes of civil and naval archi-

tecture, and as fuel, that the culture of forest trees should be promoted and fostered; but they are of the first necessity, in many of the mechanic arts, the extensive manufactories of innumerable articles, and to supply the private and public demands, for an infinite variety of other objects of application.

Besides the enormous domestic consumption of the products of our forests, the annual exports amount to nearly five millions of dollars.

The rapid destruction of trees for all these purposes, with that still more extensive one, occasioned by those wide spreading settlements, which are advancing with hasty strides towards the waves of the Pacific Ocean, as well as by those accidental conflagrations, by which thousands of acres are annually laid waste, demands the most grave consideration of individuals and of the government. To New England, in particular, this subject is of the deepest interest, and of the first consequence. Being the most commercial portion of the Union, we should not neglect the means of furnishing the most essential materials, for those immense commercial fleets, which are destined, in the not distant future, to throng our harbors, and cover the seas of every clime.

For many years, ship timber has been procured with great difficulty, and it is now so scarce, that our building yards are supplied from the borders of the great lakes, as well as the middle and southern States, with the most essential portions of the frames. The forests of white oak, once so extensive, have nearly disappeared, and can only be reproduced by artifrcial means.

As fuel, and for the many various purposes of husbandry, how indispensable is a wood lot; yet how few farmers, in many sections of this Commonwealth, have that valuable appendage to their estates, when it is in their power to create them, at but little comparative labor or expense. Notwithstanding the Agricultural Society has, for years, offered a liberal premium for plantations of forest trees, it is believed that not a single application has been made, for the promised reward of successful experiment.

In this country very few have attempted to raise groves of forest trees from the seed, in consequence of a too prevalent opinion, that the process is difficult, the labor and expense so great, the growth so slow and the prospect of remuneration or picturesque effect so distant, as to render it a hopeless undertaking. But we have the fullest instruction as to the method, and conclusive evidence of the complete success, with which the practical operations have been long prosecuted, in numerous British and French works on Arboriculture; and from my

own experience, I am confident, it is in the power of every landholder to surround his dwelling, border the avenues and different compartments of his estate, for the purposes of comfort and embellishment, and establish a grove sufficiently extensive, that in twenty years it will supply fuel and timber for all the required domestic purposes, and forever after, if properly managed.

I have raised from the seed, several thousands of Elms, Button-Woods, Rock Maples, White Ashes, Hickories, Black Walnuts, Butternuts, White, Red and English Oaks; and some of them have obtained, in fifteen years, a height of more than thirty feet, and from eight to ten inches in diameter.

Whoever attempts this interesting and valuable culture, cannot fail to be cheered on in his progress, by the pleasiug occupation, and will be sure of leaving a rich inheritance to his children, while he will merit the gratitude of his countrymen, both for the example and the beneficial result. None are too young to commence, and that no one is too old has been beautifully illustrated by Homer. When Ulysses returned from the Trojan War, he found his aged father planting trees, and asked him, why, being so old, he subjected himself to the labor of doing that, of which he could never expect to enjoy the benefit: the venerable Laertes, not recognising the person who addressed him, replied: "I plant against my son Ulysses comes back."

Is there not many a father, who would be glad to leave such a memorial of his parental affection, while he would experience the most soothing reflections, in the decline of life, to repose under the shadow of trees, whose seed had been planted, by the hand of a darling child.

Why then should not the youth of our land be imbued with a taste, for the beauties of picturesque scenery, carefully instructed in the art, and early enabled to appreciate the advantages, which are to be derived from Arboriculture. It is an occupation which more perfectly blends the useful and honorable, with the interesting and agreeable, than any which man can pursue; and differing from all others it never ceases to excite renewed exertions, for the passion to continue it even increases with age, and only expires on the brink of the grave.

Sires of New England, you have a high and responsible, yet a most pleasing and acceptable duty to perform, which will not only embalm your memories deep in the hearts of your offspring, but entitle you to the grateful benedictions of future generations. Hasten, then, to illustrate precept by experiment, and, with the ardor of an Evelyn, call upon your sons to "RISE UP AND PLANT;" for you may be assured,

that the anxious solicitude which induced, and the kind attentions which encouraged these labors, will constitute their most sacred and pleasing reminiscences, when you shall have been gathered to your fathers.

The external aspect of a country residence, without the appropriate embellishments of groves, trees, shrubs and flowers, appears as desolate and cheerless, as would the interior, divested of those conveniences and decorations, which are intended to administer to the comfort and gratification, of the independent or affluent proprietor. What more dreary and melancholy scene can be presented, than an isolated house, on some bleak and naked hill, or treeless plain, — exposed to the driving snow storms of winter, and the dazzling influence of summer's ardent sun. The ruins of Balclutha would be infinitely less revolting. The idea of loneliness would not be associated with commiseration, for in those, we should be reminded of former days of chivalry and splendid hospitality; and instead of having awakened the sentiment of despair, the imagination would mingle the natural beauties and grandeur of the surrounding landscape, with the mustering recollections of the by-gone affluence, sylvan sports, convivial pageantries and martial deeds of their ancient lords, when in the full enjoyment of prosperous fortunes, and the plenitude of their baronial glory.

Who in passing such a dwelling, as has been described, and is too often seen in this favored land, does not look upon it, as he instinctively hurries onward, as the only remaining structure of a once populous region, and which had become the temporary encampment of barbarians, whose devastations had stricken the soil with sterility. The thought of suffering humanity is painfully united with the barren solitude of a desert, — an Arab's tent pitched in the midst of the boundless waste of Barca.

Of all the nations of the earth, there is no one, which offers such powerful inducements as the United States, for undertaking the culture of useful and ornamental trees, for those of our forests are unrivalled for their variety, size and magnificence. Michaux observes, in the introduction to his Silva, "that, in America the trees more than thirty feet high exceed one hundred and forty, while in Europe there are but thirtyseven, which attain this height; and of these but eighteen enter into the composition of forests, and only seven are employed for domestic or maratime purposes."

There are fiftythree species of the Oak, in North America, seven-

teen of the pine and eight of the Maple; of the superb trees which compose the genus of Magnolia, but fifteen are known to exist upon the globe, five of which belong to China, one to the West Indies and the remaining nine to the United States. We have eleven species of the walnut, while not one is indigenous to Europe, as the variety commonly cultivated there, is a native of Persia.

Besides the reasons which have been suggested, as inducements for devoting a part of our leisure to the history, science and art of Arboriculture, there are others, in which even the antiquarian cannot fail to be interested. A knowledge of the longevity of trees would aid him, in illustrating the history of the monuments of civilization, and thus become auxiliary, in elucidating that of the globe we inhabit.

De Candoll, the learned professor of natural history, in the university of Geneva, observes with equal truth, beauty and boldness, that "old trees may be considered as the medals of distant ages." Are they not then, as worthy of consideration as those of gold, silver and bronze, which bear the impress of imperial ambition, and are so zealously sought, carefully preserved and eagerly consulted for the verification of chronology? This may appear extravagant and inexplicable, but still no position is more tenable, no fact more firmly established, or more capable of demonstration.

A tree has been considered, by writers on vegetable physiology, either as an aggregate of as many distinct plants, as there are buds on its extremities; or as one being, analogous to that, which is called an individual, when speaking of animals. By the first hypothesis, as new buds are continually added to the old, the aggregate tree, which is the result, has not, necessarily any term to its existence. By the other theory, which is that very generally adopted, as a ligneous accretion is annually formed round the trunk, and branches, and endowed with new organs, it is evident, that there should not occur that induration of the functions of life, which produces death in the animal kingdom, by what is called old age, and therefore trees should never die, but from some accidental cause, as a deficiency of aliment, an imedicable wound, or the rigors of an uncongenial climate. This being conceded, it is evident, that examples should exist of an extraordinary age, which is indubitably the fact, as has been clearly established by the most conclusive evidence.

The process of ascertaining the longevity of trees, is simple and unerring; being cut transversely through their trunks, circles are seen from the centre, to the circumference, each of which indicates the

annual growth of the tree. As, however, but few, comparatively, can be thus examined, tables have been carefully constructed, by several learned and ingenious naturalists, from which the approximate age of trees, of like species, may be readily ascertained. Having collected admeasurements of the diameter of many trees of different kinds and ages which grew in the same latitudes, whose annual circles had been numbered, or whose exact age was known, from some record of the period when they were planted, the annual average increase is discovered; and when the longevity of a standing tree is desired, it is only necessary to find its circumference, when the table of the annual average increment of the species will give its age, with sufficient exactness, to prevent an error of any moment.*

By this method, Adanson and De Candoll have ascertained and published accounts of the probable longevity of numerous celebrated trees. Some of the cedars of Mount Lebanon, measured in 1660 by Maundrell and Pocock, were found to have been nearly eight hundred years old, — the oak of Welbeck-lane, described by Evelyn, must have been 1400, — the linden of Choille 538, and that of Irons 583 — the olive trees in the garden of Jerusalem certainly existed at the time of the Turkish conquest of that city, and one at Pescia in Italy had endured seven centuries. The English yew trees of Fontaine Abbey, in the county of York, have survived twelve centuries, those in the church yard of Crowhurst, in Surry, fourteen hundred, — that of Fotheringall, in Scotland, from twentyfive to twentysix hundred, — that of Braburn, in Kent, three thousand. But they describe two other trees of a most remarkable character, viz. the Baoback, estimated to be five thousand one hundred and fifty years old, and the Cypress of Taxodium, in Mexico, which is one hundred seventeen feet ten inches in circumference, is still more aged. Other examples, less remarkable, seem to confirm their assertion, that in all probability there still exist trees, of not only a prodigious antiquity, but such as are living witnesses of the last great physical revolution of the earth.†

The longevity of trees then, is a subject which possesses real interest, beyond that of mere curiosity; and if we attach the greatest value to those relics of letters and the arts, which have been so eagerly collected from the ruins of ancient nations, why should we not feel as deep a solicitude, to ascertain whether trees do not exist which were contemporaries with the oldest generations of the human race. In many cases they would enable us to establish the date of ancient monuments, while the later would aid in fixing the age of trees which

* See Note I. †See Note 2.

grew in their vicinity. Such inquiries cannot fail of being essentially useful; but if they are merely curious, still are they not worthy of being prosecuted? For curiosity is the most distinctive and elevated propensity of our nature; it is the impulsive attribute of the mind, which rouses and propels into vigorous action, all the other faculties, with which we are endowed. Under its potent influence the inconsequential and important are sought with equal avidity, and the desire of gratification increases, with the advancement of civilization and the acquisitions of knowledge. How numerous are the instances, where momentous discoveries in science, valuable inventions in the arts, and developements of highly interesting facts, have been the fortuitous results, of an unrestrained indulgence in this ardent disposition, this restless passion, to behold whatever exists, or to ascertain, what has been, or can be accomplished, by the physical and intellectual powers of man. It was this inquisitive and all searching spirit, this aspiring and far reaching emanation of the soul, which produced the telescope, the magnetic needle, the electrical battery, and the theory of gravitation, — hurried a Park and a Clapperton into the immense desert of Africa, to trace the course of the Niger, induced Ledyard to traverse the wilds of Europe and Asia, that he might stand on the shores of Kamtschatka, and induced the learned and daring Humboldt to scale the snow capt summit of the Andes, merely that he might detect a new lichen, or identify those points of elevation, which were the equivalents of the degrees of latitude, in climate. What, in fact, are the vast additions which have been made, in all the departments of natural history, but the trophies of its zealous votaries, who willingly braved the severest hardships, for the acquisition of a single unknown mineral, plant or animal. Are not nearly all the books of travels, but so many verifications of the position, which has been assumed. Do they not anonunce, from the expedition of Hano, to those of the last tourists of Jerusalem, the Alps and the banks of the Indus, that the disposition to explore is as universal, as it is indomitable and insatiable. Let not any object then, however insignificant, be regarded as unworthy of consideration; for it may be the cause of some wonderful invention, the first scintillation of some splendid triumph of genius, or indicate the route to some glorious victory of reason. Nothing, in fact, should be excluded from observation, because of its apparent unimportance, for it should be recollected, that angels, under the humblest vestments of humanity, have been unconsciously entertained, whose visitations involved the destinies of empires.

NOTES.

1. Several simple methods may be employed for increasing the data, by which this interesting inquiry may be so far extended, as to enable any one to ascertain the age of remarkable trees, whose circumference is known, in any part of the globe. De Candoll uses and recommends strips of paper of various lengths, and about an inch wide, for obtaining the diameter and number of annual circles, where trees have been felled. One of these being extended across the stump, or trunk, the thickness of each years growth is marked thereon with a pencil, from the centre to the bark, and the diameter; but as it is quite as desirable to ascertain the circumference of standing trees, whose age is known, a pocket graduated measuring tape, will be found to answer best for both purposes; as the diameter can be ascertained in feet and inches, the circles counted, and the results entered in a memorandom book. These facts, as from time to time, collected, can be arranged in tables, under appropriate heads; and if individuals, who have it in their power to prepare such tables would do so, and publish them in some scientific journal, they would furnish the elements, for constructing one, sufficiently extended, to answer all the purposes desired. This is being done in many parts of Europe, and it is to be hoped, that there are citizens, in every section of this country, who will be induced to devote so much attention to the subject, as that in a few years, complete tables may be prepared, by which the age of any of our native trees may be ascertained, while they are yet flourishing. No country affords so good an opportunity, as the smallest to the most gigantic, of all our numerous species are continually falling, under the blows of the farmer and the lumberman, in all parts of the Union.

In a recent publication, the learned and distinguished De Candoll, has earnestly requested, that all persons, in every part of the globe, who take an interest in rural affairs, or investigations in the vegetable kingdom, and are disposed to aid in the accumulation of intelligence, on this subject, would do him the favor of transmitting such facts, as it may be in their power to collect.

2. The ages of the following remarkable trees have been ascertained, with as much exactness as historical data, or the principles, which have been derived from the actual admeasurement, and counting the circles of trees of like kind, afford.

	Age.
A Date tree in Egypt,	300 years.
Apricot tree in Damascus,	324
Grape Vine in Damascus,	378
Red Oak of Mount Etna,	400
Walnut tree of Balbic,	406
Almond tree of Damascus,	640
Fig tree of Damascus,	648
Olive tree of Palestine,	710
Fig tree of Palestine,	780
Olive tree of Asia Minor,	850
A Live Oak in Louisiana,	1000
Sycamore or Plane tree of Palestine,	1050
Sycamore of Heliopolis,	1805

One of the Cedars of Mount Lebanon,	1824
Peletin [Terebinthus] of Asia Minor,	1890
A Cedar of Mount Lebanon,	2112
The celebrated Chesnut of Mount Etna,	2660
Sycamore of the Bosphorus,	4020

The Sycamore near the ruins of Heliopolis, according to the tradition in Egypt, existed before the visit of Joseph and Mary, and that they sat under its shadow, and drank water from a neighboring well. The accumulation of mud, from the deposite of the Nile, has long destroyed the original tree, but sprouts having put forth from the stump, and forming part of a circle, calculations were formed therefrom of the size and age of the original tree, which was added to that of those which now exist.

The Sycamore of the Bosphorus, under which it is said Godfrey of the first crusading army encamped, has also disappeared, leaving ten trees, which sprang from the stump; one of which being measured was found to be 1050 years old; and it is possible others of equal age have been removed, and that the present trees are the second remove from the parent stock.

The Chesnut of Mount Etna grew from the stump of a felled tree. These, and other like instances, show how tenacious of life, are the trees of countries, most favorable to their constitutions, and the practice of perpetuating a forest, by cautiously preserving a proper number of sprouts, proceeding from the stumps, is of the most remote antiquity.

ART. II. *Description of Select Hardy Herbaceous Plants, suitable for Ornamenting the Parterre, Border or Shrubbery.* Communicated by Mr JOSEPH BRECK.

(Continued from page 89.)

THE genus Pentstemon embraces a family of beautiful plants, worthy the attention of every amateur: many of the species are perfectly hardy, while others require the protection of a frame during winter. The genus is peculiarly American, abounding in the west and southwest of our vast country and Mexico, but none in New England. Many beautiful species have been discovered within a few years, by Drummond, Douglass, and other indefatigable botanists, and to whom we are much indebted for these pleasing acquisitions to our pleasure grounds.

Class Didynamia: (four stamens; two long and two short; but in this genus, there is an imperfect stamen in addition.) Order, Angiosperma (seeds in capsules) *Natural order*, Scrophularineæ.

The genus is distinguished by its five leaved calyx, a bilabiate, (having two lips,) ventricose, (swelling) corolla; a fifth sterile filament longer than the rest, and bearded on its upper side. The capsule is ovate, two celled, two valved, containing many angular seeds. Its generic name is from *Pente*, (five,) *stemon*, (stamen,) in allusion to its four perfect and one imperfect stamens.

Pentstemon pubescens, produces its purplish blue flowers about June: the pubescent (downy) leaves are lanceolate, oblong, sessile, and serrulate; the flowers in a thin panicle, with the sterile filament bearded above the middle: one foot and a half high.

Pentstemon lævigatum is very similar, but smooth, with paler, later flowers, and is less common: two feet high. These two species are described by Mr Nuttall as being found at the south in barren fields and dry rocky ground: they are not common in our collections, nor do we know that they are to be found in any in this vicinity.

Penstemon staticifolius, is a beautiful, hardy, new species, figured in Edwards' Botanical Register, for June last, which was sent to the London Horticultural Society, by the lamented Douglass, from California. It is said to be nearly related to P. diffusus, from which it differs in its much larger and more lilac flowers, in the form of the leaves, and in those next the root being perfectly entire. It was then extremely rare, only one plant having been originally raised.

Pentstemon diffusus, is said to be very ornamental; but we have not seen it in flower. We raised plants the last season from seed, which will come into flower the present year.

Pentstemon pulchella, is a handsome species, with large bell shaped, pale purple flowers, and long lanceolate, smooth serrate leaves; one foot high. It flowered finely through the last autumnal months, in our collection, although it was from seed the same season.

Pentstemon atropurpureus, is also an ornamental species, with fine dark, ruby purple flowers, which are produced from July to October: one and a half foot high. It is a native of Louisiana: it flowered finely with us the last season, and succeeded best in a rich, black, moist soil.

Pentstemon cœruleum, is one of the finest of the genus, a native of the south, with beautiful blue flowers. Stem smooth: radical leaves linear entire; cauline ones lance linear, entire, all sessile: sterile filament short, bearded above: divisions of the calyx lanceolate, acute, glabrous. We saw this in bloom last season at Cambridge Botanic Garden.

Pentstemon Richardsonii, glandulosa, Bradburii or grandiflorum, Nuttallii, dissectum, erianthera or glaber, hirsuta and campanulata, are ornamental species, but not much known.

When seeds can be obtained, there will be no trouble in raising a supply of plants. It is said to be difficult, or even impossible to raise the seeds in heat. We are inclined to believe there is some truth in the remark, as we succeeded in raising only a few plants in a moderate hot bed, while those sowed in the open ground in May, produced an abundance. As the seeds are very small, they should only be pressed into the soil, or very slightly covered. The young plant should be sheltered from the mid-day sun. Most of the species are easily propagated from cuttings or layers, which readily take root.

In the same natural order with Pentstemon, and in the same artificial class and order, may be found the genus Chelone, with which there is a near relation. It is characterized by its thick, short, ventricose form of the ringent corolla, in which the sterile filament is shorter than than the rest: the anthers are woolly, and the seeds membraneously margined. "Chelone is from Greek, signifying a tortoise, to the back of which, the helmet of the present genus, has been fancifully compared." The species are all handsome flowering plants, suitable for ornamenting the border, flourishing best on a soil of loam with a little peat inclining to moisture.

The only species indigenous with us is Chelone glabra, found in abundance in wet places, flowering from August to October, having large white flowers in dense spikes; the leaves lanceolate, oblong, acuminate and serrate: three feet high. There is said to be a variety, purpurea, with purple flowers, and another with rose or red flowers, var. rosea.

Chelone barbata. The lower lips of the corolla of this beautiful species is bearded; which circumstance, gives to it the specific name. The flowers are a fine scarlet and orange, and produced in profusion from July to August; three feet high; from Mexico: leaves opposite connate (the bases united or growing into one, as the upper leaves of the Honeysuckle) lanceolate, entire. It requires some protection through the winter.

Chelone obliqua. *Red flowered.* We had this ornamental species in bloom last season, but owing to its being placed in a dry soil, did not succeed so well as the last species, which was planted in a moist soil, and which is probably more congenial to its growth.

The flowers are reddish purple, and continue from August to Oc-

tober: three or four feet high when grown in perfection: indigenous to the South: leaves lanceolate, oblique stalked, opposite, finely serrated at the edge.

Chelone Lyonii, is a handsome species, with which we are not acquainted, but desirable: a native, also, of the South: four feet high, with purple flowers in dense terminal spikes, from July to September; stem smooth, much branched: leaves stalked, cordate ovate, serrate.

Chelone latifolia, is another fine Southern species, with red flowers, in much crowded spikes, two feet high: leaves broad, ovate and oval, serrate, abruptly acuminate; tapering at the base, petioled.

Chelone centranthifolium, is a handsome species, figured and described in Paxton's Magazine for April last, resembling C. barbata, but free from the beard at the mouth of the corolla; seven feet high: leaves betwixt ovate and lanceolate, blunt at the point, smooth and somewhat shining. Flowers growing in a panicle, slender and long, forming the upper part of the stem: Calyx, bluish green, five parted: Corolla tubular, slightly inflated, somewhat funnel shaped, bright orange scarlet, limb two lipped, upper lip divided into two parts, lower one into three. A native of California, from whence it was introduced by Mr David Douglass. It is said to make a fine appearance, when growing among bushy plants, and that it will flourish in almost any light soil, if the situation be not too exposed. All the speciés may be propagated by cuttings and slips from the roots.

The genus Mimulus contains some pretty ornamental plants, suitable for the margin of ponds, or to occupy some place which is rather moist and partly shaded; most of the family requiring considerable water to grow them in perfection

"The generic name is from Greek, signifying an ape or monkey. The flower seeds in front resemble the face of a grinning monkey."

Class, Didynamia, order Angiosperma. *Natural order*, Scrophularineæ. Character of the genus: Calyx prismatic, five toothed; corol ringent; upper lip folded back upon its sides; lower lip with a prominent palate; stigma thick two cleft; capsule two celled, many seeded: seeds minute.

Mimulus ringens, is the only species indigenous in N. England, which is very common about our brooks and wet places in the month of August, with blue, ringent, almost personate flowers, having the palate of the lower lip prominent, and the upper lip reflected at the sides; erect and smooth, with sessile, lanceolate, acuminate leaves, and axillary peduncles longer than the flowers.

Mimulus luteus. *Yellow Monkey flower.* A handsome species from the South, with yellow flowers: one foot high. Stem erect, glabrous, stoloniferous: leaves roundish ovate, nerved toothed; lower ones obtuse, petioled; upper ones acute, closely sessile; raceme terminal: peduncle axillary, opposite, elongated; calyx unequal; teeth acutish. In flower most of the season.

Mimulus guttatus. *Spotted Monkey flower.* The flowers of this species vary much in cultivation. The flowers are yellow, spotted with crimson or brown. One variety has a large round spot upon the central division of the lower limb of the corolla, while other varieties are spotted upon each division.

It produces flowers through the season, with the exception of the hottest part: but is in the greatest perfection in September and October. The height one foot. Foliage very much like luteus.

Mimulus luteus, var. variegatus. *Variegated Monkey flower.* Figured in Edwards' Botanic Register for October. We give the following extract. "The first plants of this species which appeared in this country, were reared from seeds from Paris; but we believe without any intimation of its native country. Since that time Chili has been stated to be the origin of the species, but we know not upon what certain authority; not a specimen have we ever seen of it from that country. We should almost be inclined to suspect it to be some garden production, if it did not remain true from seed; at all events we agree with Dr Hooker in referring it to M. luteus as a variety. It is the prettiest of the genus, and is raised with the greatest facility, provided it is sown in a damp place under the wall, or where it is not fully exposed to the sun's rays. So treated, it grows vigorously and flowers beautifully in May and June. But if exposed to too bright sun and dryness, it loses its vigorous habits, and becomes a poor dwindling thing not worth cultivation."

This and perhaps M. guttatus, are undoubtedly varieties of M. luteus, as they agree in their habits, foliage, and shape of the corolla, which is open; upper lip two parted, folded back: lower lip three parted, central division notched. In the variety variegatus, the tube of the corolla is yellow, finely speckled with crimson: the lips, deep purplish crimson. Having, the last season sowed the seeds of the three species, or varieties, from them were obtained perhaps five hundred plants, which sported into many varieties. Some were entirely crimson except the interior of the tube; others were plain straw, sulphur, yellow or orange, variously speckled, spotted, or margined with

red ; — some were large, while others were inferior flowers; and presented, during the autumnal months a very gay appearance. Their situation was in a moist place. All the species are easily propagated from cuttings.

Mimulus rivularis, seems to be confounded with M. luteus and other species or varieties, as they have come under our observation ; but as we raised the different varieties from seed, we cannot determine ; there may have been some mistake in the seed, which was received from England.—With the exception of our indigenous species, the Mimulus cannot be considered hardy, although we did preserve some last winter in the open ground with protection, but are easily kept in a cold frame, or in the cellar in pots.

" Digitalis, named by Fuchs, from digitabulum, a thimble, in allusion to the form of the flowers."

Class, Didynamia, order, Angiosperma. *Natural order*, Scrophularineæ. Character of the genus, calyx five parted : Corolla campanulate, five-fid : Capsule ovate two-celled, many seeded. Most of the species are showy border flowers, of easy culture. All the species of this genus, as well as all the genera in the natural order Scrophularineæ, if not poisonous, are suspicious plants.

Digitalis purpurea. *Purple Fox Glove.* This with its variety alba are too well known to require a particular description. They are properly biennials; but if the old roots are divided every year they are perennials. It is a native of Britain, and is there considered " one of the most ornamental native plants in rocky copses, neglected hedges, and by the road sides. Its large tall spikes attract not only the botanist and florist, but is even conspicuous enough to be introduced in the painter's landscape of such scenery."

We have had account of specimens five or six feet high. The common height is from three to four feet. All who cultivate this plant, should be aware that it is a violent poison. It is cultivated as a medicinal herb, by the Shakers, in their physic garden at Harvard, but we believe there is not so much demand for it as formerly. " When given to the full extent of which the system can admit, the pulse intermits, and vertigo, indistinct vision and nausea, with vomiting or purging occur; and if after these indications, the quantity be still increased, or if any considerable portion of the recent herb be inconsiderately swallowed, it produces delirium, hiccough, cold sweats, convulsions, syncope and death."

Digitalis ochrolenuca. *Great flowered Fox Glove.* This species

has pale yellow flowers in July and August, four feet high. Leaves ovate lanceolate, acuminate, toothed; stem villus, (covered with fine soft hairs;) bractes twice as long as the flowers; corolla villus, netted. The whole of the genus are peculiarly European; all the species, embracing as many as twentyfive, are found in that section of the globe.

Digitalis lutea. *Small yellow Fox Glove.* A pretty species from France, two feet high. Leaves lanceolate, toothed, smooth. Flowers in a dense, one sided raceme; corolla smooth, pale yellow, segments ovate, bearded; lower bractes longer than the flowers; in June and July.

Digitalis ferruginea. *Iron colored Fox Glove.* From Italy, four feet high. Flowers in a dense pyramidal raceme; sepals edged: corolla bowed, lip ovate, three toothed: in July and August.

All the species are more or less ornamental, and would give variety to the borders if introduced. Some of the most desirable are D. tomentosa, fucescens, ambigua or grandiflora, fulva, aurea, leucophæa, purpurascens and tubiflora.

Antirrhinum. Snap dragon. Class, Didynamia. Order, Angiosperma. *Natural order,* Scrophularineæ. From "*Anti*, like, *rhin*, nose; because the flowers of most of the species bear a perfect resemblance to the snout of some animal."

Antirrhinum majus, and its varieties coccineum, rosea, bicolor lutea and variegata, are popular border flowers, easily cultivated in a dry soil. Best propagated from seeds, which should be sown yearly to produce new plants, as old plants do not flower so well, and are subject to be winter killed.

Antirrhinum linaria, of Bigelow, is included in the genus Linaria: Linaria vulgaris. Were it not that this plant were a troublesome weed, taking possession of the whole of the ground it would find a place in the border, as its flowers are quite ornamental. It might be planted in a tub sunk into the ground. It is found very common by the road sides, near Boston, and probably is not indigenous, but imported from England, its native place. Its yellow and orange flowers are in long crowded spikes; the corolla being furnished with a long, hollow spur beneath. "The mouth is closed with a protuberent palate from the under lip, and gapes open upon lateral pressure, a character which has given the genus the name of Snap-dragon." "The species of Linaria are for the most part pretty annuals: and some of them, as L. cymbalaria, well adapted for growing in pots or for rock

work. C. triphylla is a popular border annual. L. triornithophora, a half hardy perennial, is remarkable for the form of its flowers, which resemble three birds seated in the spur."

The genus Linaria may be distinguished from Antirrhinum by the spur on the corolla, and by the capsules which in the first is ovate two valved, opening at the end in three-five segments, while in the last it is oblique at the base, without valves, opening at the end by three pores.

Dracocephalum. Dragon's Head. Class, Didynamia. Order Gymnospermia (seeds naked.) *Natural order*, Labiatæ.

The extensive natural order Labiatæ, affords but few ornamental border plants: but it includes many that are useful, and not a single genus that is unwholesome or suspicious. Some are used as aromatics in our food, as Savory, Mint, Marjorum and Basil; others are prized on account of the abundance of volatile oil, which they produce, yielding agreeable prefumes as Lavender and Thyme: While many are used in the preparation of slightly tonic beverages, as Sage, Glechoma hederacea, Balm of Gilead, &c. It includes the whole of the order Gymnospermia in class Didynamia, and eight or ten genera, in Diandria monogynia. The whole tribe have four cornered stems.

" Dracocephalum is from *Drakon*, dragon, and *kephale*, head. The flowers resemble the figure of some grotesque beast. It is therefore called Dragon's head." The genus may be known by the remarkable inflation of the orifice of the corolla: the upper lip concave; the middle division of the lower lip roundish, notched; stamens unconnected; calyx two lipped. Several fine species are found in the United States.

D. virginicum from Virginia, may be considered one of the finest, which, with the following species, are common in many gardens.

It is a tall plant when cultivated, four feet high, with its conspicuous pink flowers in regularly arranged, crowded and elongated spikes from July to September; leaves linear lanceolate, serrate.

D. denticulatum, is a handsome species from Carolina of lower growth; it does not exceed one foot and a half in height; the flowers are pink, in spikes less dense than the last species, in August and September; leaves obovate lanceolate, tooth-letted upwards.

D. austriacum, sibiricum, and grandiflorum with blue flowers, and speciosum with pink flowers, would be desirable acquisitions to the border.

Betonica grandiflora, with light red flowers, and some of the Monardas (*tall balm*) are about all, besides those named, worthy of attention as ornamental hardy plants in Labiatæ.

(To be continued.)

(From the Boston Commercial Gazette.)

Art. III.—*Massachusetts Horticultural Society's Exhibitions.*

Messrs Editors,—I saw in the *New England Farmer* of last week, a report from Samuel Walker, of the Massachusetts Horticultural Society, on an exhibition of flowers from the gardens of Mr Wilder, that I read with great delight, as it was at once a proof that a taste for the cultivation of flowers and for describing of them, had greatly increased within a few years in our country. In former times if Flora was named as a Nymph of lovely mein, it was Ceres alone who received all the honors from the cultivation of the soil. A century ago when Lord Kaimes and others were writing upon ornamental gardening, but little attention had been paid to the subject in America. A few Royal governors and opulent merchants began about that time to cultivate ornamental gardening; but most of these men knew nothing of plants or of flowers, but sustained the expense of a garden as a mark of distinction. The greater part of these cultivators of flowers, in their own gardens, could have given you no more of technical, botanical information, than they could of Heraldry, if you inquired of them an explanation of their armorial bearings, blazoned on the panels of their coaches. The *Fess Point*, would have been to them an enigma, and nothing but the name of a flower was sought for. Not that these were ignorant men: far from it; they were business men, politicians and scholars; but it was not the taste of the times to attend to such things. In fact, with the great mass of the people, perhaps, it would have been a mark of effeminacy to have shown a fondness for flowers. But in this the taste has changed, and the gravest statesman and profoundest philosopher may cultivate, admire, and minutely describe a flower, without losing any particle of his greatness with the people. When the Vassals, the Brattles, the Tracys lavished their wealth in gardening, it was not so. The doings of *Royal governors; the rights of man; the conjectures upon the course the legislature would pursue the next session? who would be Mandamus Councillors? whether the Walpoles would still hold their power?* were the subjects of discussion. The beauties of nature were but little thought of at that time; now and then some one would be singular and take some pains to change, by cultivation, a single pink to a double one, but then his neighbors, winking to each other, said, "he is more nice than wise." Such refined and delicate pursuits as the study of botany

were not proper for men who had frontiers to defend, institutions to build up, and all the elements of society to fashion, in forming a new nation. At least they thought so. The revolutionary war followed this labor; and Ceres, Pomona, and Flora, were all more or less neglected; ploughshares and pruning-hooks were beaten into swords and spears. The soldier, however tasteful, on the track of blood could not stop to admire a wheat-field, nor to examine the beauties of the flowers in his path-way. Soon as the country began to recover from the evils of the revolution, a taste for agriculture and gardening became fashionable, in some measure. Washington set the example: he was a practical farmer, and an excellent gardener. He brought trees, shrubs and flowers from every clime, and spent every hour he could spare from indispensable business, in enriching his collections for the field and the green-house. This example was followed in every State in the Union; in the city of Philadelphia with great success. Every garden in that city, for eight years, was under his eye. Massachusetts was not behind any other State in her attention to horticulture as well as agriculture. The means of indulging in a luxury of this nature were soon acquired after the peace of 1783; and the nucleus of all the vast improvements of this day was then established. The pleasure to be derived in cultivating flowers can now be appreciated by most persons, as their biography and science have become household ornaments; and the utility of the pursuit is a little more remote, but easily traced when our attention is turned to it. The cotton plant, now the great staple article of the world, as to growth and manufacture, was, as oriental tales inform us — and they are always the truth or the shadow of it — once the garden plant of some Asiatic beauty, who, to the delights of vision, as the pods of the plants opened with snow-blown loveliness, with a natural curiosity and taste, added that of touch. The soft and fibrous mass, as her dainty fingers played upon it, seemed to attenuate under the pressure — and at that moment the thought of making it a thread was conceived, and the progress from the distaff to the loom, and from that to ornamental dress, was rapid and astonishing. Taste and fancy have more to do with improvements and science, than we imagine. The culture and the manufacture of cotton have now become the support of more than ten millions of the human race in Europe and America, and of more than fifty millions in Asia and Africa.

Agriculture has received many advantages from accident. Celery, now a common dessert of every table, it is said, came into the garden

plants from the following circumstance : — An Italian nobleman, in a paroxysm of passion, slew his only brother ; the church condemned him for three years to a monastery, to prayer and penitence ; — his food to be of the weeds which grew within the enclosures about his prison ; celery, bleached in the shade of the cloister, then became a favorite food ; and when released from his confinement, he transplanted the weed, then but little better than a night-shade, to his garden — it was set in trenches to bleach it, and to make it crisp and tender for his palate. He was a leader in fashionable life, and his example was imitated throughout Europe ; and celery became at first a garnishment for the table, then a luxury, and now a necessary for every palate.

The dyes of all the looms of ancient and modern times were borrowed from flowers. The philosophers of the East saw that to please the world they must follow nature. "Mark the lily how it grows — Solomon in all his glory was not arrayed like one of these," says an inspired writer. The poets of a later age, those great interpreters of nature, have followed up the thought, and expanded it with philosophical ingenuity. This thought is scattered through every page of their works, for they have adorned every column of their imperishable temples with these wreaths of nature.

> "Who can paint
> Like nature ? Can imagination boast,
> Amid its gay creation, hues like these ?
> Or can it mix them with that matchless skill,
> And lose them in each other, as appears
> In every bud that blows !"

Among a prosperous people, there is always a surplus measure of time, which may be used to their advantage if properly improved ; and how can it be better filled up than in such sweet and innocent pursuits ?

A love of distinction is an innate passion of our souls ; the glories of war and of eloquence are fast declining, and yet the love of distinction must be supplied from other sources : Nature is ready, when properly interrogated, by her responses, to fill up the void created by this decline. That which was once said in bitter but playful sarcasm, will soon be acknowledged as a settled truth : — "That he who makes two blades of grass grow where only one grew before, is preferable to all the warriors and statesmen put together ;" and in modern times we shall find these occupations the more imperishable monuments of

fame. The Lowells, the Kenricks, the Cushings, the Winships,* the Wilders, the Walkers, the Haggerstons, and others, that I have forgotten, have found that their labors have been "like words fitly spoken" — the glory of wisdom — "flowers of gold in pictures of silver."

This cultivation of flowers at the present day, seems not merely confined to gratify a laudable ambition; but to extend itself far, very far beyond it. The florists have gone back to ancient days, as every one must, who intends to follow nature in matters of taste. The greatest efforts of the present generation of florists have been the use of flowers in depriving the grave of its horrors; I allude to the connexion of a garden with a cemetery, as at Mount Auburn. The dark and silent chambers of the dead have always been distressing to the living; they say, with Othello —

> "Here is my journey's end, here is my birth,
> And every sea-mark of my utmost sail."

The horticulturist of Mount Auburn leaves his flowers with a different feeling than that experienced by our great ancestor when driven from Eden,

> "O flowers,
> That never will in other climates grow,
> My early visitation, and my last
> At ev'n, which I bred up with tender hand
> From the first opening bud, and gave ye names,
> Who shall now rear ye to the sun, or rank
> Your tribes, and water from th' ambrosial fount?"

The florist now knows that from the garden he loved, that those very flowers which he reared to the sun, are to be planted around his grave; to shed their perfume and scatter their leaves on every summer breeze. This "lovely conceit," like Ophelia's pure imagination, "has turned everything to prettiness";—and the traveller, as he wanders

* On Saturday, March 5, our correspondent was presented with a splendid BOUQUET, containing *eighty different kinds of flowers*, and he thus acknowledges the receipt of his rare and beautiful present.—

☞ A CARD.—PHILO-FLORIST takes this medium of the public press to acknowledge the receipt of a garland of flowers, of extensive variety and of surpassing beauty, from the Messrs WINSHIP, of Brighton. For this kind offering he tenders to them his thanks, and with them would express his earnest wishes for their prosperity. If Flora had always been so attentive to the Muse of History, we should have known more of the gardens of the Ancients than we now do; but in coming time they will be better acquainted with each other, for the former has given the latter a new subject to celebrate—her struggles with Nature in acclimating "herb and flower" to much higher latitudes than their native beds, and still not retaining, but increasing their beauties;—this truth is verified by glancing at the sacred sun-flower of the Incas, which, under the hand of taste and science, developes new varieties and splendor, in a strange soil, at each successive season.

through this labyrinth of flowers, which seem to cover the hearse and the pall, and to hide the spade and the mattocks, whispers to himself "can this be death?"—if it be

> "Death is the privilege of human nature;
> And life without it were not worth the taking!"

Go on, ye florists; and while you contend, in innocent rivalry, in making earth's bosom each year more lovely than the last, be assured that you will secure the affection and gratitude of all; and that even he who has no parterre of flowers to boast of, no garden from which to gather golden fruits, will select those which the Muses have scattered over the fields of knowledge and taste, and bind them on your brow.

PHILO FLORIST.

(From Paxton's Magazine of Botany, and Register of Flowering Plants for October.)

ART. IV.—*Remarks on the Culture of Perennials in general.*

PERENNIALS, are those plants, which do not, in their growth, form either trees or shrubs, but which lose their tops wholly, or in part, every year after they have done flowering; the roots continuing to live and regerminate for several years successively.

Perennials are of two kinds, *bulbous* and *herbaceous*, which, differing materially from each other in habits, require, consequently, a different kind of treatment. Such being the case, it will be necessary to make a few remarks on each kind separately; and

BULBOUS PERENNIALS.

These are of three kinds, viz:—Hardy, or such as will grow in the open border; Greenhouse, or such as require a little protection from cold and wet, but very little heat; and Stove, or those that will not grow to perfection without artificial heat.

Hardy Bulbs, with a few exceptions, are remarkably easy of cultivation, and if planted in proper soil and situation, seldom fail to produce plenty of offsets and seeds for propagation.

The best kind of soil for their growth is a light loam, rather sandy than otherwise, yet not too light, or the bulbs will be injured during the heat of summer, and if adhesive, they invariably grow weakly and seldom flower.

As to the depth which the different bulbs require to be planted in

the ground, no certain rule can be laid down; some species require to be planted not more than an inch and a half deep, and others from four to six inches. This must, therefore, be left to the judgment of the planter.

Encourage as much as possible the growth of the leaves, by giving them free exposure to light and air, for on them depends the success of the bulb's flowering the following year. If the leaves grow strong, a good quantity of strong pulp is stored up in the bulbs, and a good bloom is the consequence.

Never, if it can be avoided, disturb the roots by removal during the time of their growth; but if obliged to do so, select a wet day, and take them up with good balls, so as not to injure the fibrous roots.

The only time to remove them with success, is during the season of their torpidity, at which time the offsets may be separated, and planted where the cultivator may judge best.

The season of rest for most of the spring-flowering bulbs happens shortly after they have done flowering; but the autumn-flowering ones rarely become torpid till towards the following summer; but the only general rule that can be laid down in this is, that when the tops have quite died down, then is the time to separate or remove them without injury.

With a few exceptions, as in the case of tulips, and several other florists' flowers, hardy bulbs always do better when not kept long out of the ground, after being taken up. Indeed it is always advantageous to plant them again at the same time they are taken up and separated, because *first*, if kept in too dry a place, they are liable to become exhausted, and in some cases to shrivel. *Secondly*, if kept in a damp place, they invariably mould, and often perish. *Thirdly*, when left in the ground, they make their roots sooner and much stronger than under other circumstances. *Fourthly*, the season at which they ought to be planted, may prove so busy a time with the gardener, that he may scarcely be able to attend to them, until after they have begun to grow, which in general weakens their flowering, if it does not totally prevent it. And, *fifthly*, if planted at the time of separation, all anxiety about them is at an end.

Many of the more tender kinds of bulbs in the borders will require protection from heavy rains, whilst in a torpid state, particularly if the situation be low flat or damp; but if planted on banksides, under the walls of hot houses or other dry situations, this precaution will scarcely be necessary. The readiest and least troublesome way is to

place an inverted flower-pot over them, and lay a bit of slate over the draining hole. The more hardy kinds rarely suffer, and there need no particular care.

Green House Bulbs.

These differ from the last by being usually grown in pots, from the facility with which they can be removed from one place to another, either at the time of flowering or when in a torpid state, and from the different temperature they require. There are five things indispensable for the successful growth of exotic bulbs, viz. :—suitable soil, a proper temperature, due precaution in watering, perfecting the growth of the leaves, and allowing them a proper season of rest, called wintering.

The soil should be richer than that in which the hardy kinds grow, because from their confinement in pots they are unable to obtain any other nourishment, except what they receive directly from the aid of the cultivator. A light rich loam mixed with very rotten dung, and a portion of peat, perhaps is the best, as a general mixture for them ; but there must be many exceptions to this rule ; for some species require nearly all peat, and others flourish best in nearly all loam ; and in these exceptions the cultivator must be guided by the native habitats and strength of growth of each species.

Temperature. Those termed green house bulbs, require, during their times of flowering, little more than shelter from cold winds and heavy rain ; but at the time they first begin to grow, and after they have done flowering, it is always advisable to give them a gentle warmth, — first to assist them to flower fine, and, lastly, to encourage the leaves to grow fine.

Watering. All the kinds require a good supply of water when in a state of active and vigorous growth ; but whilst in a state of torpidity they should be removed to a place where they can remain perfectly dry, until the season of their growth commences again.

Perfecting the leaves. Unless the leaves are perfected properly, no certain success can be anticipated. To encourage their growth, do not place them behind or under the plant stage as is a common custom ; but expose them to a little extra heat, give them plenty of light, and gentle waterings occasionally with liquid manure ; but as soon as the leaves begin to die, lessen the quantity of water, remove the plants to a cooler situation, and eventually leave them dry altogether.

Wintering. During their time of their torpidity, any dry, cold pit or frame will suit them, provided they are not exposed to the effects

of frost or water; and as soon as the season is arrived in which they begin to grow, the bulbs should be shook out of the soil, the offsets be separated and repotted in fresh soil, and placed in gentle heat.

In potting, always be careful to drain well, for a stagnation of water usually destroys the bulbs. After potting, as soon as the plants begin to grow, give a gentle supply of water, increasing it as the plants get more strength.

Stove Bulbs require the same kind of treatment as green house bulbs in every respect, except temperature. Being natives of tropical countries, they require the heat of a good stove, and at the time of their torpidity, placing in a temperature not lower than that of the green house.

Herbaceous Perennials.

The mode of cultivating this class of plants is perfectly easy: three things chiefly have to be attended to. *First*, the manner of propagating; *second*, the most suitable soil; and *third*, the requisite temperature. There are five methods of *propagation* practised; by divisions, suckers, seeds, layers and cuttings.

Dividing the roots. This may be done either with a kind of knife, if the plant is small, or a spade, if the root is large and strong. The best time for doing it, is when the tops are just beginning to grow, after having been cut down.

Suckers. These may be taken up any time when they appear; but the most usual time is when the plant is beginning to grow.

Seed. Sow, for the most part, early in spring, in light soil, and plant out the following autumn in the situations where they are to flower.

Layers and Cuttings. Proceed precisely in the same manner as for propagating soft-wooded shrubs and trees.

Soil. Different species of plants require rather different kinds of soil: but a light rich loam will suit the greater part of plants. Those confined in pots should have the soil enriched with a little very rotten dung.

Temperature. Plants may be divided into three or four kinds; hardy, frame, greenhouse and stove. The first requires very little care, except keeping free from weeds after once they are planted; but the three last are more trouble, because they grow in pots. They all require similar treatment to each other; with the exception of the heat. The first will bear all weathers without injury; the second require a slight shelter in winter: the third require a little protection during most part of the year; *and the fourth will not flourish without a brisk heat.*

Art. V.—*Extracts from Foreign Publications.*

The following flowers are figured and described in the October, November and December numbers of *Edwards' Botanical Register*, edited by John Lindley, which have not been noticed in the back numbers of the Horticultural Register. Some of the most singular of those described, are found in the Natural order Orchideæ, which have of late attracted the attention of amateurs, as well as botanists. The number of the species in this tribe, already discovered, amounts to nearly fifteen hundred, and the number is monthly increasing, and will increase, perhaps, for ages to come, until every nook and corner of the earth has been explored. Lindley, in his *Introduction to the Natural System of Botany*, says — "Orchideæ are remarkable for the bizarre figure of their multiform flower, which sometimes represents an insect, sometimes a helmet with the vizor up, and sometimes a grinning monkey; so various are those forms, so numerous their colors, and so complicated their combinations, that there is scarcely a common reptile or insect to which some of them have not been likened."

"They are found in almost all parts of the world, except upon the verge of the frozen zone, and in climates remarkable for dryness. In Europe, Asia, and North America, they are found growing everywhere, in groves, in marshes, and in meadows; in the drier parts of Africa, they are either rare or unknown; at the Cape of Good Hope, they abound in similar situations as in Europe; but in the hot damps of the West and East Indies, in Madagascar, and in the neighboring islands, in the damp and humid forests of Brazil, and on the lower mountains of Nipal, these Orchideous plants flourish in the greatest variety and profusion, no longer seeking their nourishment from the soil, but clinging to the trunks and limbs of trees, to stones and bare rocks, where they vegetate among ferns, and other shade loving plants in countless thousands. Of the epyphytic class, only one is found so far north as South Carolina, growing upon the branches of the Magnolia, if we except the species from Japan, which, as I have elsewhere stated, appears to have a climate peculiar to itself, among countries in the same parallel of latitude." We will first notice those plants in the *Natural order* Orchideæ. *Gynandria Monandria* of Linnæus. "Coryanthes maculata. *Spotted Coryanthes.* A native of the woods in Demarara, where it is not uncommon, hanging from

the branches of trees, and suspending in the air the singular lips of its flowers, like fairy buckets, as if for the use of the birds and insects that inhabit the surrounding foliage. There certainly is not a more singular genus than this in the whole vegetable kingdoms, nor one whose flowers are less like flowers, to the eye of the ordinary observer. The sepals are of the most delicate texture; when young they spread equally round the centre, but after a few hours they collapse, and assume the appearance of a bat's wing half closed. The lip is furnished near its base with a yellow cup, over which hang two horns constantly distilling water into it, and in such abundance as to fill it several times; this cup communicates by a narrow channel formed of the inflated margin of the lip, with the upper end of the latter, and in this, also, is a capacious vessel very much like an old helmet, into which the honey that the cup cannot contain, may run over."

"Govenia superba. *Superb Govenia.* So called in compliment to James Robert Gowen, Esq. under whose care were conducted many of the curious experiments upon cross fertilization at Highclere, the seat of the Earl of Carnarvon. This noble species was originally discovered by Messrs Lexarza and La Llave on the mountains near Valladolid, a town of Mexico, flowering in August. The native name is *Azuzena amarilla.* It is one of the handsomest of the whole order of Orchideæ, and is especially remarkable for its stately appearance, the rich orange of its flowers, and the long time they continue to open. The specimen in the Messrs Loddiges' collection grows to the height of a man. It is found to bear the hottest and dampest stove, but, like all terrestrial species, requires a season of repose.

"Pleurothalis Grobyi. *The Groby Pleurothalis.* A native of Demarara, whence it was imported by Mr Bateman, who named it in compliment to Lord Grey of Groby. It belongs to a very pretty species, all of which are characterised by having their leaves so much longer than the secondary stems as to conceal them and form dense tufts." A dwarf plant three or four inches high, with small yellow, red striped flowers.

"Maxillaria crocea. *Saffron-colored Maxillaria.* Introduced from Rio Janeiro in the spring of 1833. *Flowers* before expansion having some resemblance to the beak of a bird; pale green, with a brownish tinge at the spur. *Perianth* of a greenish yellow, becoming of an orange yellow when expanded. *Sepals* narrow and pointed,

the three exterior ones being each about the same size and length, with their edges turned back. The two interior ones are rather shorter than the others, somewhat curbed, and crossing so as to conceal the column. *Labellum* about half the length of the sepals, thick, and fleshy, connected to the lengthened base column, which forms the spur; cucullate and crisp at the margin, which is rather paler than the sepals, otherwise it is of a brownish red color, together with the column."

"Stanhopea oculata. *Eyed Stanhopea.* Imported by Messrs Loddiges. It is the most interesting of this splendid genus, on account of the extremely delicate waxy appearance of its surface, the softness of its ground color, and the richness of the deep purple spots, which, lying upon a bright yellow field, so very conspicuously ornament the base of the lip and petals. It is said to be a native of Brazil."

"Maxillaria picta. *Painted Maxillaria.* A truly beautiful plant, found wild in the Organ mountains of Brazil, and originally introduced by the late lamented Mrs Arnold. When well managed, it throws up a profusion of its gay speckled flowers, which remain perfect for some time."

"Maxillaria densa. *Dense-flowered Maxillaria.* A native of Mexico, whence it was imported by the Messrs Loddiges, in whose stove it flowered in January last. Flowers in a dense head, white and pink. The stems rise some height above the ground, and are closely invested with brown withered scales, from the axils of which spring the pseudo-bulbs and flowers."

"Fernandezia acuta. *Sharp-leaved Fernandezia.* A native of Trinidad, whence it was imported by Mr Knight, in whose collection it flowered in June last." A neat little plant, with orange and crimson flowers, with numerous short, acute, sheathing leaves which are closely imbricated upon the stem."

"Vanda téres. *Taper-leaved Vanda.* This superb epiphyte was originally discovered upon trees in Sylhet by Dr Wallich, and it has more recently been met with by Mr William Griffith abundantly near Medown in the Burmese Empire, also growing on trees in the woods. When Dr Wallich came to England, this species formed one of the numerous living plants brought home under his care, and blossomed during the voyage. The very flowers which were then produced, we are so fortunate as to possess in spirits, through the kindness of their liberal discoverer. They measure nearly four inches and a half from

the tip of one petal to that of the other, but only two were formed upon the spike. The specimens from Mr Griffith are not quite so large in the flower, but there are three blossoms to each spike."

"Nothing can exceed the flowers of this plant in delicacy of texture or softness of color; the deep purple of the petals softens away to the margin, and seems to melt as it were into the purer white of the sepals, while the rich yellow and crimson of the lip renders the brilliancy of the other parts still more conspicuous."

"Maxillaria cristata. *Crested Maxillaria.*" A remarkably beautiful epiphyte, which flowered in the collection of Mr Knight last July. "It is a native of Trinidad, growing on old decayed branches of trees near the Mud Lake. The lip is a most curious organ. It is of a firm fleshy texture, and is deeply divided into three parts; of these, the two lateral ones are falcate and smooth, while the middle one is rounded, has a strong tooth on each side, and is bordered by a deep white fringe of necklace-shaped hairs; then the short stalk of the lip, has four or more such hairs, growing straight from its border, and the disk is furnished with a large white two lobed flat tooth, the divisions of which diverge from each other. The striping, banding, and painting of the delicate white flowers with rich crimson, produces a very rich and striking effect."

"Macradenia triandra. *Triandrous Long-gland.* A native of Surinam, whence it was brought by Mr Lance," having a decumbent spike containing six yellow and crimson flowers.

"Eulophia lurida. *Lurid Eulophia.* One of the easiest of all stove Orchideous plants to cultivate, growing upon a damp wall, or rough stone, or under almost any kind of condition, provided the air be hot, and damp, and uniform. It then flowers profusely at intervals throughout the year. A native of Sierra Leone, whence great quantities are occasionally brought. It appears to be very common upon the trunks of trees in some parts of the colony."

Lindley remarks that "It often happens that those productions of nature which charm the eye by their beauty, and delight the senses with their perfume, have the least relation to the wants of mankind, while the most powerful virtues or most deadly poisons are hidden beneath a mean and insignificant exterior; thus Orchideæ, beyond their beauty, can scarcely be said to be of known utility, with a few exceptions. The nutritive substance called Salep is prepared from the subterraneous succulent roots of Orchis mascula and others."

"Fuchsi discolor. *Port Famine Fuchsia.* Octandria Monogynia.

Natural Order, Onagraceæ. A native of Port Famine in the Falkland Islands, resembling F. gracilis and tenella, but decidedly a different plant; remarkable for its compact, bushy manner of growth, its deep purple branches, its small very undulated leaves, and also for its being apparently more hardy than any other Fuchsia yet in the gardens. For the latter reason we attach especial importance to it, for by a judicious intermixture of its pollen with such beautiful plants as F. conica, globosa, and its more tender relatives, the whole race may probably be rendered capable of bearing the climate of Great Britain, and may thus become far more generally valuable than they yet are."

Elichrysum bicolor. *Two-colored Elichrysum.* Syngenesia Superflua. *Natural Order*, Astraceæ, (Compositæ). A beautiful new hardy annual, a native of Van Dieman's Land. In appearance it resembles the new common E. bracteatum, (*Golden Immortal Flower*), but is much handsomer.

Oxalis Piottæ. *Piotta's Oxalis.* Decandria Pentagynia. *Natural Order*, Oxalidaceæ. A truly beautiful little half hardy, or frame perennial, flowering most copiously during the months of July and August. A little tuft does not, indeed, produce much appearance, but a pot filled with its dense green leaves, and covered with the large salmon colored flowers, is a lovely object. Said to be a native of the Cape of Good Hope."

"Galatella punctata. *Dotted Galatella.* Syngenesia Polygamia Frustranea. *Natural Order*, Asteraceæ, (Compositæ). A hardy herbaceous plant, native of salt marshes in Hungary, Podolia, and elsewhere in the east of Europe. In this country, it flowers in July and August, growing to the height of about two feet, and forming a thick compact bush." A plant of no great interest, with blue flowers.

"Rhododendron pulcherrimum. *The lovely Rhododendron.* Decandria Monogynia. *Natural Order*, Ericeæ. A most beautiful plant, obtained by Mr Waterer of Knap-hill; between R. arboreum and caucasicum. It is of rather delicate appearance, but we are informed it is quite hardy, and an abundant flowerer." Flower light pink, shaded with dark. The flower of another variety, called R. Nobleanum, is also figured, very much like the other in all respects, except that its flowers are of a deep and brilliant rose color. Both are among the handsomest hardy shrubs cultivated in England, but too tender for our climate.

Ochranthe arguta. *Fine-toothed Palebloom.* Pentandria Tryginia. *Natural Order*, Hypericaceæ Anomalæ. A pretty green-house plant, native of China, with handsome foliage, resembling that of the Camellia. Flowers yellowish white, small, in terminal racemes.

Prunus Japonica. *The Single Chinese Plum.* Icosandria Monogynia. *Natural Order*, Rosaceæ. This pretty, hardy shrub, will be an object of interest to the botanist if not to the florist, being the origin of the "Double Chinese Plum, or Almond, as it is often incorrectly called." "It is always interesting to procure the wild forms of cultivated species, and so see from what humble originals Nature produces some of the most striking works." The double flowering Almond is one of the most ornamental shrubs that adorns our gardens.

"Edwardsia chilensis. *Chilian Magu Tree.* Decandria Monogynia. *Natural Order*, Leguminosæ. A fine tree, native of Chili, where the inhabitants call it Magu. Introduced by Messrs Lodiges, in 1822. It proves to be a hardy, handsome tree, flowering in May in great profusion. Flowers yellow, papilionaceous, in spikes.

"Ipomœa Aitoni. *Mr Aiton's Ipomœa.* Pentandria Monogynia. *Natural Order*, Convolvulaceæ. A pretty perennial stove climber. It flowers from April till October. Flowers lilac, with purple centre, and striped with the same color."

"Eutoca viscida. *Clammy Eutoca.* Pentandria Monogynia. *Natural Order*, Hydrophyllaceæ. A new, hardy annual, found in California by Mr Douglas, and raised by the Horticultural Society, in whose garden it flowered this summer for the first time. It is perfectly hardy and will grow in any common soil. The blue of the flowers is remarkably deep and brilliant, so that the plant has a handsome appearance; but its leaves are rather course and weedy. We know, however, of no plant better adapted for bouquets; for it will go on growing and flowering in water for two or three weeks after being gathered."

"Cereus triangularis. *Triangular Torch-thistle.* Icosandria Monogynia. *Natural Order*, Cactaceæ. A native of Mexico and the West Indies. The plant had been in the collection at Leigh Park upwards of fifteen years without blossoming, until September, 1834, when two flowers were perfected. One was despatched to London, and is thus described:

"It was, indeed, a beautiful object; its petals were of the most dazzling whiteness, the effect of which was greatly heightened by the

dense mass of yellow stamens occupying the centre, and by the border of olive green sepals, on which the petals reposed. This is said to have the largest flowers of all the species, not even excepting the common night-blowing Cereus: its fruit is described as being quite smooth, of a rich scarlet, and with the size and form a goose's egg."

"Cratægus Douglasii. *The Douglas Thorn.* Icosandria Mono-Pentagynia. *Natural Order*, Rosaceæ. A native of North West America, where it was collected by Mr Douglas. A hardy tree of small size, flowering in May."

A few other plants are figured in this work of no great interest except to the botanist. The numerous works devoted to botany, Floriculture and Horticulture, published and patronised in England, indicate a very different state of feeling in relation to these subjects there, than what exists in this country.

A monthly publication here at the expense of from six to ten dollars per year, would find but few supporters; but there it is not so, as the many beautiful works prove. We shall be able from time to time, to give extracts from some of the leading works devoted to these subjects; and sincerely hope the time will soon come when we shall not be quite so far behind our transatlantic friends. J. B.

Art. VI.—*Miscellaneous Matters.*

Mildew on Grapes.—A gentleman of this village, who takes much interest in these things, informs us that he has discovered a *sure* remedy for mildew upon grapes. The mildew has been the great bane to the success of growing the more tender but delicious kinds of grapes in this quarter, and even the much prized Isabella suffers more or less by it. The gentleman above-mentioned, says, that he last year discovered that his grapes began to mildew badly, that he had formerly tried sulphur and other remedies without success, and that he made the experiment of applying strong *soap suds* with a syringe to a few bunches, and these came to maturity, plump, smooth and fair, while all the rest upon the same vine were so badly mildewed as to be unfit for use. Should this simple remedy prove effectual, our courage will again be revived in cultivating this delicious table fruit.—*Fredonian Censor.*

Strawberries.—Among the numerous kinds of fruits which are indispensable to good living is the strawberry. Besides being a most delicious dessert fruit, it is considered by medical men a valuable medicine in several diseases — particularly putrid fevers and pulmonary consumptions. A free use of strawberries, it is said, will both prevent and cure the rheumatism. There are several varieties of excellent flavor, and by a judicious selection, and a little labor, a full supply may be had through the season. The ordinary method of cultivation is to prepare the ground, by manuring and spading, and transplant in August. The distances between the rows is generally from eighteen inches to two feet, and between the plants from nine to fifteen inches, according to the varieties. The runners the first year are cut off before they take root. Some cultivators cut off the leaves in autumn. The second year the runners are permitted to take their course — filling up the space between the plants and producing, ordinarily, a good crop of large sized strawberries. Some lay down straw or grass for the runners to run upon. The utility of this is manifest in many respects, but especially in keeping the fruit from coming in contact with the earth, by which it would be injured by dirt. After the fruit is gathered the straw should be removed and the plants cleared of weeds. They should be transplanted every second year.

Anthracite Coal Ashes.—The Philadelphia Horticultural Society has awarded Mr J. A. Snyder the premium for the best assortment of fruits. The account states that the fruit consisted of Peaches, Nectarines, and Green Gage Plums, produced within the city and in an unfavorable situation. Mr Snyder had been in the habit of placing ashes of Anthracite Coal about the roots of his fruit trees, and to that circumstance he attributed their preservation from the attacks of insects. Col. Carr stated that he had practised the same for two years past, and that it seemed to afford effectual protection from those insects which attack the roots.—*Silk Cul.*

Rhubarb, or Pie Plant.—The seed of this plant having ripened, it may be sown immediately with advantage, on a bed of good earth. Sow in drills, cover the seeds half of an inch, press the earth smartly to them, thin the plants, and next spring they may be planted out, at a yard apart, and the stalks may be used the first season.—*Cultivator.*

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Art. I.—*Rearing Silk-Worms.* Communicated by Hon. H. A. S. Dearborn.

As the culture of silk, excites universal attention, throughout the United States, every kind of information, in relation to that subject, cannot fail of being highly interesting to those, who have already commenced, or contemplate entering into that important branch of husbandry; and having recently read a most able and instructive report, made to the Society for the Encouragement of National Industry, in France, on a novel mode of rearing silk-worms, in apartments artificially warmed and ventilated, I have translated it for publication. The intelligence it contains, may, possibly, be employed to great advantage, in the New England and Middle States, where the climate is much more rigorous, than in the northern departments of France, for the benefit of which the experiments were suggested, and prosecuted; and with so much success, that it is now considered practicable, to extend the cultivation of one of the most valuable products of the south, over the whole of that empire.

Although it has been conclusively shown, that the mulberry and silk-worm can be profitably reared in all parts of this country, still it is worthy of consideration, whether more satisfactory results cannot be obtained, by adopting the system which has been practically illustrated near Paris, to obviate the deleterious influence of cold, humidity, noxious exhalations, and the sudden changes of weather upon that delicate insect.

This is, emphatically, an age of invention, enterprise and advancement. Each day becomes distinguished by some triumph of genius,

in science or art. What were once considered as wild and visionary conceptions, or extravagant and impracticable anticipations, have been more than realized. Enthusiasm, based on the profound convictions of fact and induction, instead of being deterred by the sinister smiles of incredulity, or the discouraging doubts of prejudice, now boldly announces what it knows can be accomplished, confidently appeals to experiment, for the verification of theory, and commands admiration for success, where public opinion had prognosticated disappointment and ruin.

Suggestions of what may be achieved, are no longer deemed the evanescent flashes of rapt imagination. The triumphs of erudition, talent and skill have been so numerous, so astounding, and so momentous, — have wrought such remarkable changes in the condition of nations, and given such a mighty impulse to individual exertion, that no one can look back from our present elevated position, for the brief period of half the age of man, without being overwhelmed with amazement, at the progress which has been made, in whatever tends to promote the comfort, independence and happiness of the people, and the grandeur of nations; and if we look towards the future, even with that limited power of prescience, which is founded on experience, who can comprehend the still more wonderful developements of mind, which this accelerated movement of the human race, is destined to exhibit; who will presume to scan the infinite resources of intellect, or dare to fix the bounds of enlightened genius, and say, — here shall your proud career be stayed?

In the vast republic of letters, science and art, how numerous are the votaries of truth, who are emulous for distinction, either as the heralds of some important fact, the discoverers of some great principle in philosophy, or as the originators of some new combination of the mechanical powers. No object, — not an incident occurs, — not an event or fact is promulgated, which does not immediately attract the eager attention of numerous individuals, in all quarters of the globe, who have made the particular branch of physics, or morals, to which each pertains, their peculiar and especial study; and the results of their several researches are but so many demonstrated truths, from which are ultimately deduced, by some master spirit of the age, those great theories and comprehensive systems, by which human reason is securely guided, in the future pursuit of knowledge. Logical precision, and mathematical exactness are the elements and tests of modern research. The understanding is addressed rather than

the imagination; proof has been substituted for hypothesis, and genius now relies on principles, instead of chance, for the attainment of its objects. Are we not then admonished to read without prejudice, to listen with a disposition to be instructed, and to examine with deep attention, whatever comes within the range of our observation; and be more cautious to condemn suggested inquiries, than fearful of being deceived, in the anticipated results, however startling, or apparently improbable their import. There is not an improvement, or discovery, — not an acquisition in knowledge, which had not its origin in some unobtrusive and long neglected fact, or some bold intimation, which seemed to forbid investigation, from its very magnitude. To advance, nothing must be disregarded. One momentary flash sufficiently illumines the tempest darkened night, to reveal the land-marks in our course; so, a single hint, — a word, may indicate the route to some unexplored region of inquiry. How fully is this illustrated even in the ranks of the vegetable and animal kingdoms. The moss which clings to the bleak rocks of the Azores, and an insect of Mexico, now furnish coloring pigments, which rival the imperial purple of the Tyrians. If man has not yet discovered the useful purposes to which all the productions of nature may be rendered subservient, — if of the fifty thousand species of insects, and the thirty thousand of plants, which naturalists have described, he has found only five or six of the former, and but a very few of the latter which are of any known value, he has, at least, ascertained sufficient to give assurance, that nothing has been vainly created, and that thousands of others may ultimately be made tributary to his wants, his comforts or his luxuries.

The history of the cultivation of silk in the United States, is invested with peculiar interest. Nearly a century had elapsed, after the first experiment, before it began to attract public attention; and had it not been for the industrious and intelligent daughters of Connecticut, that precious oriental race, of one of the most numerous, yet minute, feeble, short-lived, and neglected classes of the animal realm, would have been extinct in this country. By them, has its brief and precarious existence been watched and prolonged, with a vigilance and perseverance, as unremitted, and faithful, as that, which annually renewed and perpetuated the holy fire in the temples of Vesta. Some instinctive sentiment of its future importance, or some mysterious predestinate influence, appears to have impelled those self-created guardians of this sacred trust, to cherish and transmit it to an age,

when its intrinsic value, and their faithful and meritorious services, would be justly appreciated, and honored. When the ever changing fortunes, and peculiar situation of our country are considered, during the long period which has intervened, since the planting of the first mulberry seed, and the birth of the first silk-worm; when we estimate the adverse circumstances attendant upon this culture, and fully understand what patient attention, and determined zeal were required, in the divided occupation of preserving the insect, as well as its native plant, — for the latter is as indispensable for the procreation of its species, as for the construction of that sumptuous tent in which it expires, and leaves, as a rich inheritance to its patrons, to be converted into the most magnificent vestments of nations; when, in fact, all the various conditions for the successful management of these little Asiatic colonies are known, it looks like one of those inexplicable incidents, which seem to sanction a credence in fatality. Yet, after all, what is this fatality, — this destiny, which superstition announced, and ignorance has believed, but the necessary result of causes, sometimes capable of explanation, but often too recondite for human ingenuity to divine, still not the less certain of existence. Gravitation, heat, light, magnetism, and electricity, which have, through all time, been the gaze and admiration of the multitude, and subjects of the deepest research, and intense study, are but sublime effects, and philosophy has not yet been able to discover the cause of either of those great phenomena.

At all events, there has been a very remarkable and most propitious combination of circumstances, attendant upon this department of rural industry, which have, at last, brought it into such distinguished notoriety and general favor, that there is no longer any doubt of its rapid extension.

Here individual enterprise has achieved, what required the power and munificence of a Justinian, in the Bizantian empire, of a Henry IV. and his regal successors in France, and of the governments, monarchs, and princes of Venice, Genoa, Naples, and the other states of Italy. Without national patronage or encouragement, the cultivation of silk has reached a point, which gives assurance, that it will become as important to our agricultural, mechanical and commercial industry, as it has been to those of China, Hindostan, Persia and Southern Europe. If we had no statesmen like De Serres, or Colbert, or affluent nobles, like those who surrounded the thrones of the Eastern Continent, still the desired object has been as completely attained, by

the spontaneous and zealous efforts of a few private citizens in this republic. Du Ponceau, Pascalis, Cobb, Fessenden, Kenrick, Gay and Whitmarsh, with other intelligent and practical compatriots, have, by their extensive correspondence, numerous publications, experiments, discoveries, improvements and practical operations, given an impulse which is felt throughout the land; and multitudes of our most enlightened and energetic farmers and capitalists, are making demonstrations, which indicate the speedy realization of their most sanguine anticipations.

The first piece of silk made from the raw material, raised, reeled, thrown, dyed, and wove in this country, was a national flag. It was manufactured in an establishment erected by the venerable and illustrious Du Ponceau, and presented by him to Congress in 1831. It was immediately suspended in the Representatives' Chamber, over the portrait of Lafayette, as an appropriate emblem of national gratitude and respect, for that great and honored man, and as indicative of the favorable disposition of the government to naturalize one of the most valuable products of his native country; while it is a splendid memorial of the distinguished services of him, who so richly merits the thanks and benedictions of every American, for his liberal and successful labors, to enable them justly to appreciate, and avail of the advantages, to be derived from the culture of the material of which it is formed.

The name of Du Ponceau, will not only live in the memory of his fellow citizens, as a gallant soldier of the revolution, a learned and eminent jurist, "a ripe scholar," and one of the first scientific and literary men of the age, but as the generous promoter of national industry, — as a benefactor of the Republic.

Report made to the Society for the Encouragement of National Industry,

By Mr Soulange Bodin,

in the name of the committee of agriculture,

On an experiment in breeding silk-worms, made, in 1835, *by Mr Camille Beauvais, on his estate of Bergeries de Senart, near Montgeron, in the department of the Seine-et-Marne.*

Gentlemen,—You have referred to your Committee of Agriculture, the examination of a letter, which was addressed to you, on the 20th of June last, by Mr Camille Beauvais. It calls your attention to

one of the most important subjects, of agricultural and industrious economy, which interests the age in which we live.

Indeed, gentlemen, among the thousand various branches of industry, encouraged and rendered fruitful by your institution, a certain number of which gradually attain perfection in each year, and which you are anxious to verify, reward and render profitable to all, there cannot but be perceived the favorable indications, and anticipated results of that great phenomenon, which characterizes modern society, — *Progression.* Everything advances and is elevated, under the same secret impulse, — individual benefit, towards the same apparent end, — the public good; and in this universal movement, which is governed by an exalted philanthropy, each receives quietly, in his turn, the reward of his efforts, under the common banner of circumspect emulation, which neither contains, or occasions the least germ of dissention, or active opposition.

But it is different, when one of those bold, exclusive, and innovating ideas, which are occasionally advanced, by ardent minds, and whose natural enthusiasm is sustained by profound conviction, which astonishes the multitude, and tends to displace some ancient order of things. These commanding ideas, necessarily, disconcert inveterate habits, as to the correctness of old opinions, and excite against them precedents, which are enveloped in the legitimacy of time. A conflict of opinions is then produced, during which the human judgment long combats natural facts, and truth, on whichsoever side she may preponderate, will, sometimes, be very dilatory in her triumphs.

It is, gentlemen, a spectacle of this kind which is now offered for your consideration, by an able agriculturist, who has established himself within a few years, near Paris, on an indifferent, refractory and arid soil. It has been said, that this man only wished to put his foot upon our land; that to advance, he calculated but little on the profits of the plough, and that he only sought a spot, where he could realize the treasure, which, as yet, existed, but in his head.

This treasure, which Mr Camille Beauvais, now offers to your inspection, was not, in fact, gentlemen, but an abstraction, which he could thus have stated :

"To lay the foundation of his own fortune and increase that of the nation, by an improvement, which will certainly promote the cultivation of silk, in the centre and in the north of France."

After many experiments, he believes, that he has, at last, caused a new fountain of private and public wealth to arise, out of his own

arid land, and far from desiring to engross it, for his exclusive benefit, he invites us to draw from this fountain, which will be inexhaustible, if his zeal for the public good, has not greatly deceived him.

Mr Camille Beauvais belongs to the South: he had only to establish his magnanery* in the South, and to manage it, in conformity to the system with which he was already familiar; he knew the efforts which had been vainly attempted in preceding ages to breed silk-worms in the North. Everything attracted him on one side, while all was repulsive on the other; but he said to himself:

"Every branch of industry is advancing; why does that of silk always remain, very near what it was, when it passed from Italy into France? The sciences, as physics and chemistry, — the recent discoveries in which have been so remarkable, and whose aid can be invoked, were then scarcely known to the husbandman; why then should this branch of industry remain irrevocably confined to its ancient cradle? Should the losses, which have sometimes been so discouraging, be attributed, rather to the constitution of the precious insect, by which this culture is maintained, than to the insalubrity of the situation, and the variations of the atmosphere, which have such a powerful influence upon a life, at the same so full and so brief? They cannot be imputed to the north, where the silk-worm is not now bred, when they so cruelly afflict the delightful climate of the south, which is reputed to be exclusively propitious to them. Wherever the mulberry tree grows and prospers, the worm which feeds upon its leaf, ought to be able also to grow and prosper. Do not perpetually neglect the accidental conditions of beings! Why cannot I create, under the shelter, where this worm accomplishes its destiny, an isolated climate, free from all local influence? I can, in fact, more easily protect them from the less sudden changes of the intemperate climate, of the north, than they can be screened from the capricious temperature of the south. What do I say? There is no longer either north or south; for I perceive that it is possible to command and combine, in their confined asylum, fire and water, — those two great promoters of all organizations, and to imitate, for them those winds, which maintain without, the salubrity of the air, and scatter to a distance deleterious effluvias."

I have put these words in the mouth of Mr Camille Beauvais, gentlemen, not to extol or over estimate his theory, but because they ex-

* The name given to the apartment in which silk-worms are bred.

press the bold and profound thoughts, which must have presided at his establishment, and contain the principles upon which all his labors were prosecuted. It was at his own expense, and his own risk, that under the influence of his own convictions, he, for seven years, put these principles in practice, with continually increasing results, without being discouraged by a few mistakes, which he nobly confessed, without being intimidated by the inquietude of his friends, or the doubts which he saw arise, like clouds, ready to obscure the brilliancy of his first successful experiment, and to blast, perhaps forever, his fondest hopes.

It would be superfluous to enter, here, into the general details of cultivation, which every friend of agriculture, is invited to examine, at the establishment of Bergeries. They have been described elsewhere; and that is not now the subject of inquiry; it is sufficient to say, that it is upon 67,000 mulberry trees, of the best species, and of the most luxuriant growth, among which are to be seen a great number of the Morus multicaulis, that Mr Camille Beauvais principally founds his hope, of a second annual brood of silk-worms, which he proposes to undertake. These trees, including nurseries and established plantations, contain sixteen hectares and a half of land.

The establishment, in its present condition, is capable of rearing annually the number of silk-worms which are produced from one hundred and fifty ounces of eggs. During the five last years the mean product of an ounce of eggs in the establishments of the south, has not exceeded from fifty to fiftyfive pounds of cocoons, that is to say, only about 10,000 silk-worms out of the 42,000 eggs, which an ounce contains, reached that last period, which unites a simple worm to the enjoyments of a refined civilization. On the contrary, Mr Camille Beauvais' first brood, gave him sixtyseven pounds of cocoons, for each ounce of eggs. He has been constantly progressing, during the years 1830, 1831, 1832 and 1833; in 1834, he obtained 104 pounds of cocoons. All these facts are generally known. His last brood gave him 137 pounds; this brood was from eight ounces of eggs, and the worms were kept in a temperature equal to from 18 to 20 degrees of heat according to Reaumur's thermometer,—[equal to 72 and 77 of Fahrenheit.] They continued their labors for thirtyseven days, and consumed 16,830 pounds of leaves, the product of trees, half of which were grafted and the other half seedlings. They yielded 1,101 pounds of cocoons, of the most beautiful quality, large, firm and of an admirable whiteness. It does not appear, that such a re-

sult has been obtained anywhere else, in any large establishment: nevertheless, Mr Camille Beauvais, is the first to inform you, that one of his pupils, Mr Henry Bourdon, who had recently left the Polytechnical School, and is a proprietor at Ris, terminated an experiment, in which the proportional product, amounted to one hundred and seventy pounds of cocoons, to an ounce of eggs.

We have seen that an ounce of eggs produces 42,000 worms; Mr Camille Beauvais employed eight ounces of eggs; he should, therefore, have had 336,000 silk-worms. He actually realized 1,102 pounds of cocoons; it requires, at Bergeries but 360 cocoons to make a pound; he has then obtained only about 286,520 silk-worms. He lost 4,000, when they began to rise, to form their cocoons, by the bad arrangement of the heaths, or twigs, and an imperfect ventilation. He has then lost in the first ages, including the eggs which did not hatch, 45,480.

It results from an analysis, which Mr D'Arcet has been so kind as to communicate to me, that the air of the magnanery of Bergeries, during the fourth age was slightly alkaline. The water, which was there condensed, by means of a globe filled with ice, and which was found to be as limpid as distilled water, was slightly alkaline. The nitrate of silver did not form a precipitate at the moment of admixture, but it immediately after assumed a faint brownish red color. At this period of the brood the ventilation was well regulated. The air was so little altered, that it was difficult to discover carbonic acid upon the tub of water, and ediometrical experiments made with this air, either by phosphorus or deutoxide of azote, indicated as much azote and oxygen as the atmosphere; it contained very feeble traces of ammonia, combined with carbonic acid.

At the period the worms began to ascend, the ventilation, as has been stated, was interrupted and in part suppressed, by the heath; the air of the magnanery ceased to be pure. Mr Henry Bourdon, who made the analysis of the air, found it to be composed of

Azote and carbonic acid	82,57 parts
Oxygen	17,43
	100,00

It is known that atmospheric air contains 79 parts of azote and 21 of oxygen. It is apparent, then, that the air had become very much vitiated. At this period the water in the magnanery, and which was condensed, by the means of ice, was limpid; it had neither odor, nor

savor, was akaline, and not rendered turbid by the addition of nitrate of silver; but almost immediately assumed a faint brownish red color, and that there was suddenly formed, an abundant brownish red precipitate, which did not appear to have been perfectly defined.

An opinion can be formed of the effect produced on silk-worms, which are constantly confined in the magnanery, which is not properly ventilated, by the following experiment, which Mr D'Arcet made upon some which were reaching their last state, and which were bred in a pure air; he confined twelve large silk-worms taken in their fourth state, in a quart bottle, in which had been placed some mulberry leaves; at the end of twentyfour hours, the air contained in the bottle had diminished in volume, was alkaline and contained,

Azote	79,11 parts
Carbonic acid	17,50
Oxygen	3,39
	100,00

The air therefore, in the bottle was almost completely vitiated, one of the worms was dead; the others were shortened and shriveled, and of a dirty greenish yellow color, and scarcely moved; three died soon after being placed on fresh leaves; the eight others ate but little, three only made a small quantity of silk before they died, two changed into the chrysalis state, without spinning, and three died without spinning or changing.

I have before stated, that Mr Camille Beauvais should have had 336,000 silk-worms, from his eight ounces of eggs. He then realized from one hundred eggs only 85,27 cocoons, and lost 14,73 worms and eggs, which did not hatch. By adding to the 286,520 worms which spun, the 4000 which died, at the time of ascension, we have 290,520 which completed their growth. These worms consumed 16,830 pounds of leaves. Fresh leaves contain, of

Dried vegetable matter	32 parts
Water	68
	100

Each silk-worm, then, had eaten, in the whole course of its life 29 grammes of fresh leaves, or 6,28, g. of dry vegetable matter.*

* Mr D'Arcet has ascertained, that there are 5,58 parts of azote in 100 parts of the dry vegetable matter of the leaves. A silk-worm, then, does not find in all the leaves it eats during its whole life but 0,518, g. of azote. Silk contains 11,33 parts of azote in 100.

I have, gentlemen, pronounced the word *Pupils*. Mr Camille Beauvais defines himself to be a man of conviction and progression; but that conviction, that progression and his ardent and disinterested zeal loyally seeks to establish an empire, an extension, in which their influences shall indefinitely increase. To attain that object, he has gratuitously opened a school of theory and practice, whither resort the young proprietors from all parts of France. This year they hurried, — that is the word, to his establishment, to the number of fifteen. Among them are to be found, with Mr Henry Bourdon, the pupils of Roville, the Marquis Amelot, a large proprietor in Gatinais, the son of Baron Mallet, who has an extensive sugar refinery at Choisy-le-Roi, Mr Bella, son of the director of the model-farm of Grignon; Mr Baynard, late prefect of the Haute-Alpes, and of Maine-et-Loire, who is now establishing mulberry plantations near to Bergeries. After having employed a part of their time, in attending to the breeding of the silk-worms in all its minutest details, and assisting with their own hands, in the cultivation and management of mulberry trees, under the direction of a nursery man of the south, who is attached to the establishment, their worthy master assembles them, for two hours, in each day, for the purpose of instructive conversation, when they recapitulate, or compare all the observations of the day, or discuss all the advantages, which, from their elevated point of view and their social condition, they are enabled to perceive, their country will derive, from the interesting subject of their studies and experiments. What truly logical ideas, what lights, without shadows, what germs of amelioration, rendered fruitful by this powerful reconciliation of observations and facts, have already been produced, by those young and studious citizens, — the legitimate hope of Agriculture and the State! To present to you, gentlemen, in a single word, their deep conviction of the advantages they have gained, from their connexion with Mr Camille Beauvais, and the sentiments, which his generous attentions had excited in their hearts, I should inform you, that before their departure, they unanimously voted to present him a gold medal, as a brilliant testimony of gratitude, the most sensibly felt and the most worthily merited. This medal has been struck at Monnaie, but the resolution is yet unknown to Mr Camille Beauvais. A great number of persons have already made application to him, to be received at his establishment the approaching season.

One of these pupils, Mr Peycams, nephew of Mr Caussade, Col. of Artillery and proprietor of an estate in Guadaloupe, has paid particular

attention to the management of the *filature*. He is going to that Island, at the request of the principal planters, to instruct the black females, in the reeling of silk, from the cocoons; for this purpose, he will take with him the complete apparatus for a *filature*. But Mr Camille Beauvais, acknowledges, and has published in terms which at the same time delineate his character, his gratitude and his love for truth, that for the pleasing results which he has obtained this year, and which were chiefly produced by his own intelligence, the lofty reach of his genius and his determined perseverance, he is incontestably indebted to the apparatus for ventilation, which Mr D'Arcet has already made known to you, which was applied to Mr Grimaudet's very complete magnanery, and the plan and description of which, the Society for the Encouragement of National Industry has published in its *Bulletin*, under the name of *Salubrious Magnanery*, which Mr D'Arcet had given to it. After various experiments, Mr Camille Beauvais says, this simple and cheap apparatus has finally proved, what he had conceived might possibly be attained, and what he had for a long time sought; *an equal temperature and a pure air constantly renewed:* conditions, which joined to careful attention and cleanliness, approximate as nearly as possible, the artificial breeding of silk-worms, in those limited apartments, where it is necessary to confine them in Europe, to the most favorable condition in which they have been placed by nature.*

The first application of Mr D'Arcet's system of ventilation, at the establishment of Bergeries, has, at once, imperfect as must yet be, an operation, which, for want of time, could only be considered as an experiment, had a success, which cannot fail to interest every enlightened mind. God forbid, that what remains for me to say, should diminish the merit of the applicator, and his right to your respect! On the contrary, Mr D'Arcet, has, himself declared that it was Mr Camille Beauvais, who communicating to him an opinion, which that learned man had formed, in traveling through the south of France, on the culture of silk-worms, and had requested him to consider the subject, and make a plan of a magnanery. French agriculture, will please then, I hope, to unite in the same sentiment of esteem, the learned and the practical man. I say French agriculture, for it should not be doubted, if the interesting experiment which has been sub-

* There is in China, a wild species, which feed in the open air, on the mulberry trees of the country, and which have not yet been domesticated.

mitted to your consideration, should have such an important influence, on the production of silk in the central and northern parts of France, how much more efficacious still, will it be in ameliorating the culture of the south! Will not the most cautious men — those ancient agriculturists, who have so great a right to intrench themselves behind that prudence, which we respect in them, and which is the treasure of their life, wish at least, that such experiments be repeated and extended? But the subject is so important, and the inquiry so grave, that I request, gentlemen, your permission, to enter into some details, previous to presenting a short summary of the essential conditions, for the proper management of silk-worms, and the means, which are now employed, to render the air of the magnanery salubrious.

If the organization of the silk-worm is carefully examined, and it is found that they respire only by their stigmata,* and if the gas they expire, especially during the period of their last change, is analysed, no one can fail of being convinced, of the importance of a gentle and continuous circulation of air, in an apartment where millions of these little insects are assembled and extended on frames which emit deleterious exhalations.

On attentively observing the continual exertions which are made by these small animals, both by dilation and contraction, and which are repeated without cessation, especially, at the moment of moulting, it will be seen, that all their functions are in operation, with greater or less activity, according to the heat, to which they are subjected, and it will be readily perceived to what danger they are exposed, from sudden changes of weather.

Great humidity in the magnanery is of itself fatal to silk-worms, while it produces a fermentation in the vegetable and other matter which collects on the frames where they are fed, and thus vitiates the air they breathe; therefore cultivators dread, especially in the fifth state, the cold and damp winds of the south. Besides the exterior humidity, a great quantity is developed in the magnanery, from the leaves and from the worms themselves.

The dryness of the air, besides being essentially injurious, to silk-worms, as to all other animals, even when in the greatest possible purity, withers, and crisps the leaves; and the worms instinctly perceiving that they require a certain quantity of water in their food,

* The silk-worm, and the larva of other insects, instead of breathing through the mouth, like other animals, breathe through the spiracles or stigmata, which are holes in the rings on each side.

reject the leaves as soon as they wither; there is consequently the suffering of the worms, as well as the loss of leaves.

All intelligent cultivators know, from their own experience, how important it is, to fulfil all the conditions of a continual renewal of the air, a uniform temperature, and an invariable humidity; but from a want of the means for doing this properly, they are compelled to guard against the injuries which may arise, as well as they can, and to this end, they are in the habit of burning in the apartment aromatic plants, boiling vinegar, with cloves in it, sprinkling the worms with chloride of lime, &c. &c. But the inefficiency and even danger of these expedients is readily perceived.

Dandolo, the distinguished cultivator of Piedmont, delayed not in ascertaining that these means were detrimental to the silk-worms, and immediately and completely reformed, the art of managing his establishment. To purify a magnanery, he made holes in the floor, ceiling and lateral walls, for the admission of fresh air and the escape of these fumigations, which he had ascertained were dangerous; and in the magnanery, constructed on his plan and called *Dandolories*, the proprietor obtained from 100 to 110 pounds,* of cocoons, instead of from 50 to 60 for each ounce of eggs; but his imitators, unfortunately are but few, in consequence of the want of encouragement in Piedmont. Here is the subject presented for consideration, in France, where encouragements are not wanting.

Nevertheless the system of Dandolo is yet defective; he established his fireplaces or furnaces in the magnanery, and the immediate action of the heat which is developed, and the exhalations which arise from the combustibles, cannot but be injurious to the silk-worms. Besides, his means are often ineffectual, especially in lowery and stormy weather, when the air does not freely circulate, and when it is necessary to have recourse to fumigations of chloride of lime, the application of which, it is far from being practicable, at all times, to make, with the desirable exactness.

It is necessary, then, to employ more powerful and infallible means, for illustrating the principles of sanitory purification developed by Dandolo: it is thus that science assumes its control over the subject, and completely annihilates the action of exterior influences, removes the source of heat beyond the magnanery, and is enabled to realize, simultaneously, the four conditions, so essential to success in the management of silk-worms.

* The pound of 16 ounces.

In the system of D'Arcet, the magnanery is in the second story, and the furnace or colorifery, is in a small apartment in the lower story, which is called the air chamber. The air issues from this chamber into pipes, which extend the whole length of the floor of the magnanery, and from which it issues through circular holes of various sizes. In the ceiling, are made a number of conduits and openings, perfectly symmetrical with those below, and it is by these superior openings that the air escapes through a funnel into the chimney of the furnace, which receives the pipe of the colorifery, after having been introduced into the magnanery, by which a continual warmth is kept up.

It is only necessary, then, that a proper temperature and humidity should be maintained in the apartment; and this result is easily obtained, for, by the aid of a furnace, ice, moist cloths, and desicating substances, there can be produced heat, cold, humidity and dryness.

In the month of April, 1833, Mr D'Arcet sent to Mr Camille Beauvais, his plans of a "Salubrious Magnanery," and as the period of breeding the silk-worms was near, the application of the system, and a knowledge of the result, would be postponed for a year, if it was suffered to pass, Mr Camille Beauvais was impatient to test this scientific theory by an experiment, the success of which was guaranteed by his experience in the management of silk-worms. In a month he constructed a new magnanery, which was so judiciously arranged, as to insure to him all the advantages, which could be derived from the proposed improvements. He corrected, as soon as possible, such imperfections as necessarily arose from the novelty of the system applied to the rearing of silk-worms, and the precipitate manner, in which the work was executed.

Mr Camille Beauvois, immediately found, in the interesting and successful result which he obtained, the prize of his assiduity, and his devotion ;* and has the gratification of having demonstrated, more clearly, than had before been done, that a new era may be commenced in the culture of silk, — thanks to Mr D'Arcet's system of salubrity, for the application of which, it only requires a careful and attentive workman to execute the instructions which he has given, in a perfect manner.(1)

* The current price of raw silk, was at that time, twentyfive francs per half killogram, and Mr Camille Beauvais sold his for fifty. It was produced by that beautiful race called *Sina*, which Lewis XVI. obtained from Canton in 1784, and was by degrees changed, in consequence of the negligence and avarice of the first cultivators of this species of silk-worm ; but Mr Poidebard has been enabled, by long and assiduous efforts, to regenerate it in a remarkable manner, and Mr Camille Beauvais has endeavored to restore it in all its primitive beauty.

Still, gentlemen, if the important fact which has been established, near the capital of the empire, seems to countenance those bright hopes, which numerous enlightened men have entertained, it is proper to declare, — it is proper to repeat, in the sincerity of truth, which repulses all equivocal triumphs, that whatever confidence this remarkable experiment merits, and has already obtained, it only appears, as yet, but as an isolated and very recent result, and is at present deprived of that influence, which can only be obtained by its reproduction, by different persons, under other circumstances and in other places, and it should also receive the sanction of time. The author of this experiment, merits encouragement, without doubt; the attention of those who are interested in it, ought, at the same time, to be roused, and possibly restrained; new trials appear desirable, to the true friends of our prosperity, — that is to say, gentlemen, to you all; it is important that those trials be continued, for that which attracted your attention, has also attracted the attention of the able cultivators of the South — strangers to all prepossessions, superior to all prejudices, they await new trials with an eagerness, the more legitimate, because they well know, that the experiments which are now making in the North, cannot but be advantageous to the South, which is ready to receive with gratitude new methods of culture which appear to them sufficiently well tested; they know that the industry on which large fortunes are founded in the South, will be able without injuring them, to create like fortunes in the North, and gradually relieve the common country from the tribute of fortyfive millions of francs, which it annually pays to foreigners for raw silk; and which the agriculturists of the North, hereafter the emulators and not the rivals of those of the South, will be able, in a quarter of a century, to divide with them, as brothers, the ever increasing fruits of their own industry.

From these various considerations, gentlemen, your Committee on Agriculture, has charged me with the honor to propose to you, that this report be inserted in the Bulletin, and referred to the Commissioners on Medals.

Approved, at a meeting held on the 30th of September, 1835.

SOULANGE BODIN, *Reporter.*

(1) It is highly probable, that the apparatus for heating green houses with hot water, or the cockle or furnace for warming private houses and public buildings, may be advantageously substituted for Mr D'Arcet's method. If the theory of Mr Beauvais should be deemed worthy of adoption in this country, the ingenuity of our enterprising citizens will, beyond a doubt, discover some simple, cheap, and better mode. — *Translator.*

ART. II.—*Influence of Temperature on Plants, &c.* Communicated by J. E. T.

SIR — According to accounts from all parts of the country, concurrent testimony has pronounced the winter now past, as the severest, in point of intensity of cold, and unintermitted duration, of any within the memory of man, and the usual thermometrical observations coincide with this fact. It becomes, therefore, a kind of interesting duty, for the lovers of horticulture and agriculture, to note down with as much precision as they are able, for the benefit of those who have to pass through seasons yet to come, any variation or new appearance in vegetation, which may, on fair rules of reasoning, be attributed to this unusual severity of temperature.

Trees and plants, both of the useful and ornamental species, are endowed with capacities enabling them to resist various degrees of cold, and any observation throwing light on this, at present, obscure portion of vegetable physiology, cannot fail of being gratifying to the lover of natural history. It is not improbable that the same may be the case with the insect tribe in its various stages of torpid existence, from the egg to the subterranean grub and chrysalis, — but this may be left to the entomologist, although certainly not without its interest to the cultivator. I therefore throw out the hint to your numerous readers and correspondents, to commit to the press, through the various agricultural and horticultural publications in the Union, all facts and observations in any way bearing on this subject; these may hereafter be collated and collected into a point, by able and experienced hands, and perhaps produce the result of some clear and obvious law of nature, the promulgation of which, may be eminently useful.

The geographical distribution of plants, is, at this moment, attracting much attention amongst botanists, and as the different zones into which it is divided, depends somewhat on the capacities of the various plants to exist and flourish in peculiar temperatures, much light might be expected on the subject, by correct observations during periods of its extremes. As a guide to some of these facts, I would offer the following points for remark, of course feeling persuaded that any one taking an interest in the subject, will soon find out for himself the appearances bearing upon it in the most direct manner.

It is well known that nature has provided protection in the shape of scales, and a gummy secretion, for the buds of many trees; among

the most conspicuous are those of the chesnut and varieties, and the butternut. Are these thicker, or the secretion in greater quantity than usual; or have the scales been more penetrated and destroyed by the action of the intense frost? Short hairs, (pubescence,) are also of use in protecting plants; are these more dense than usual?

In this neighborhood, from the falls of snow which covered the earth early in the autumn, the frost has penetrated but a little depth into the ground. Should any peculiar effect be observed it may, therefore, be attributed chiefly to the low degree of temperature of the atmosphere alone. It is very possible that many plants whose upper branches may have been cut off by the intense frost, are yet alive at the roots, and will make vigorous shoots in the spring and summer months, if not taken up under the idea that they have been frost killed; for many plants, *deciduous*, that is, torpid during the winter, when exposed to the open air, are full of life and viridity, when kept during this season in the green-house. Observations on the efficacy of the various artificial coverings made use of here, such as sea-weed, pine boughs, &c., will not be without interest.

From the cause above alluded to, of the frost having penetrated but a little way into the earth, it is presumed that the class of herbaceous perennial flowers, will not have suffered much. Woody shrubs, on the other hand, will have been more exposed, and many which thrive only in sheltered situations, have been, probably, killed; such as, perhaps, the double flowering Althea, (Hibiscus Syriacus) several of the later imported azaleas, &c.

It is, however, more to the fruit trees, that I would invite attention. Many of the pears are rather tender, so are several of the cherries and apricots; I have also known the imported raspberry to suffer from intense cold, as well as many of the newer varieties of strawberries. The action of frost on the wood of plants, is not much understood — whether it penetrates the bark covering and freezes the juices in the vessels, which by their expansion on being converted into ice, rupture and burst these vessels, and thus destroy the plant, or whether intense cold alters the state of these juices, and render them unfit for the support of vegetation, and what is the nature of this change, or, as is most probable, whether both these methods of action occur — whether frost has any effect on the ligneous fibre of various plants, and what that effect is. All these are interesting points for the vegetable physiologist.

It occurs to me, that a set of amusing experiments might be made

on the temperature of the internal parts of trees, by boring a hole nearly as deep as the centre of the trunk, and cutting a perpendicular slice out, so as to insert a delicate thermometer, which may be left there until the bulb of the instrument is grown over by the new made wood cicatrizing the wound of the auger. If this bulb were protected against the pressure of the growing wood and the index kept clear by the use of the knife, the bulb would always be in immediate contact with the sap vessels, and the temperature of the juices indicated; many curious observations would be then made, concerning the winter and summer temperature of the sap, and its different degrees in different trees. The blood, which circulates in the human body, has, I believe, always an equal temperature in healthy persons. In various animals it differs. This may be the case with the fluid which circulates in different plants. Folding bands of hay around the trunks of trees, has been long known as an efficient protection against severe cold. This argues that some direct effect is produced on the bark by frost. The Boston market has been tolerably well supplied with winter spinach, notwithstanding the intense cold. This vegetable, I am informed, is covered with boards and then with sea-weed or other litter; the before-mentioned early snow has also been a favorable circumstance for this plant. Should any observations occur to me, I shall take the liberty of sending them to your Register.

Yours, truly.

ART. III. — *Some Observations on the Flashes of Light from Flowers.* By Mr J. R. TRIMMER, Brentford.

THE power of some plants to emit flashes of light, is a subject so curious as to be deserving of more investigation than has at present been bestowed upon it. It is thus described in a note in Darwin's Botanic Garden, vol. 2, page 144: "Miss E. C. Linnæus first observed the *Tropæolum majus*, or Garden Nasturtium, emit sparks or flashes in the morning, before sun-rise, during the months of June or July, and also during the twilight in the evening, but not after total darkness came on; these singular scintillations were shown to her father and other philosophers, and Mr Wilcke, a celebrated electrician, believed them to be electric. Nor is this more wonderful than that the electric eel and torpedo should give voluntary shocks of

electricity; and in this plant perhaps, as in those animals, it may be a mode of defence, by which it harasses or destroys the night-flying insects which infest it, and probably it may emit the same sparks during the day, which must then be invisible. This curious subject deserves further investigation. The ceasing to shine of this plant after twilight, might induce one to conceive that it absorbed and emitted light like the Bolognian Phosphorus, or calcined oyster shell. The light of the evening, at the same distance from noon, is much greater, as I have repeatedly observed, than the light of the morning; this is owing, as I suppose, to the phosphorescent quality of almost all bodies in a greater or less degree, which thus absorb light during the sunshine, and continue to emit it again for some time afterwards, though not in such quantity as to produce apparent scintillations."

On the same subject, Darwin has an additional note in the same volume, page 182. "In Sweden a very curious phenomenon has been observed on certain flowers, by Mr Haggren, Lecturer on Natural History. One evening he perceived a faint flash of light repeatedly dart from a marigold; surprised at such an uncommon appearance, he resolved to examine it with attention, and to be assured that it was no deception of the eye, he placed a man near him, with orders to make a signal at the moment when he observed the light. They both saw it constantly at the same moment. The light was most brilliant in marigolds of an orange color, but scarcely visible in pale ones.

"The flash was frequently on the same flower two or three times in quick succession, but more commonly at intervals of several minutes; and when several flowers in the same place emitted their light together, it could be observed at a considerable distance.

"This phenomenon was remarked in the months of July and August, at sunset, and for half an hour after, when the atmosphere was clear; but after a rainy day, or when the air was loaded with vapors, nothing of it was seen.

"The following flowers emitted flashes, more or less vivid, in this order: — 1. The marigold *(Calendula officinalis)*; 2. Garden Nasturtium *(Tropœolum majus)*; 3. Orange Lily *(Lilium bulbiferum)*; 4. African Marigold *(Tagates patula et erecta)*. Sometimes it was also observed on the Sun-flower *(Helianthus annuus)*; but bright yellow, or flame color, seemed in general necessary for the production of this light, for it was never seen on the flowers of any other color.

"To discover whether some little insect, or phosphoric worms,

might not be the cause of it, the flowers were carefully examined, even with a microscope, without any such being found. From the rapidity of the flash, and other circumstances, it might be conjectured that there is something of electricity in this phenomenon. It is well known, that when the pistil of a flower is impregnated, the pollen bursts away by its elasticity, with which electricity may be combined. But Mr Haggren, after having observed the flash from the Orange lily, the anthers of which are considerable space distant from the petals, found that the light proceeded from the petals only, whence he concludes, that this electric light is caused by the pollen, which in flying off is scattered upon the petals."

I am not aware of any other author who has added any new fact to those already mentioned by Darwin.

I have often observed the curious circumstance of the flashing of flowers, without being at all able to ascertain its cause. Sometimes I have been almost led to suppose it to be an optical deception, occasioned by an impression made on the eye by the bright color of the flowers from which the corruscations seemed to proceed. But at times I have seen the flashes of light so vivid and plain, and extend to so great a distance, that it is impossible for me longer to entertain that opinion; besides, too, I have seen the flashes proceed from pale colored and even white flowers, which would not make that impression on the eye. On the whole, I am much inclined to believe it to be electric, particularly from a circumstance which occured a few years ago. In walking in my garden in the evening, in which was a considerable quantity of Nasturtium in bloom, not at all thinking of the flashing of plants, I was struck by the very vivid flashes that proceeded from them, the scintillations were the most brilliant I had ever observed, and at the same time the sky was overcast with a thunder cloud; directed by this circumstance, I have on several occasions looked for the flashes, when in the evening there has appeared electric clouds collecting, and have always found them, at that time, most to abound, and to be most brilliant. My observations, in this respect, seems to differ from that of Mr Haggren, who only witnessed plants to flash on clear nights.

All the plants mentioned by Mr Haggren I have observed to flash, with the addition of many others. The Nasturtium is that in which I have most frequently seen the most brilliant flash; the Scarlet Geranium I have observed as vivid as any flower, but I have seen them in many lighter colored flowers, though much fainter, and even

in white flowers, particularly in the white Rose, and a white species of Œnothera.

I have troubled you with these particulars, in the hope that yourself, or some of your correspondents, may have some further facts on the subject to communicate, or that at all events some of your readers may be led to make observations and experiments in regard to so interesting a subject. — *Paxton's Magazine of Botany, page* 193.

ART. IV. *Description of Select Hardy Herbaceous Plants, suitable for Ornamenting the Parterre, Border or Shrubbery.* Communicated by Mr JOSEPH BRECK.

(Continued from page 144.)

THE Natural order Campanulaceæ contains nearly three hundred species of plants, mostly natives of temperate regions, and constitute a class whose chief value is in their beauty, and from these a goodly number of highly ornamental border herbaceous perennials may be selected, most of which may be found in the genus Campanula, its type. We have already noticed the family of Lobelias, which have been united by some Phytologists in the same natural order with Campanulaceæ; but by the most modern and correct classification they have been separated. Lobelia, should then be arranged in the natural order Lobeliaceæ, instead of Campanulaceæ, as it is placed in March number, page 84. There is, to be sure, a close affinity between the two orders, but a distinction sufficient for their separation. One of the most prominent distinctions is in the form of the corolla, which is regular in Campanulaceæ, and irregular in Lobeliaceæ, with numerous other minor differences known to the botanist. The milky juice of the former is slightly acrid, but the roots and young shoots of many of the species are occasionally used for food; while the excessive acridity of the milky juice of the latter, is in all cases suspicious, and in many species dangerous. "*Lobelia longiflora*, a native of some of the West India Islands, is one of the most venomous of plants, proving fatal to horses who eat it, swelling until they burst. Taken internally, it acts as a violent cathartic, the effects of which no remedy can assuage, and which ends in death."

"*Campanula*. A diminution of *campana*, a bell; on account of the form of the corolla, which resembles a little bell."

Class Pentandria. Order Monogynia. The genus has monopetalous (of one piece,) superior flowers; seeds in a capsule: corolla campanulate, closed at the bottom with staminiferous valves; stigma 3—5 cleft; capsule inferior opening by lateral pores.

We have one indigenous species, which is very pretty, and worthy a place in the border; found abundantly on the banks of Merrimac river, at and above Lowell. It is very much like C. rotundifolia of England. Having cultivated them side by side, we can see but a shade's difference. Mr Eaton calls our species also *rotundifolia;* each species has nearly round, or heart kidney crenate radical leaves, from which the specific name is given, and linear entire cauline ones, with drooping, solitary, fine blue flowers; those of the English species being rather the largest, with the cauline leaves, a little broader. The common name with us, is Flax bell flower, or Hair bell. It is in flower July and August; 1 foot high.

Campanula medium. *Canterbury Bells.* This species with its varieties, may be considered one of our oldest ornamental plants, having for a long time been cultivated in our gardens; it is, nevertheless, a showy plant, and will doubtless always be retained, as a prominent ornament of the border. The varieties are rose, blue, and white, double and single. The double varieties, however, are much inferior to the single ones, and will be cultivated only for their singularity. Being biennials, it will be necessary to sow the seeds every year. The young plants must be transplanted to the place in which they are to flower in August or September, for if deferred until spring the bloom will be greatly weakened; the same holds good with all biennials, and most seedling perennials.

Campanula persicafolia. *Peach leaved Campanula.* This is one of the finest species, containing a number of beautiful varieties, with large showy flowers, more bowl shaped than the last. The varieties are single and double blue, single and double white, maxima or large peach leaved, and grandis or large flowering; all of them are perfectly hardy, with handsome foliage, which makes them valuable as border flowers. Stems angular; leaves stiff, obsoletely crenate serrate; radical ones, oblong ovate; cauline ones, lanceolate linear; three feet high, in flower from July to September. The white varieties are not common with us.

Campanula pyramidalis. *Pyramidal Bell Flower.* This is a grand ornament when cultivated in perfection, forming a pyramid from four to six feet high, producing innumerable flowers for two or

three months if shaded from the sun. It was formerly a great favorite in England, but its popularity has long since passed away to give place to other more fashionable flowers, which have in their turn also been succeeded by other rivals more fair. But the old fashioned Hollanders are not quite so fickle; flowers with them seem to be esteemed, notwithstanding their antiquity. The pyramidal bell-flower is said to be in demand there still, as an ornament to halls, staircases and for being placed before fire-places in the summer seasons. We have seen some splendid plants the past season at Belmont Place, under the care of Mr Haggerston.

"In its cultivated state, it has thick ramose roots, which are milky; oblong leaves, and strong stalks, from the sides of which the flowers are produced for more than half their length. The most common color is blue, but there is a variety with white flowers. It is a native of Istria and Savoy, and was cultivated by Gerrard in 1596."

"*Propagation and Culture.* By seed, cuttings from the stem, or by dividing the roots; the last method makes the strongest plants in the shortest time. The season for this operation is after the bloom has faded in September; the sections are to be planted in pots, and protected by a frame during winter. In spring they may be transplanted into large pots, and in the beginning of summer into still larger ones, in which they are to flower the summer following."

"*By Seeds.* The plants so raised, Miller says, are always stronger, and the stalks rise higher, and produce a greater number of flowers. Good seeds are to be obtained by placing a strong-flowering plant in a warm situation against a wall or under a glass case. They are to be sown in pots of light earth soon after being gathered, protected by a frame during winter, and will come up in the spring. When the leaves decay in October, they are to be transplanted to beds of light sandy earth, without any mixture of dung, which is a great enemy to this plant. Here they are to remain two years, being protected by rotten tan; they are then to be removed to their final destination in September or October, and the year following, being the third year from sowing, they will flower. The plants, Miller observes, of this species, as of many others that have been propagated by roots, offsets or cuttings, do not so readily bear seeds as those which have been raised from seed.

"The *C. Carpatica, grandiflora*, and several other showy species, may be similarly treated."—*Loudon.*

Seedling plants in our climate will flower the second year gener-

ally, some not until the third. A slight protection is necessary during winter. Under our fervid sun, there will be no difficulty in ripening seeds.

Campanula grandiflora is now separated from Campanula and is united with the small genus *Wahlenbergia* and is called *Wahlenbergia* grandiflora. For a description of it, see page 116 of the present volume. Campanula trachelium, *Throatwort*. There are four varieties of this species, viz. single and double blue, single and double white. A native of Britain woods, three to four feet high, with flowers from July to August. Stem angular; leaves stalked; calyx ciliated; peduncles trifid.

Campanula rapunculus. *Rampion*. A native also of the woods of Britian and cultivated not only for ornament, but also in " France and Italy, and sometimes in Britain, for the roots, which are boiled tender and eaten hot with sauce, or cold with vinegar and pepper. It is sown in the spring on deep light soil in drills, and will be ready for use by the autumn of the same year. C. persicafolia and rapunculoides may also be cultivated for the same purpose." A biennial, with purple flowers in July and August, three feet high.

Campanula glomerata. *Cluster flowered*, " is a handsome rock or pot plant: it requires a dry lean soil, otherwise, as in most plants, the flowers lose the intensity of their color in that which is very rich." Flowers purple, in clustered heads in May and June; two feet high; a native of Siberia. Leaves scabrous, oblong lanceolate sessile; Campanula urticifolia, speciosa, versicolor, azurea, bononiensis, lactiflora, aggregata, with numerous other species are worthy of a place in every garden, as they are easily cultivated, succeed admirably in our climate, and will endure the severest of our winters. But a small portion of this large genus require protection.

Papaver, (poppy), Class Polyandria (many stamens), order Monogynia, is the type of the *Nat. Ord.* Papaveraceæ which contains a few beautiful perennials, but mostly annuals; the properties of which are well known as possessing narcotic qualities. Eschscholtzia californica, and Argemone grandiflora, have within a few years past become popular border annuals, but with the protection of a frame perennials. The best way to propagate them, is to sow the seeds in August; the young plants will then stand the winter and flower earlier and much stronger than when sowed in the spring. They continue flowering all the season even after the frosts have commenced in autumn. The double variety of Eschscholtzia is propagated by dividing the roots,

and requires some care to keep it through the winter without the protection of a green-house. The single variety, after all, is the prettiest; a large patch of it with its hundreds of brilliant yellow and orange flowers, opening to the sun from day to day for months, surrounded by their delicate glaucous foliage, is an interesting sight. E. crocea is a beautiful new variety not much disseminated, with saffron colored flowers.

The genus was named in honor of Dr Eschscholtzia, a botanist. It was introduced into England from California in 1826.

" Argemone. From *argema*, the name by which the cataract of the eye was known, and which was thought to be cured by the plant." The seeds of A. mexicana are said to be much stronger narcotic than opium. The genus has a three leaved calyx, six petals, and a capsule half valved.

Argemone grandiflora is the most showy of the genus, a native of Mexico, and the first introduced into this country: its large flowers with delicate white petals and numerous yellow stamens, make a splendid appearance, and we think much superior to

Argemone ochroleuca with pale yellow flowers: the leaves, capsules, and the whole plant are armed with formidable spines, and having once had the hands or any part of the body come in contact with them, the plant will be forever after viewed with feelings far from those of pleasure.

Argemone barclayana is equal to it, in its powers of annoyance, but its more showy, brilliant yellow flowers, make amends, in some measure for its repulsive appearance.

" Papaver. Said by De Theis, to have been so called from the Celtic *papa*, which signifies pap, or the soft food given to children, in which the seeds were formerly boiled to make the infants sleep." Capsule one celled, opening by pores under the persistent stigma: Calyx two leaved: petals four. A showy well known genus, with large brilliant, but perishable flowers. It is a pity this family of flower are so unpopular, for they are truly beautiful, and were it not for their bad character, and the propensity they have to make themselves too common, would undoubtedly, be thought much of. Papaver Rhœas, contains numberless varieties with double, semi-double, and single flowers of every shade of red, lilac, purple, white edged, variegated and mottled. P. somniferum, the true opium poppy, in its double varieties, is equally variable as the last, sporting into almost every hue, except yellow and blue. The variety *picotee* of recent introduction

is the most elegant. Some of the flowers are white or rose, delicately spotted on the margin of the petals with red; the number of the petals is surprising, and we are led to wonder at the transformation, which cultivation has made in a flower with only four petals, into one in which they are almost innumerable.

Papaver orientalis. *Oriental poppy.* This is a most magnificent perennial, and worth all the rest of the poppy tribe. Its large, gorgeous, orange scarlet flowers, display themselves in the month of June. The bottom of the petals are black; the stigma is surrounded by a multitude of rich purple stamens, the anthers of which shed a profusion of pollen, which powders over the stigma and the internal part of the flower, giving it a very rich appearance.

The flower stems are rough, three feet high, each one bearing a single solitary flower, five or six inches in diameter; a clump with twenty or thirty of these flowers, makes one of the most conspicuous and showy ornaments of the garden. Leaves are scabrous (rough) pinnate serrate. Propagated by dividing the roots, which should be done as soon as the foliage has died down in August, as it commences growing again in September and throws up leaves which remain during winter, it being one of the most hardy plants. If deferred until spring, if it flowers at all, it will be weak. It may also be propagated from seed, but does not commonly flower until the third year. A native of Levant.

Papaver bracteatum. *Bracted poppy*, is another superb perennial very much like the last, a native of Liberia. The flowers are a deeper red, and the only essential difference is in the leafy bractes, by which the flowers are subtended. Propagated in the same way; with us, it has not flowered so freely. Neither the flowers of the Argemone, Eschscholtzia, or any of the tribe are suitable for bouquets, not only on account of their transitory nature, but also on account of their propensity to invite to the arms of Morpheus, "the sleepy goddess," to whom the poppy is said to be dedicated. "Papaver cambricum, is admired for its yellow petals." It is now called Meconopsis cambrica; not common with us. There are also a number of other species and varieties of perennial poppy, as P. nudicaule, with two or three varieties with yellow, and one with scarlet flowers, from Siberia, one foot, to one and a half high. P. pyrenaicum, from the Pyrenees, with yellow flowers and a variety with red, one foot high. P. alpinum from Austria has white flowers three quarters of a foot high.

Glaucium. So called on account of the leaves and the whole

plant being covered with a glaucous bloom. The flowers of all the species are fugacious, but are daily produced in long succession.

Calyx two leaved; petals four; pod two-celled, linear, 2—3 valved; seeds several, dotted.

Glaucium fulvum. *Horned poppy.* It has an unlucky common name, otherwise it would perhaps, be more generally introduced into the garden than it appears to be, as it deserves a place in every collection, not so much for its flowers, which are very pretty, but particularly for its beautiful "sea green dew-bespangled leaves," which are universally admired, and peculiar to the genus. The flowers are yellow or orange, and continue through the season. It is a biennial, a native of the South of Europe. Stem smooth; cauline leaves roundish sinuated; pods rough; flowers sub-sessile.

"The whole plant abounds in a yellow juice, is fœtid, and of a poisonous quality, and said to occasion madness."

G. luteum with yellow, and G. phœniceum with red flowers, are annuals.

Sanguinaria Canadensis. *Blood Root. Puccoon. Indian paint.* A native of our own woods, deserving a place in the garden, where it flourishes with increased beauty, and constitutes one of its prettiest vernal ornaments; displaying its glossy, eight petalled white flowers early in April. By cultivation, undoubtedly, its numerous, oblong yellow stamens, may be converted into as many petals. With this in view the seeds must be sown: a few generations of plants may give us monstrosities, equal to those exhibited in the rose, poppy, or any other double flower. Calyx two leaved; petals eight; pods ovate, two celled; the only species, if *S. grandiflora* is only a variety, which it probably is.

The generic name is "from *sanguis*, blood. All parts of the plant on being wounded discharge a blood colored fluid. This is a singular and delicate looking plant. It has a tuberous fleshy root with red fibres and a reddish juice; from each bud of the root there springs only a single fig-like glaucous leaf, with a flowered scape; the flower has no smell, and is very fugacious." It is said the Indians stain themselves with its red juice. "The root is a violent emetic." Easily propagated by dividing the roots in the fall or summer.

The curious genus Saracenia belongs also to the *Nat. Ord.* Papaveraceæ, and has been described in Vol. I. page 64. In that account there is an error of the press, were instead of *Panama*, it should read *Canada*. A plant suitable only for moist, or wet ground.

S. flava, a yellow species from the south, we have seen at the Botanic Garden, Cambridge.

The *natural order* Rosaceæ contains many beautiful flowering shrubs or trees, but few ornamental herbaceous perennials, excepting the genus Spirea already noticed, and Potentilla and Geum, which afford a few, belonging to the *artificial class* Icosandria. *Order* Polygynia. None of the plants contained in Rosaceæ are unwholesome.

"Potentilla. In allusion to its supposed *potential* virtue in medicine. These, however, appear to consist of nothing beyond a slight vulnerary quality." Calyx ten cleft; corolla five petalled: seeds naked, wrinkled, affixed to a small, juiceless receptacle.

This is a numerous genus, consisting of strawberry like looking plants with mostly yellow flowers.

Potentilla atrosanguinea. *Dark Blood Colored Potentillas.* This is one of the finest species with beautiful foliage, and blood colored flowers from Nepal, one and a half foot high, in flower from May to September. Leaves ternate stalked; leaflets obovate, cut serrate, white with down beneath; Sepals elliptical; Petals obcordate. Propagated from divisions of the root, and from seed.

Potentilla formosa. Synom. Nepalensis. This is another beautiful species from Nepal, with fine rose colored flowers, which are produced the greater part of the season. Radical leaves quinite, cauline ones ternate; leaflets cuneate oblong serrate; stipules large adnate entire; propagated the same as P. atrosanguinea and all the other species.

Potentilla splendens, has yellow flowers of not much beauty, but the leaves are elegant, being silvered over with a silky down, and interruptedly pinnate. Flowers dichotomous, in corymbs; from Nepal.

Potentilla grandiflora has fine large yellow flowers — a native of Siberia.

Potentilla Russelliana, is a splendid hybrid with scarlet flowers.

P. Hopwoodiana with rose and scarlet flowers is also beautiful. Most of the species, which are numerous, are pretty, but those named are the finest. With the exception of the two last, which we have not had an opportunity to try, they all stand the winter well: they succeed best in light soil.

"Geum from *Geyo*, to give a relish." The roots of Geum urbanum, chewed in the mouth, correct a disagreeable breath. "Gathered in the spring and put into fresh ale, they give it a pleasant flavor, and

prevent its turning sour." But the only species worthy the attention of amateurs are Geum queliyon or coccinnea, G. hybridum, and the one of more recent introduction, G. grandiflora.

Geum coccinnea "is a very desirable plant for the borders, much esteemed in Europe, with scarlet flowers from May to October, and perfectly hardy. A native of Chili, introduced in 1826; from one to two feet high.

Geum hybridum, has brown red flowers in June and July one foot high.

Geum grandiflora has large scarlet flowers.

Geum rivularis, common in our wet grounds in company with *Senecio aurens*, is in flower about the first of June, and conspicuous for its high, nodding, dark colored flowers. For the florist it has not great attractions, but with the botanist it is a fine looking plant and may be introduced into the borders for the sake of variety, as it costs nothing but the trouble of taking up.

Art. V.—*Extracts from Foreign Publications.*

Paxton's Magazine of Botany and Register of Flowering Plants. Edited by J. Paxton, F. L. S. H. S. Published monthly. Price two shillings and sixpence; each number containing four beautifully colored plates.

We have received the December, January and February numbers of this splendid work, which we consider one of the best of the English periodicals, containing much original, practical information. The work has been in existence only two years. It contains also numerous wood cuts, illustrating many systems of heating by hot water, plans and sections of plant-houses of various kinds, machines, instruments, utensils, plants, &c. Comparing it with other foreign works, we should consider it a cheap publication, although some of our readers may be startled at the expense, which amounts to the sum of from ten to twelve dollars per annum when delivered in this country.

"*Natural order* Compositæ. *Syngenesia Frustranea Calliopsis bicolor atrosanquinea.* Crimson two colored Calliopsis. Synomyms, Calliopsis sanguinea,

Coreopsis tinctoria atrosanguinea,

Coreopsis sanguinea.

A beautiful new variety of the common *Calliopsis tinctoria* formerly *Coreopsis tinctoria.* The rays of the flower of this elegant variety, are, dark crimson, sometimes bordered with yellow, fringed and lacerated.

The flowers are liable to vary, some being entirely of that fine deep blood color, which composes the centre of the old variety, and others have a very narrow margin of rich yellow.

It is perfectly hardy, and, like the C. bicolor, requires the most simple culture, the seeds merely requiring to be sown in the open border, and the plants kept from weeds. Common light loam suits it very well. The generic name is derived from the Greek word *kallistos*, most beautiful, and opsis, *eye*, or most beautiful to the eye, alluding to the splendid show made by the flowers when expanded. The specific *bicolor* is given from the two very distinct colors of the flowers. It is not known who originated or introduced this fine variety."

"*Natural order* Scrophularinæ. *Diandria monogynia. Calceolaria hopeana.* Mr Hope's slipper wort. Green-house perennial. *Stem* a foot or more high, clothed with pubescence. *Leaves* broadly ovate oblong, stalked, wrinkled, and veiny, unequally toothed, hairy, large, six inches long, and three or four broad. *Flowers* numerous, corymbose, pendulous. *Flower stalks* slender, an inch and a half long. *Calyx*, segments green, ovate, acute, rather reflexed. *Corolla* bright yellow, two lipped; upper lip short, shaped like a helmet; lower lip large, much inflated, with three to five ribs, spotted and striped with dark red inside the mouth.

This beautiful hybrid was raised a few years ago, betwixt *C. corymbosa* and *C. plantaginea.* It is an exceeding free flowerer, and the color of the flowers are of so rich a yellow that it is a very desirable plant for the green-house."

"*Calceolaria corymbosa, var. Jupiter.* Jupiter calceolaria, or slipper wort. *Stem* a foot and a half or two feet high, covered with pubescence. *Root leaves* oblong lanceolate, obtuse, doubly notched. *Stem leaves* ovate, obtuse, opposite. *Corymbs* forked, consisting of thirty or forty flowers. *Calyx* ovate, acuminate. *Corolla*, upper lip small, yellow, incurved; lower lip large, of a deep brownish red, with a yellow border, and slightly notched; inside purple at the mouth, and below yellow.

This is one of the many beautiful varieties of the *Calceolaria* raised by Messrs Young. It is certainly a very splendid kind, and

well deserves to be in every collection. It is nearly, if not altogether, hardy. Nevertheless it is best, whatever kinds are grown in borders, to shelter them from excessive wet in winter, if they are not taken up and placed in pots."

Natural Order Cinchonaceæ. *Pentandria monogynia, Rondeletia speciosa.* Showy Rondeletia. Stove plant., compact dwarf shrub. *Stems* smooth, erect, branching, yellow green, slightly colored with rose-color when young, afterwards becoming red, and finally, when the wood is old, of a reddish brown. *Leaves* obcordate, that is, betwixt oblong and heart shaped, acute, opposite, dark glossy green on the upper side, paler and often slightly tinged with red, on the under. *Flowers* terminal, in corymbs, very showy. *Calyx* five parted, segments acute, yellowish green, tinged with red. *Corolla* tube three times the length of the calyx, rose-colored; limb five, and occasionally six-parted, lobes rounded, very rich orange red, darkest at the extreme edges, and becoming lighter towards the centre of the flower; centre of the flower, bright orange yellow; eye, dark crimson.

According to Messrs Loddiges, this brilliant plant is a native of the Havanna, whence it was received at Hackney through the kindness of their friend, W. J. MacLeag, Esq. in 1830, and has since flowered in the stove beautifully. The flowers are exceeding rich in color, and make a most striking appearance, being quite as splendid as *Ixora coccinea*, if not more so.

It requires the stove, and should be potted in loam and peat, and may be increased by cuttings. The generic name is given in honor of a physician named Rondelet, and the specific name from the showy appearance of the plant when in flower.

"*Natural Order* Polemoniaceæ. *Pentandria Monogynia. Phlox Drummonii.* Mr Drummond's Lichnidea. *Plant* annual. *Stem* from a foot to a foot and a half high, covered with long hairs. *Leaves* on the lower part of the stem opposite, on the upper alternate, oblong, acute, rather cordate at the base, hairy on the under side, bright green, and partly clasping the stem. *Corymbs* terminal. *Calyx* of fine acute segments, being like the stem, bright green. *Corolla* salver shaped, tube long, very hairy, pale rose colored; limb spreading, pale rose colored without, rich rosy red within; eye deep crimson; throat yellow."

This beautiful species was raised under the care of Mr Campbell, Curator of the Botanic Garden, Manchester, from seed which arrived from the late Mr Drummond, in March, 1835.

Dr Hooker states the plant to be a native of Texas, and named by him after its indefatigable discoverer.

" Should this lovely species turn out to be an annual, which to all appearance it will, it must be regarded as a novel feature in this favorite genus. The plant is perfectly hardy, and will prove a great ornament to the flower garden."

" *Natural order* Solaneæ. *Pentandria Monogynia. Petunia linearis.* Narrow leaved Petunia.

Synonyms, Salpiglossis linearis,
Nirembergia intermedia,
Petunia linearis.

Plant a small shrub, covered thickly with glandular hairs. *Stems* upright, branching, clammy, about a foot high. *Leaves* alternate, oblong, narrow, blunt, about half an inch long, pale green. *Flowers* terminal, or situated opposite the leaves, very copious, and when expanded shining in the sun like crimson velvet. *Calyx* campanulate, five-toothed. *Corolla* funnel shaped, covered on the outside with soft hairs, hardly an inch long; tube orange, beautifully veined with purple, somewhat longer than the calyx; throat bright orange within; limb five lobed, of a rich crimson purple, very brilliant in sunshine; the centre as it approaches the throat, very dark, towards the border lighter, and more tinged with blue. *Stamens* all fertile.

This exceedingly pretty plant is a native of Buenos Ayres, where it was discovered growing in sandy plains by Mr Tweedie, who transmitted the seeds of it to Mr Niell, of Cannonmills, in 1832; from this seed one plant was raised, which flowered in the stove in September, 1833. The habit of the plant is that of *Nierembergia;* and when quite young and out of flower, they can scarcely be distinguished from N. gracilis, except that the leaves of the latter are rather narrower.

Natural order Rubiaceæ. *Tetrandria monogynia, Ixora Bandhuca.* Bandhooka ixora. A bushy shrub; *branches* numerous; whilst young, smooth and bright green; when old, rather rough and of a dull brown. *Leaves* oblong, blunt, smooth, and shining, opposite, having short foot-stalks, but appearing to clasp the stem. *Flowers* numerous, in corymbs, terminal. *Calyx* rather purple colored. *Corolla* scarlet at first, and afterwards becoming darker until it is dark crimson; tuble slender, more than twice as long as the expanded limb; *segments* of the limb elliptic-ovate, spreading; berry purple; little larger than a garden pea.

It is a native of Hindostan, from whence it was introduced by Sir Abraham Hume, about the year 1812. In its native country it is said to form a good sized bush, which at the season of flowering makes a splendid show; indeed, in this country, when the plant is well grown, the corymbs of flowers are large, and the petals well expanded; the richness of the crimson color being contrasted with the bright green of the leaves, together with the dwarf habits of the plant, the whole forms a spectacle scarcely surpassed for splendor by any of the other inmates of our stoves. It requires to be constantly kept in a damp stove, with much the same temperature as for Orchidæ.

"*Natural Order* Orchideæ. *Gynandria monandria, Epidendron fragrans.* Sweet scented Epidendron. This species is not so remarkable for the beauty of its flowers as for the very delightful fragrance they emit when expanded; we cannot describe this better than to say, that it greatly resembles that of the flowers of the hawthorn when first open in spring, only the scent in these is far from being so powerful as that of the Epidendron. The flowers continue without fading for a long time. *Flowers* greenish yellow. The generic name is derived from the Greek *epi*, upon, and *dendron*, a tree, because in the native woods they are always growing upon the branches of trees, their little roots covering the outside of the bark, or hanging pendant, in order to absorb the exhalations constantly arising from a damp soil and dense underwood. The specific name is given on account of the fragrance of the flowers."

Dendrobium moschatum. Musk scented Dendrobium. *Plant*, Epiphyte. *Stem* upwards of four feet high, pendulous. *Leaves* oblong-linear, blunt, alternate, striate with purple. *Flower-stem* radical, ten or twelve feet long, pendulous, slender, naked and upright, from eight to nine feet, producing on the pendulous part nine to twelve flowers. *Flowers* beautiful, large, measuring when expanded, nearly four inches in diameter. *Sepals* or calyx leaves and *petals* oblong, obtuse, producing rich oranges faintly striped with cream color. *Labellum* or lip, slipper shaped, slightly hairy outside, same color as the sepals and petals, inside richly feathered with dark crimson. *Column* dark crimson.

The flowers are very splendid, and of a very large size, being nearly four inches in diameter when fully expanded. The rich orange color, contrasted with the bright crimson in the inside of the lip, gives a very fine effect, and renders this one of the most desirable

kinds hitherto introduced. It is a native of Pegu, where it was discovered by Dr Wallich, and introduced into this country in 1828. The flowers emit a pleasant musk-like scent, very perceptible towards evening, from which circumstance the specific name is given, we believe by Dr Wallich."

"*Maxillaria Deppei.* Mr Deppe's Maxillaria. Epyphite. *Pseudo bulb,* ovate, angles rounded. *Leaves* oblong-lanceolate, acute, platted or ribbed, usually three arising from the summit of the pseudo-bulb, from eighteen inches to two feet long. *Flower-stem* erect, shorter than the leaves, two-flowered. *Sepals* oblong-lanceolate, green, spotted with purplish red. *Petals* white, smaller than the sepals, somewhat cuculate, spotted and striped inside with crimson. *Labellum* or lip three lobed, curling, bright orange, two side lobes spotted and striped with crimson. *Column* cream colored.

"This fine species is a native of New Spain, where it was discovered by Mr Deppe, in 1828, after whom it has been very properly named." J. B.

ART. VI.—*Osage Orange. (Maclura Aurantica.)* Communicated by WILLIAM KENRICK.

THE Osage Orange is a native of Missouri and Arkansas, where it rises in elegant proportion to the height of sixty feet. The tree is deciduous and hardy, as it has endured the rigors of the last seven winters near Boston, and is one of the most ornamental of all our native trees. The leaves are oval, lanceolate, of a beautiful shining green, and bear striking resemblance to those of the orange, and the wood also like that of the orange, is armed with long sharp spines. The trees are diœcious, or some male and some female, therefore requiring more than one tree for the production of fruit; but these however cannot be distinguished when young. The fruit is beautiful, but not eatable; of the size of a large orange, of a golden color, and the trees when laded with the fruit are splendid. The wood produces a fine yellow dye. It is valuable for furniture as it receives the finest polish. It is remarkably tough, strong and elastic, and is therefore called *Bow Wood,* being preferred by the Indians to all other wood for bows. It is also supposed to be the most durable timber in the world, and for ship building is esteemed preferrable to live oak.

Even the leaves so beautiful, may, it appears, be converted to very important use, since according to a memoir lately presented to the French Institute, they are valuable as food for silk-worms.

On the best authority I am assured that the trees of the Osage Orange, when set at the distance of fifteen inches asunder, make the most beautiful as well as the strongest hedge fence in the world, through which neither men nor animals can pass.

Newton, April 18, 1836.

Art. VII.—*Remarks on the Culture of Hardy Deciduous and Evergreen Shrubs.*

[From Paxton's Magazine of Botany.]

The culture of hardy shrubs is in general simple and easy, the chief things to be noticed are — the proper season of planting — the situation in which the plants will thrive — the kind of soil best suited to their growth — and the encouragement given to enable them to thrive afterwards.

The proper season for planting.—As soon as the leaves begin to fall in October, deciduous trees may be planted with safety; and although this planting continues until the trees begin to swell their buds again in the spring, yet those plants have invariably succeeded best with us which were shifted in October, November, February, and March and those the worst that were planted in December, January, and April.

Evergreens, in general, if taken up carefully, may be planted with success any season of the year, provided dull or dripping weather be taken advantage of for that purpose. There are particular seasons, however, when they will thrive with much greater freedom than at others. If the situation be dry, and the soil light and sandy, they should be planted (with the exception of hollies) in November and December, if the weather be mild; on the other hand, if the situation be low and the soil retentive of moisture, they should be planted in May. In both cases it is indispensable that all large trees and shrnbs be removed with good balls, and that the roots be uninjured. Hollies should be removed from the end of May to the and of June.

In planting evergreens, I perfectly agree with Mr M'Nab, that

whether it be done in a dull day, a wet day, or a dry day, it is very necessary to keep in view the expediency of keeping the plants for as short a time out of the grouud as possible — if only a few minutes, so much the better; and in all cases, when it can be done, when great numbers are to be planted, we should, if possible, have some men stationed to take up the plants, others to carry them, and a third set to put them in the ground.

"In all seasons, situations, and soils the plants should be well soaked with water as soon as the earth is put about the roots. Where the water is not at hand, so that may not be easily carried or wheeled by men, a horse with a water-barrel on wheels should be used. As soon as the plant has been put into its place the earth should be filled in, leaving a sufficient hollow round the stem, and as far as the roots extend, to hold water, which should then be poured on in sufficient quantity to soak the ground down to the lowest part of the roots; in short, the whole should be made like a kind of puddle."

"By this practice, which is particularly necessary in spring and autumn planting, the earth is carried down by the water, and every crevice among the roots is filled. Care must always be taken to have as much earth above the roots of the plants as will prevent them from being exposed when the water has subsided. The best plan is to take an old birch broom, or anything similar, and laying it down near the root, pour the water upon it; this breaks the fall of the water, and prevents the roots from being washed bare of such earth as may adhere to them: in this way time is saved, for the water may be poured out in a full stream from the pail, a watering-pot, or even from a spout or pipe in the water-cart or barrel, when the situation is such that this can be brought up to the plant."

"After the first watering has dried up, the earth should be levelled round the stem of the plant, and, as far out as the water has been put on, but not trod; if the plants are large a second watering is sometimes necessary, but in ordinary sized plants one watering is quite sufficient; and after remaining twentyfour hours, more or less, according to the nature of the soil, the earth about the stem and over the roots, should be trod as firm as possible, and, after treading should be dressed with a rake."

2. "*The situations in which the plants will thrive.*—With regard to the situation in which each shrub should be planted little can be said here; to form a correct judgment of this, a knowledge of the natural

habitats of each is required ; this knowledge may be easily obtained by referring to a botanical catalogue, and other works treating on the subject. Some shrubs love a dry and elevated situation, and will not thrive crowded with others, — some are rather tender, and must have warm and sheltered places, — others are very hardy, and will thrive planted anywhere, others again will not grow freely unless they are placed in low damp ground, — and others do not flourish if much exposed to the rays of the sun.

3. " *The kind of soil best suited for them.*—With respect to soil, hardy shrubs may be divided into two kinds, viz. first, shrubs requiring common soil; and second, those shrubs constituting the American garden. A rich, light hazel loam undoubtedly suits the greater part of the first class of plants, although many of the stronger growing kinds will make fine bushes on almost any kind of soil. The American plants, as *Kalmias*, *Rhododendrons*, *Andromedas*, &c. &c., make the finest plants and the best show if they are planted in a soil composed for the most part of sandy peat; but in the absence of this, a very good compost may be made for them of light hazelly loam, river sand, and vegetable or leaf mould, equal parts, or a little peat earth mixed with it. After having taken out the original soil from the proposed border to about a foot and a half deep, substitute the above mixture in its place.

4. " *To encourage the growth of the Shrubs after being planted.*— Whilst the plants are small, constantly keep down all rank growing weeds, and clear off all rubbish that would otherwise retard their growth ; also they receive much benefit by the surface of the ground being often stirred with a Dutch hoe, as it prevents the surface baking hard in dry weather.

Watering shrubs, except in peculiar situations, during dry summers, appears to be of very little, if any, benefit; on the other hand, it takes up much time, and is the means of the ground baking hard when dried by the sun again. When they have advanced to a large size all the care required is to cut off the overhanging branches, so as not to allow them to smother each other, or the stems of those overhung will become naked and unsightly.

(From the Baltimore Farmer.)

THE GREVILLE ROSE.—This superbly beautiful rose, notwithstanding fifty plants of it were sold in Baltimore, for five dollars each, in the year 1828, is not so generally known as it ought and deserves to be. I have had one to bloom for several years, and last year it had fifty five branches of flowers, and made about 300 feet of wood, and in my opinion, fully realizing the high character given of it in the fourth number of Loudon's Magazine, page 467, and in the report of the Horticultural Society of London, for the month of June, 1836, which I have extracted for more general information.

Rosa Grevillii, or Greville Rose.—This species has attracted much notice in different parts of Europe and in this country, being quite a novelty in its general characteristics, and in commenting upon which I cannot perhaps give a better idea to the reader than by extracting the statements made in other publications. In the fourth number of Loudon's Magazine, page 467, is the following description given, in a letter from a correspondent to the editor :—

"You will no doubt recollect the shoot I showed you of my Greville Rose, which grew 18 feet in a few weeks — it is now in bloom, and is the most singular curiosity of all the rose tribe that has come under my observation; it grows on an east by north aspect, on the gable end of my house, covering above 100 feet square, with more than 100 trusses of bloom. Some of them have more than 50 buds in a cluster, and the whole will average about 30 in a truss, so that the amount of flower buds is little short of 3,000. But the most astonishing curiosity is the variety of colors produced on the buds at first opening; white, light blush, deeper blush, light red, darker red, and purple, all on the same clusters."

In the report of the Horticultural Society of London for the month of June, 1826, the following remrrks are made :

"Rosa Grevillii, in a single fasciculus of flowers, are roses of every shade of purple, and from white to the darkest tint; it is one of the handsomest of climbing roses."

The leaves are beautifully serrated on the edges, and those on the young shoots have a pink border running entirely round the leaf, and which, contrasted with the green, gives them a delicate and beautiful appearance; the petiole or leaf-stalk is broad at the base, and deeply indented on the sides, so as to form narrow hair-like segments : the upper part where it joins the leaf is narrow and of the usual size. I

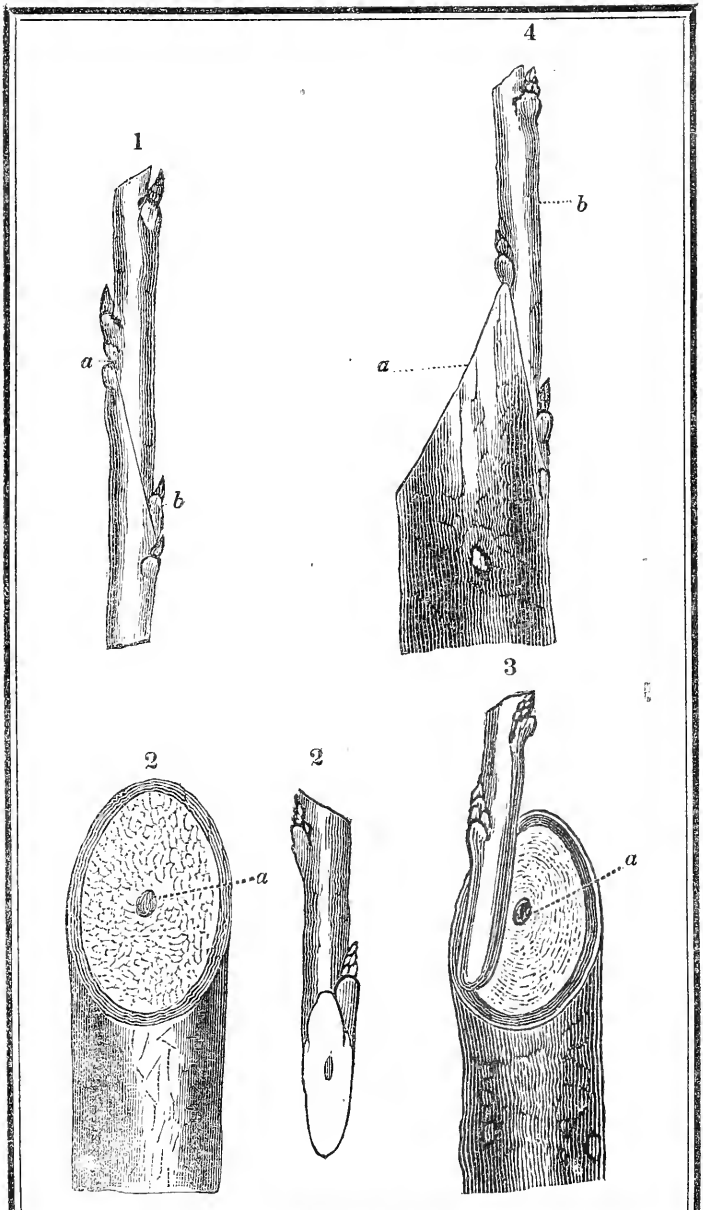
have succeeded during the past season in rearing about 150 young, vigorous plants, two-thirds of which have been already disseminated throughout the Union, and near 500 more are in a progressive state, and will be fit for transplanting the ensuing season."

The undersigned having become fully satisfied of the utility and beauty of this rose, and encouraged by the numerous orders coming in for it, has been induced to propagate it largely, and to lower the price to $1 or $1 50 in large pots, by which means they can be removed at any season of the year. ROBERT SINCLAR.

Clairmont Nursery, Jan. 9.

TO COOK CAULIFLOWERS.—Cut it when close and white, and of a middling size; cut the stem so as to separate the flower from the leaves below it. Let it lie in salt and water awhile; then put it into boiling water, with a handful of salt. Keep the boiler uncovered, and skim the water well. A small flower will require about fifteen minutes boiling — a large one about twenty. Take it up as soon as a fork will easily enter the stem: a little longer boiling will spoil it. Serve it up with gravy or melted butter.—*Gen. Far.*

ELDER TREE.—Sir J. E. Smith has remarked that this tree is, as it were a whole magazine of physic to rustic practitioners. It is said that if sheep that have the rot can get at the bark and young shoots of elder they will soon cure themselves. The wine made from elder berries is too well known by families in the country to need any encomiums; it is the only wine a cottager can procure, and when well made, it is a most excellent and wholesome drink, taken warm before going to bed. It causes gentle perspiration, and is a mild opiate. If a rich syrup be made from ripe elder berries, and a few bitter almonds, when added to brandy, it has all the flavor of the best cherry brandy. The white elder berries, when ripe, make wine much resembling grape wine. The buds and the young tender shoots are geatly admired as pickle. The leaves of the elder tree are often put into the subterranean paths of moles, to drive those noxious little animals from the garden. If fruit trees, flowering shrubs, corn or other vegetables, be whipped with the green leaves of the elder branches, it is said insects will not attach themselves to them. An infusion of these leaves in water is good to sprinkle over rose-buds, and other flowers subject to blight, and the devastations of caterpillars.—*Leigh Hunt's London Journal.*



GRAFTING BY COPULATION.

THE

HORTICULTURAL REGISTER

AND

GARDENER'S MAGAZINE.

JUNE 1, 1836.

Art. I.—Mr Van Mons' *Method of Raising Fruit Trees from the Seed.* Communicated by Hon. H. A. S. Dearborn.

The name of Van Mons has become so conspicuous, that the horticulturists of every country have felt a deep solicitude to be made better acquainted with his character, and the novel means by which he has been enabled to make such immense additions to our choice varieties of fruit. Impressed with this sentiment, Mr Poiteau, one of the most distinguished writers on rural affairs in France, has lately published a very able memoir, embracing both of those interesting subjects. With that liberality which we have so repeatedly experienced, he has generously presented a copy to the Mass. Horticultural Society; and I have thought I could not perform a more acceptable act, than in furnishing a translation for the Register, that the merits of that excellent man may be better known, and his invaluable services more fully appreciated.

The theory, which had been assumed by Mr Van Mons, was original, and the principle on which it was based, could only be verified by actual experiment, which, from the peculiarity, delicacy and difficulty of the conditions, necessarily required a greater number of years for its execution, than any other which had ever been made by man. He could not call to his aid, either the exact or physical sciences; the problem which he attempted to solve, the fact which he desired to ascertain, was not to be accomplished or facilitated by mathematical calculations, the process of induction, or such tests as chemistry, the mechanical powers, or the practical arts afford; the

lights of philosophy illumined not his route; no energy of mind could precipitate, no genius hasten, no talent abridge the operation. All human power was utterly unavailable; the anticipated developements were entirely dependent upon the secret, inexplicable, slow, unaidable and long protracted process of nature. Time, and time alone could reveal the truth he so eagerly sought. Like an astronomer watching for the return of that comet, the term of whose revolution Halley had confidently predicted, he must await the undoubted phenomenon, as conclusive proof of the correctness of assumption. But in this case, besides the mere lapse of time which was to be endured, before conjecture was ripened into conviction, there was a perseverance, a constancy of purpose, and a patient industry constantly required, for a long succession of years, no portion of which could be neglected. The infinite care, labor and exact observation in collecting, planting, and cultivating an immense variety of seeds, and keeping a minute account of the characteristics of not only every generation, but of the numerous plants, of the various species of fruit in each, were all conditions of such a peculiar nature, as to demand a mind so remarkably constituted, that no adverse event, no private or public vocation should interrupt, postpone, or induce an abandonment of the experiment.

In the whole history of discoveries there is no one, who is entitled to higher commendation, for the attention and industry bestowed, as well as for that remarkable fidelity of design, devotion of purpose and indomitable perseverance, which were evinced. Alone, unaided, unpatronized, and in fact discouraged, — if it were possible to discourage such a man,—by the total absence of favor and protection, the prejudices and customs of the enlightened as well as the ignorant, and the apalling disasters he encountered, still he nobly sought to establish a theory, which if even found correct, was not of a character to produce immediate eclat, or affluence; and would require a period probably greater than was consumed in the experiment, to give general publicity to his fame. He appears, in the course of his arduous and prolonged researches, like the incarnation of wisdom awaiting, with cool, collected, and determined resolution, for the recurrence of results, which, when obtained, afforded no other compensation or honor, than the enjoyment which a great mind derives from the discovery of a new fact, or the correctness of a hazardous conjecture.

The theory and experiments of Mr Van Mons have established a most important era in the history of pomology. It has resolved a

question which, if ever even proposed, had bid defiance to all preceding ages. The comparatively small number of the varieties of each kind of fruit, were considered as the product of some other clime than that where they were commonly cultivated, or the accidental and mysterious present of fortune, in one of her sportive moods; but the success which has attended the experiments of the Belgian philosopher, has disclosed the process, by which nature accomplishes her wonderful work in the creation of new fruits, and has enabled man to avail of the secret, in such a manner, as not only to replace those which are necessarily exterminated by age, but to multiply the varieties to an illimitable extent.

After the lapse of half a century, the great merit of Mr Van Mons begins to be properly appreciated, and he has fortunately lived long enough to reap the only reward he desired, the gratitude of the world. There have been a combination of circumstances, which have had a most propitious influence, in giving notoriety to his highly commendable efforts. The rapidly increased taste for gardening and all branches of tillage, within the last thirty years, throughout western Europe and this country; the establishment of horticultural societies, and extensive nurseries; the attention which learned and eminent men have bestowed on useful and ornamental planting, and the numerous publications which have appeared for diffusing intelligence on all these subjects, seem to have been simultaneously brought in aid of the great labors of Mr Van Mons; and to render them peculiarly interesting and acceptable. He has been fortunate too, in the acquisition of such illustrious friends and colaborators, as Soulange Bodin and Poiteau, to comprehend and make known his valuable researches and precious contributions of excellent fruits. Those enlightened and generous heralds of his deeds, have rendered the name of Van Mons as familiar and dear to every intelligent cultivator of the earth, as those of a Cato, a Bacon, and a Du Hamel.

While the storm of war swept over Europe, and devastation or conquest, victory or defeat, alternately produced ruin, or advanced the prosperity of individuals and nations; while empires were reared, or monarchs dethroned, and military chieftains elevated or ruined, Van Mons steadily pursued his quiet, unobtrusive and industrious course; and whether he suffered the evils of the times, or participated in those benefits which all occasionally experience, he never for a moment neglected the great object of his life, and his memory will be cherished, when the names of many, who were blazoned to the

world, as the mighty spirits of the age, during the eventful period of his unknown existence, will be either execrated or forgotten. In the shades of rural retirement and the halls of science, he was zealously engaged in advancing the glory of his country, and the interests of the human race, while sovereigns were contending for supremacy, and statesmen to control or direct the movements of the madly excited multitude. What a grand and imposing spectacle does the life of such a man present! How dignified, how instructive, how influential the example, and how consolatory the reflections which it awakens! It is a verdant spot in the desert of the past, on which the imagination delights to dwell, where reason finds a resting place. There gush forth the fountains of intellect; there is reared the temple of the true Jupiter Ammon, — enlightened genius presiding over the terestrrial destinies of man, and announcing laws for his safe and honorable guidance, in the career of utility and happiness.

But there are unfortunately dark and odious incidents in the history of his country, and which have too often been the reproach of most nations, — neglect and ingratitude towards one of its most illustrious men and greatest benefactors. Instead of being cheered on by public countenance and approbation, he received neither direct assistance or encouragement. Even protection from outrage was not afforded him; and three times were his invaluable nurseries exterminated under the sanction of the government. Still, in defiance of all the difficulties which he was compelled to encounter, he has triumphed gloriously.

It is much to be desired, that Mr Van Mons' theory should be adopted in this country, and more especially, as his process can be commenced at the point, which he was only enabled to reach, after extending his experiments through a period of forty years. It was not, until in the fourth and fifth generations of his trees raised from the seed, that they began to yield good and excellent fruit. He was obliged to begin with seed produced by wild trees; but in this country a great number of superior fruits have sprung up, as was predicted by Poiteau, from the planting of the seeds of successive generations of natural fruits. This has arisen from the manner in which our wide spreading population has been extended, which did not allow of that attention to the selection and propagation of the best varieties of fruits, by scions and buds; and nurseries are of very modern establishment, even in the oldest and most densely inhabited portions of the union. Besides the general inability to purchase and transplant

to a great distance, valuable trees, the whole attention and labor of the pioneers of the wilderness, were required to procure the means of snbsistance; and the luxuries of an orchard and a garden could not be obtained, until the necessaries of life were first secured, and even then fruit could only be generally multiplied, like the other products of agriculture; consequently most of the trees have been raised from the seed, and having been commonly left in the natural state, their seeds have been again planted, and so on, from generation to generation, until we now find those superior kinds of fruit appear, in various parts of the United States, which Mr Van Mons produced in the fifth generation. Such are many of our most celebrated apples, plums, cherries, pears, nectarines, and especially pears. The Andrews, Bloodgood, Cushing, Dix, Gore's Heathcot, Harvard, Lewis, Prince, Seckel, Wilkinson and many others, may be classed with some of the best old, and newest European varieties.

Here then is an advanced position, from whence to commence the experiment which Mr Van Mons has so long and successfully prosecuted. Let the seeds from the fruit *borne on the parent trees* of those choice varieties be planted, and it is more than probable, all the trees thus obtained, would produce as good, and many of them superior fruits, to those of the originals; and their seeds being again planted and continued from generation to generation, the limit may be ascertained beyond which nature will not go, in the process of amelioration. At all events, taking Mr Van Mons' theory as the basis of the experiment, we have the advantage of the generations which preceeded, and may obtain results, in fifteen years, equal, if not superior to those he has only been enabled to reach in fifty years. We know not what is the generation of those extraordinary native trees. The ancestors of all the species of apples, pears, cherries, plums, and peaches which exist in a natural state, in this country, must have been generally grafted or budded trees, brought from Europe, and ten generations or more may have succeeded before they appeared in the perfection in which we now enjoy them, or not more than four or five.

If our nurserymen, and gentlemen who have a taste for horticulture, would appropriate a portion of their grounds to this special purpose, we may confidently anticipate most interesting and valuable results. Besides the additions which might thus be made to our choice fruits, it may ultimately render the care and labor of grafting and budding unnecessary; for if the seeds of such ameliorated kinds always

produce new varieties of equal or superior character, to those of the parents, it will only be requisite to collect and plant their seeds, to fill our nurseries, gardens and orchards with superb fruits, without the application of artificial means. An ample field is most certainly presented for enterprise, and when we have such conclusive evidence of the success, with which experiments may be prosecuted, there are powerful inducements to undertake them.

THEORY OF VAN MONS,

Or an Historical Account of the means which were employed by Van Mons to obtain excellent fruit from the seed.

BY A. POITEAU.

The great number of good and excellent new Pears with which Mr Van Mons has enriched Europe and North America, within the last forty years, seems to clearly prove, that the method he adopted to obtain them is superior to all others, as no one has obtained so many. Still although he never concealed his process, but published the principle with his catalogue of fruits in 1823, there has not been, within my knowledge a single nurseryman, or an amateur in France, who has attempted to practice it, either from a reliance in, or to verify the result.*

In 1833, the Royal and Central Agricultural Society of the Seine, offered a prize for good, and perfect new fruits; but the programme, which was published by the society for that purpose, did not even name Mr Van Mons's theory, or indicate any new method of arriving at the desired end, and left the competitors to the vague routine of sowing at hazard, and waiting until nature performed a miracle, in producing one good fruit among a thousand bad. Time will make known the result of the competitors, I shall therefore say nothing upon that subject at this time, but I cannot but regret, that in an age, when philosophers, chemists and physiologists are directing all their efforts to discover the process, or what is vulgarly called the secrets of nature, the Royal and Central Agricultural Society of the Seine, has not named Mr Van Mons's theory,—a theory which is now supported by so many rapeated experiments, as to place it among the number of demonstrated truths.

* I honorably except Mr Bonnet of Boulogne-sur-Mar, an enlightened pomologist, who went several times to Lovain, to examine Mr Van Mons' nurseries and who has within three years sown seeds, according to the principles of that great master.

I have said that in 1823 Mr Van Mons published in a few words, the principle of the means which he had employed to obtain good new fruits. In 1828 I gave an account of some of these means in the "*Considerations of the process which is employed by nursery men to obtain new ameliorated fruits, &c.*" published in the "*Annals of the Horticultural Society of Paris,*" Vol. III. page 288.* Now I call the principle of these means VAN MONS' THEORY, and my object is to indicate its origin, to develope it and to support it by reasons and facts, to attempt to demonstrate its solidity, to cause it to be adopted, and to present it as one of the most learned and most useful discoveries which genius and reason has made towards the close of the eighteenth century.

Mr Van Mons, could most assuredly present and explain his theory infinitely better than it is possible for me do; but fearing that his numerous occupations, and above all his modesty might prevent him, I hope, at least, to be able to give a sufficiently clear idea to excuse the audacity of writing upon this useful and important discovery of that learned and venerated professsor, and, besides, the fear I entertain that Mr Van Mons will not publish his theory, I believe I shall render an essential service to the history and chronology of fruit trees, in fixing the epoch of the origin of this history, as well as of that of those numerous good fruits for which we are in debt to him. We should at this time be very grateful to our ancestors, if they had left us a greater number of data, on the epochs and the circumstances attending the appearance of the fruits, which they have transmitted to us, and which will probably disappear in the hands of our offspring; we should have had a fixed basis to calculate their longevity, the degrees of their infirmities, and their deterioration, subjects which have now acquired great importance and which it is difficult to determine, because man does not live sufficiently long to ascertain the phases of the deterioration of fruits. Still as this deterioration, soon or late, is certain, we are very much interested, not to trust to chance, the replacing of the old fruits, in proportion as they deteriorate, by new fruits, at least as good if not better than the ancient, which we are fated successively to lose, in consequence of their great age, the feebleness of their constitution and the diseases by which they are attacked.

In this state of things we should consider the theory of Van Mons, as a very precious discovery, as it not only enriches us with new

*I translated the article and it was published in the New-England Farmer in 1829.

fruits, the greater part of which are superior to those which we possess, but gives us the certainty of being able to replace those which are inferior, or which have deteriorated, by new varieties of excellent qualities; it is applicable to the renewal of stone and seed fruits; but it is in that of Pears we have the most numerous examples of it efficacy, Mr Van Mons being more particularly attached to this kind of fruit, (without however, neglecting the others,) as superior, not merely from its qualities, but from the length of time which several of its varieties may be kept.

ORIGIN AND DEVELOPEMENT OF THE THEORY OF VAN MONS.

Mr Van Mons, a professor of chemistry at the University of Louvain in the Kingdom of Belgium, since 1817, was born in Brussels in 1765. To the most precious gifts of nature, by which he was favored, was added a good education. The study of physic, and chemistry early accustomed him to carefully examine whatever came under his observation, and to seek the cause of every effect which he saw. From the age of fifteen years, his ideas were fixed on the *natura rerum*, and since that time his meditations, his researches, and his continual experiments, far from producing a change, have but tended to confirm them. A taste for labor which he has never lost, and an ardent desire for the acquisition of knowledge, enabled him at the age of twenty years, to be received as a pharmacopalist, to write and speak all the languages of Europe, and to correspond with the learned men of all nations.

Although Mr Van Mons commenced his pomological experiments when a youth, and has not ceased to continue them, his vast capacity was not filled; he studied medicine to extend his knowledge, wrote a thesis on physiology, a subject which was much agitated at that time, and received the degree of Doctor in Paris. He was born with such strength of mind, that he wrote and now does, on the gravest subjects, in the midst of noise, in the company of persons who talke s loudly on frivolous subjects and takes a part in the conversation without stopping his pen.

Mr Van Mons enjoyed the reputation of a superior man, and the consideration due to his transcendent merit, when the revolution of 1788 burst forth. Belgium was immediately incorporated with France and Mr Van Mons was chosen a representative of the people. His great perspicacity enabled him to discover the labrynth without end, in which public affairs were involved, and he wrote a treatise on politi-

cal philosophy, in which he stated that the continuance of our dissentions was the only way in which that true and solid peace could be found, which we might in vain seek in any other manner.

It is necessary for me to recall these circumstances in relation to the youth of Mr Van Mons, to induce the reader to think, that when a man of such a temperament, establishes a theory on the regeneration of fruits, after having practised his experiments during fifty consecutive years, it will be received with much greater confidence, as it quadrates with the course of nature.

At the age of fifteen Mr Van Mons sowed, in his father's garden, the seeds of perennial flowers, roses and other shrubs, with the design of observing the developement, the successive generations and the variations which might thus be produced. To these he soon added seeds and stones of the well known fruits, and remarked that of all his young plants, the pears were those which least resembled their parent. He searched the gardens, nurseries, markets and neighboring provinces, to confirm or rectify his first ideas, on the causes of the variation in the flowers and fruits.

At the age of 22 years the basis of his theory was fixed, and he was established as a pharmacopolist. At that time he had a gardener named Meuris, in whom he discovered a disposition for observation; he initiated him into his pomological views, and in a short time Meuris was capable of laboring with success, as well alone as with his master. In their journies they bought every where, wild and free stocks of fruit trees, which had a favorable appearance. They were so familiar with the characteristics, which the aspect, and the wood furnished, that they could purchase as well in winter as in summer. When their explorations were distant they took up the trees, which they obtained even in mid summer, and removed them immediately. By means of these acquisitions and their repeated sowings, Mr Van Mons had, in a short time, 80,000 fruit trees in his nursery, which enabled him to make his experiment on a large scale and to more promptly obtain results.

Here is an example of the rapid conceptions of Mr Van Mons. At the commencement of the French emigration, the properties of the *Rhus toxicodendron*, being so much extolled in Belgium, a leaf of this plant sold for from 6 to 7 sous at Brussels; Mr Van Mons planted cuttings in his garden for ths use of his phramacy; and going one day to see his young plants, he noticed a gardener who was pruning the trees without regard to any principle. He immediately hastened to

find Mr Villebon, who was the phenix of horticulturists at that time, and asked him what were the rules for pruning fruit trees; the reply was, "you are too old to learn them." In two years, replied Mr. Van Mons, I will teach you, in a book, which I shall publish. He then began to consult the French, English, Dutch, Russian and German works, and found that everything was to be verified and rectified. His correspondence has proved to me, that he immediately became, himself, the best book to consult, not only on pruning fruit trees, but on an infinity of operations in culture.

His repeated sowings, without interruption from parent to son, of annual flowers, and perennial shrubs which grew and fructified in a short time; his new excursions, which were longer than the preceding, to observe the wild types of our fruit trees, in places where they grew and reproduced in a state of nature; his new generations, which were obtained from wild and free or natural stocks,* as well as from the first sowings in his nursery; and his thousand upon thousand of divers observations collected from every quarter, have enabled Mr Van Mons to establish a law, which admits of fewer exceptions; this law is, that so long as plants remain in their natural situation, they do not sensibly vary, and their seeds always produce the same, but on changing their climate and territory, several among them vary, some more and others less, and when they have once departed from their natural state, they never again return to it, but are removed more and more therefrom, by successive generations, and produce, sufficiently often, distinct races, more or less durable, and that finally if these varieties are even carried back to the territory of their ancestors, they will neither represent the character of their parents, or even return to the species from whence they sprung.

Mr Van Mons has introduced wild pear trees, into the middle of his nursery, of the best perfected varieties; these wild trees, or sub-natural species, as he calls them, have not varied and continued to yield poor acid fruit; the seeds of this bad fruit have been sown, and they have always produced wild trees, and although these wild trees

* I have observed in Mr Van Mon's correspondence with me, that he does not use the word *free* or *natural*, but that term with him is synonymous with *variety*. With us a tree is called *free* or *natural*, which is produced from the seed of a domesticated fruit, and in fact all trees which have not been grafted: thus we say a *free* or *natural* Rose, Camellia, Magnolia or Pear, when they are produced from the seed, cuttings or layers; and we particularly apply the epithet *wild* to Pears and Apples, which grow naturally in the woods, and whose fruit is not eatable.

flourish in the midst of the perfected varieties, the seeds of both being sowed neither produced any hybrids, from which, Mr Van Mons concludes, that there cannot be a cross fecundation between a natural species and a variety. He does not deny that the species can be mutually fecundated, or that the varieties can also be in like manner fecundated; but he maintains, that the plants which are the result, never offer an appreciable resemblance, either to the father or mother. The origin, therefore, which Linnæus has given to the *Datisca cannobina* may be considered fabulous. Besides, he does not believe that hybrids are so frequently produced, as has been alleged.

Mr Van Mons has been the first to ascertain and assert, contrary to appearances and common opinion, that double flowers are not a variation, but rather a sign of what he calls *feebleness*. This assertion, which may be considered bold for the age, has since been ranked among the number of truths from the fact, that it has been ascertained, there is less solid matter in all the supernumerary petals of a double flower, than there would have been in the seeds, if the flower had not been double.

But there is a point on which all will agree with Mr Van Mons, which is, that the varieties of the most delicate fruits, are those which are the shortest lived, all things besides being equal; and from experiments which he has made, full credence will be given to the assertion, that a scion taken from an apple grafted on a paradise stock, or from a pear grafted on a quince, does not succeed well when placed on a free stock. Experiment, in fact, proves, that if the paradise and quince render the grafts more precocious, and give a greater volume to the fruit, they impair the vigor of the tree, and abridge its life, by not furnishing sufficient nourishment; and it is easy, therefrom, to conclude, that a scion taken from such a tree, has already been impaired. From these facts, Mr Van Mons not only recommends that scions be always engrafted on free stocks, but that those individuals be selected, which appear most to resemble in vigor and physiology, the varieties which are to be engrafted upon them, — a condition very much neglected in sale nurseries. In those establishments, a subject having the appearance of a Beurre, or a D'Aremberg, there is grafted upon it a Blanquet or an Aurate, if it is found in the row destined for Blanquets and Aurates.

As I shall often have occasion to use the words *degeneracy* and *deterioration*, or their derivatives, it seems necessary that I should here fix the sense in which I employ them. Degeneracy, in

culture, is applied to the seeds of fruits and flowers, which have been improved by variation. Seeds degenerate, or have degenerated, when the plants which are produced from them, no longer present certain qualities, which are found in their predecessors, — qualities which they have acquired by variation. Philosophically, this is not a real degeneracy, but, on the contrary, a quality, a return towards the state of nature. As civilians, we say, that a man degenerates, if he abandons the social state, and the advantages, whether real or not, which he has acquired, at the expense of his liberty, and goes to enjoy his independence, and all his liberty, far from the chains of society, while philosophy says that this man resumes his rights, and re-enters into a state of perfect nature.

Deterioration, in pomology, applies to fruit trees and their fruits; a tree is deteriorated by age, disease, a poor soil, bad culture, an unfavorable exposure, the weather and adverse seasons, &c.; fruits are deteriorated by the same causes, except the old age of the tree which bears them, which old age, when it is not too far advanced, generally improves them.

The degeneration of the seeds of fruit trees in a state of variation, being the pivot of the theory of Van Mons, it is necessary that it should be clearly presented.

As long as plants in a state of nature remain in their natal soil, they produce, during their whole life, seeds which do not degenerate. Seeds taken from a Baobab that was two thousand years old, produced trees like itself, quite as well as those which it had borne at the age of twenty years. Wild pear trees, in a state of nature, and in their native soils, always reproduce seeds, without any sensible variation. It is not the same with plants born in the state of variation, either in consequence of having changed the climate, the territory, or from some other unknown cause. The seeds which a domesticated pear, — that is to say, one which has been for a long time in a state of variation, — yields at its hundredth frutification, produces trees not only very different from itself in consequence of its being only a variety, — and the bounds of variation are not known in descending from parent to son, — but still very different from the trees which have been produced from the seed of its first fructification; and the older a domesticated pear becomes, the nearer do the trees produced from its latest seeds, approach to a state of nature, without, nevertheless, being able ever to return to it, as Mr Van Mons affirms.

Now let us examine how the annual culinary and ornamental plants

are governed, which have been for a long time in a state of variation. The seeds are annually sown, and whatever be the variation, which the new generation undergoes, it preserves the principal characteristics of its parent, and scarcely an individual is discovered, which exhibits a tendency to return to a state of nature. When beautiful balsams, and excellent lettuces are once obtained, they are easily preserved as such, and their variation seems, sufficiently often, rather an effort to become more beautiful, than a disposition to return to the wild state of their ancestors.

From these two extreme facts, and an infinite number of others which are intermediary, Mr Van Mons has arrived at this conclusion: that as the seeds of the first fructification of an annual plant, in a state of variation, produces plants, which may vary without removing far from the state of their parent, while on the contrary the seeds which are yielded by the hundredth fructification of a domesticated pear of excellent quality, or for a long time in a state of variation, produce a great variety of trees, which neither resemble their parent, and whose fruits almost always detestable, are more or less near to a wild state; this difference should have its cause in an unfavorable modification, — *in a degeneracy which the seed of the pear undergoes in consequence of the age of the variety which bore it.*

Having arrived at this conviction, Mr Van Mons has said: by sowing the first seeds of a new variety of fruit tree, there should be obtained trees always variable in their seeds, because they can no longer escape from this condition, and which are less disposed to return toward a wild state, than those produced from seeds of an ancient variety; and as those which tend toward a wild state have a less chance of becoming perfect, according to our tastes, than those which are in the open field of variation, it is in the seminary of the first seeds of the newest varieties of fruit trees, that we should expect to find more perfect fruits according to our tastes.

The whole theory of Van Mons is contained in the above paragraph; it was to verify it, and put it in practice, that from that period he collected in his nursery young wild trees, young free stocks, and sowed large quantities of the seeds and stones of various kinds of fruit trees, in order to have their first fruits, and to sow their seeds in turn to obtain a generation, of whose novelty he was sure, and to take it as a point of departure for his experiments. Although Mr Van Mons operated on thousands of various kinds and different varieties of trees at the same time, I will assume, in order to render what I say

more clear, in explaining his progress, that he made his experiments on a single variety of pear.

As soon as the young pear tree with which he began his experiments, produced its first fruit, Mr Van Mons sowed the seeds. There resulted a first generation, the individuals of which, although of very different kinds, did not resemble their parent. He cultivated them with care, and endeavored to hasten their growth, as much as possible, by all the known means in his power. These young trees yielded fruit, which were generally small, and almost all of them bad. He sowed the seed of these and obtained a second generation without interruption — which is very important, — that were very different in kind, but did not resemble their parent, although they had a less wild appearance than their predecessors. These were cultivated with equal attention, and they fructified earlier than had their parent. The fruits of this second generation, also varied as much as the trees which bore them, but part of them appeared less near the wild state than the preceding; yet only a few possessed the requisite qualities to entitle them to preservation. Constant in his plan, Mr Van Mons sowed the seeds and obtained a third continued generation, the greater part of the young trees of which, had a *phasis* of good augury, that is something of the physiognomy of our good domesticated pear trees, and they were consequently less various in appearance. Being carefully cultivated, as had been the preceding, these trees of the third generation, fructified still earlier than had those of the second generation. Several of them produced edible fruit, although not yet decidedly good, but sufficiently ameliorated to convince Mr Van Mons that he had discovered the true path of amelioration, and that he should continue to follow it. He also recognised, with not less satisfaction, that the oftener the generations succeeded each other, without interruption, from parent to son, the more promptly did they fructify. The seeds of the fruits of this third generation, which had a good appearance, were sowed, and the trees managed as carefully as the preceding, and produced a fourth generation, the trees of which were a little less varied, and nearly all of them had an appearance of favorable augury; they fructified in a shorter time than the third generation; many of the fruits were good, several excellent, but a small number still bad. Mr Van Mons took the seeds of the best kinds of these pears, sowed them and obtained a fifth generation, the trees of which were less various than the preceding, fructified sooner, and produced more good and excellent fruits, than those of the fourth.

It was after the result of this fifth generation, from parent to son, that Mr Van Mons made known the process which I have explained. Although having arrived at a most happy conclusion, and where others in his situation would have stopped, I know that he continued his experiments to 1834, and that he now does, and has reached the eighth generation, without interruption from parent to son, and that at each remove he always obtains fruits more and more perfect.

Mr Van Mons made the same experiment upon almost all the other kinds of fruits. The apple yielded no other than good fruit in the fourth generation. The stone fruits, as the peach, apricot, plum, and cherry, became perfect in a still shorter time; all of them produced good and excellent fruits in the third generation; which should be the case, for our stone fruits always reproduce more or less good without any particular attention, and therefore they should with less difficulty and in a shorter time, arrive at a perfect state of amelioration.

After having presented in a succinct, but I hope a clear manner, the theory of Mr Van Mons, and the means which he employed to put it in practice, it is proper that I should say a word as to the time which is required to obtain good fruit, in order that any one who wishes to verify or adopt it, can proceed according to his principles.

The first thing which preoccupied the attention and excited the anxiety of Mr Van Mons, in the commencement of his experiments, was to aseertain how many years it required to arrive at the result which he sought to obtain; how many generations would be necessary, and how many years each generation would require to produce its first fruit. This first consideration, appalling to ordinary men, did not arrest Mr Van Mons in his course. He put his hand to the work, and learned that three or four generations, without interruption, from parent to son, and from twelve to fifteen consecutive years, were sufficient to obtain no other than excellent fruit from the stones of peaches, apricots, plums and cherries: that to obtain no other than excellent apples, only four successive and uninterrupted generations, from parent to son, and about twenty consecutive years, were required. As to the pear, the difficulty was greater, but not insurmountable, as we shall see. At first, Mr Van Mons was unable to procure the seeds of varieties very recently procreated; the seeds which he was obliged to use to commence his experiments with, were obtained from ancient varieties, whose age, although uncertain, was much advanced, which from experience tended to retard the first fructification of his young

trees. Nevertheless, Mr Van Mons has been able to ascertain that twelve or fifteen years was the mean term of time which evolved from the moment of planting the first seed of an ancient variety of the domesticated pear, to the first fructification of the trees which sprang from them.

The trees from the second sowing of the seed of the first generation, have yielded their first fruit at the age of from ten to twelve years, as the mean term; those of the third generation, at the age of from eight to ten years; those of the fourth generation, at the age of from six to eight years; and finally, those of the fifth generation, at the age of six years. Mr Van Mons being actually at the eighth generation, has informed me that he has obtained several pear trees which fructified at the age of four years.

From this decreasing progression, it may be seen that the fear of a lengthened experiment ought to decrease in proportion as it advances, and that adding the requisite years in the first five generations of the pear, a point is reached where none other than good and excellent pears are obtained, at the end of fortytwo years. But if in each generation, as has been shown, there are always several trees which do not await the mean term named for their fructification, the time may be estimated at thirtysix years for obtaining from the pear, in five uninterrupted generations from parent to son, new trees and fruits, all of which are of excellent quality. The time can still be more abridged; for in one of his last letters, Mr Van Mons informs me that from two of his first sowings of pears, there were trees produced which fructified at the age of six years.

I have collected much of what I have stated, and what I have yet to relate, in the nurseries of Mr Van Mons, at Louvain; but it is from the correspondence of that venerated professor, that I have obtained the groundwork of my discourse; and as that correspondence had for its object my sole instruction, and not that of guiding me in a compilation which I had not contemplated, it follows that what I have still to communicate has not that natural connexion which I desired it should have assumed, and will consequently appear, to a certain extent, as detached articles.

When Mr Van Mons commenced raising trees from the seed, he had already seen in other nurseries, that the seed of the varieties of the pear genus reproduced neither the characteristics of the tree, nor those of the fruit from which they sprang; therefore, he was not restrained, as may be said, to *raise by species*. But he had gone

farther and ascertained that the ten seeds of a pear produced ten different trees, and ten different fruits. Still his manner of sowing is very near that of all nurserymen. He left his plants in the seed bed two years; he then took them up, and part of them he threw away as worthless, and transplanted the most vigorous at such a distance one from the other, that they could thoroughly develope themselves and fructify. He considered it best to plant them sufficiently near, in order to force them to run up tall, and to form pyramidal tops, without pruning; this hastens, he states, their fructification. I have seen squares of pear trees in his nursery at Louvain, at the epoch of their first fructification, and they appeared to be about ten feet apart. While waiting for the young trees thus planted to fructify, there is afforded an opportunity of studying their form and physiognomy, and to establish the prognostics of what they may become, from their different exterior characteristics.

Mr Van Mons has ascertained that it is scarcely before the age of four years that young pear trees develope their characteristics; and that before this age, it is rarely possible to presume what each individual may become. It is not until the second or third year after the seedlings have been transplanted, that Mr Van Mons begins to examine them for the purpose of ascertaining the prognostics of each individual. In the commencement of his experiments, it was sufficiently easy for him to recognise as good auguries in those young trees, which showed from their form, wood and leaves, a resemblance to our good ancient varieties. But as he obtained a great number of excellent new fruits, which presented new characteristics, sometimes analagous and sometimes opposed to those of our good old varieties, it was much more difficult to establish the data for ascertaining what the young trees raised from the seed may become; for he obtained excellent fruit from trees of a very bad appearance. Still from long continued observations, he has established the following prognostics:

1. *Prognostics of favorable augury.* A good form, a smooth and slightly shining bark, a regular distribution of the branches, in proportion to the height of the tree; annual shoots bent, striated, a little twisted, and breaking clean without splinters, thorns long, garnished with eyes or buds, their whole, or nearly whole length; eyes or buds plump, not divergent, red, or grizzled; leaves smooth, of a mean size, crimped on the sides of the middle nerve, borne on petioles rather long than short, the youngest, in spring, remaining a long time directly against the bud, the others, or the inferior, ex-

panded, hollowed into a gutter from the bottom towards the top, but not their whole length.

2. *Prognostics of bad augury.* Branches and twigs confused, protruding like those of the horn-beam, or broom; thorns short, without eyes; leaves averted from the bud, from their first appearing, small, round, terminating in a short point, guttered their whole length. These characteristics indicate small fruit, flesh sweet and dry, or baking fruit and late.

3. *Prognostics of early fruit.* Wood large, short; buds large and near.

4. *Prognostics of late fruit.* Wood slim, branches well distributed, pendent, the shoots a little knotted, generally denote late delicious fruit; with leaves round, point short, stiff, of a deep green, borne on petioles of mean length, are analogous signs, but less sure.

I wish much, that Mr Van Mons had indicated, by what sign we could determine, when a young pear tree promised large fruit, but he has been silent upon this subject, whilst he has given, as the characteristic of good augury, an annual twig, which breaks cleanly and without splinters.

I have stated that Mr Van Mons does not agree in opinion with those, who attribute the deterioration of fruit trees to their multiplication by repeated ingrafting; now I recollect that Mr Knight has written, that if the parent tree of an ancient variety is found, it can be regenerated, by taking scions from it. This expresses with sufficient clearness that Mr Knight, the most learned pomologist in England, thinks fruit trees of free stocks, or natural trees, deteriorate much less rapidly than those multiplied by grafting, which accords with the opinion of Mr De Murinais, and Mr Bonnet. Mr Van Mons, on the contrary, maintains, that free stocks or natural and grafted trees, deteriorate in the same manner and with the same rapidity, in consequence merely of their age; and that it is age alone which causes our fruit trees to deteriorate, and their seeds to degenerate. The following is an example in support of his theory. In the course of his pomological experiments he discovered in an old garden of the Capuchines, the parent tree of our Bergamote de la Pentecote, which is at this time a sufficiently old pear, and all the trees grafted from it, are affected with canker in slightly moist land, and the fruit is small, cracks when growing in the open air, is covered with black spots, which communicate a bitter taste to the flesh, and finally it no longer succeeds, but when trained as an espalier,

along a wall. Very well, the parent tree of this Bergamote, was infected with all the evils which are found in those grafted from the same variety; Mr Van Mons detatched rooted suckers or sprouts, and at the same time took scions which he grafted on other stocks, and the trees produced from both, were neither more or less deteriorated, than those of our gardens, which have been for a long time, multiplied by the graft. Therefore, it is age only, to which should be attributed the natural and gradual deterioration of our varieties of fruit trees, as well as the equally gradual degeneracy of their seeds. I say natural and gradual deterioration, for Mr Van Mons is not ignorant that there are certain morbific traits, which are communicated from the stock to the graft, and from the graft to the stock.

The subject of deterioration naturally leads to the inquiry how many years a variety of pear may live. Mr Van Mons estimates that it may live from two to three hundred years, and that if at this age it is not extinct, its fruit is so deteriorated, that it no longer merits being cultivated; consequently he does not believe in the antiquity of fruits which, it is said, have been transmitted to us from the Romans.

Mr Knight is of opinion, the deterioration is still more rapid, and assigns a shorter term to the existence of our varieties of fruit trees. This author even asserts, that it is not long since our old fruits were still better than they now are. But it is doubtful whether Mr Knight can furnish the proof.

The thorns, with which the greater part of young free pear stocks are covered, disappear with age; but the tree can reproduce them in an advanced age, if a sprout is developed on the trunk, or if its vigor is augmented. Thus have I seen, in Mr Van Mons' garden, pear trees renew their thorns, after having ceased to produce them. In Paris it is only necessary to head down a large orange tree, without thorns, to see it throw out new branches covered with them.

There are free stocks of old varieties of pears, which have the power of causing the fruits which are engrafted upon them, to grow to an extraordinary size, — double, says Mr Van Mons. It is a quality which the free stocks of new varieties do not possess, and which Mr Van Mons cannot explain. In fact we often see trees which constantly yield fruit larger than others of the same variety, all things, in other respects, being equal. An inverse appearance, is often presented, to the florists of Paris; there are lemon trees, whose stocks become diseased, and cause the oranges which have been budded upon them to perish, in four or five years.

When the young pear trees, procreated from parent to son by uninterrupted generations, begin to produce edible fruit, they are generally summer fruits. It is necessary that the uninterrupted generations be more numerous, to obtain winter fruits, or such as keep long.

In proportion as the uninterrupted generations are multiplied from parent to son, the great differences which are first observed between the trees and their fruit, diminish in an inverse progression; wild forms, or appearances are no longer seen; all of them have an air of civilization, and their fruits no longer deviate from good. In the last package of fruit which Mr Van Mons sent me, a considerable number of the pears naturally take rank among our Beurres and Doyennes in form, volume and quality, and all these fruits to the number of sixty varieties, were the first of a sixth generation, without interruption from parent to son.

Mr Van Mons remarks, that among the new pears, he has obtained, there are some which were several years in taking a fixed form; that several did not assume one, for from twelve to fifteen years, and that others never did. Our old varieties, without doubt, have been in the same situation, and he gives as an example of pears, which have never assumed a determinate form, our Bon Chretien D'Hiver; still it is a pear the most easily recognised, notwithstanding the variation of its form and size.

Mr Van Mons considers it an invariable principle, that a graft does not bloom sooner than the parent stock from which it was taken. Nevertheless, a contrary opinion universally prevails among nurserymen. They often graft scions taken from young trees, in the hope of hastening their floration, and sometimes succeed; but, in this case it may be said, that the scion taken was predisposed to bloom, and that it would equally as soon have done so, if it had remained on the parent tree. It is the same with regard to buds. The first *Astrapœa pendula*, which bloomed in France, was a bud taken from a stock in the Garden of Plants, which did not begin to bloom, until several years after. Finally, there are so many accidental causes, which advance or retard the floration of grafts and their parent stocks, that it is difficult to ascertain whether they should bloom simultaneously, or one after the other, while numerous facts attest, that the multiplication, repeated by bud, accelerates the floration and diminishes the volume, in a great number of species.

Mr Van Mons has ascertained, that it is advantageous to collect the fruit a little before it is fully ripe, from which it is desirable to

obtain seed for planting, and to leave it to become perfectly mellow, and reach a state of decay, before extracting the seeds or stones. He admits, with Mr Knight, that the apple deteriorates less rapidly, and lives longer, than the pear. This cannot be doubted, when we compare the facility of rearing apple trees in almost any kind of soil, with the difficulty of finding one, which is suitable for the pear.

The learned professor much prefers the White Thorn, *Mespilus oxyacantha*, to the quince, as a stock for grafting our ancient varieties of pears upon. Pears grafted on a thorn, he says, grow higher, have a more perfect pyramidal form, and produce their fruit nearer the trunk. I agree entirely in opinion with Mr Van Mons; first, because the pear takes perfectly on the thorn, which is an indigenous tree, rustic, not difficult to cultivate, and of easy multiplication from the seeds; and secondly, because complaints begin to be made of the quince, not only on account of its three varieties giving different results, but in consequence of its being deteriorated by its extended multiplication by suckers and cuttings; and because it does not succeed well, in all kinds of land. As to the choice of the best variety, an error, committed in this respect, in the nursery of Luxembourg, has excited great complaints on the part of those who have obtained pear trees from that establishment, which has proved for the thousandth time, that the quince tree of malformed fruit, is not so good for stocks, as that which yields pyramidal fruit. As to the superiority of the white thorn over the quince, it is a question which will soon be settled with us; for when the Horticultural Society of Paris received the collection of pear scions, which was sent by Mr Van Mons in the spring of 1834, there were not a sufficient number of quince stocks, at command, for all of them, and Count De Murinais caused a portion of them to be placed on the thorn: they have taken perfectly well, grown admirably, and give the most favorable indications of a fortunate result.

From the data which Mr Van Mons has given, we are induced to think, that the pears which do not succeed with us, unless trained as espaliers, against a wall, have not always required that favorable position, — that they are now irreclaimable, on account of the weakness of old age, the deterioration which they have sustained, and the decrepitude which threatens them, and that finally, a time will arrive, when in spite of our cares, they will no longer be good even as espaliers, and will be abandoned and become extinct. To illustrate the principle of that able pomologist on this subject, I will add, that when

a variety is enfeebled by age, or its temperament exhausted, it is best to graft it on a quince, in order that it may receive only a moderate nourishment, and should never be put on a free stock, whose too copious supply of aliment would hasten its destruction.

Mr Van Mons has remarked, that the new varieties of pears which he obtained by repeatedly planting the seed from generation to generation, without interruption from parent to son, neither possessed the rusticity or the longevity of old varieties, and that those whose fruit was the best, were also those which indicated the shortest term of longevity. All this is in conformity to the course of nature, and it is proper that we submit to it. Mr Van Mons has given the explanation of this fact. When there is no interruption between the generations of our varieties of fruit trees, nature cannot reclaim her rights; she has not time to modify the seed according to her manner, to make them resume a part of their old wild character; but if a space of fifty years is left between two generations, the individuals of the second, bear the marks of rusticity, and a tendency towards the wild state, which nature had developed in the seeds of their parent during those fifty years. This in fact, happens, when the seeds of an old variety of a fruit tree are sown.

Here I am bound to attempt to present the opinion of Mr Van Mons without alteration, and to add thereto my reflections, and some adverse views whether well or ill established; but finally it is time that I leave him to speak for himself and express in his own cogent style, his manner of observing the progress of deterioration and decrepitude in our varieties of fruit trees.

"I have remarked," he says, "that the most excellent beyond all others, least resist the ravages of old age, and become sooner old than the varieties whose birth preceded them; they cannot attain an age of half a century, without manifesting symptoms of decrepitude. The first of these symptons, is that of bearing less constantly and the fruit ripening later. The decay of the wood, the loss of the beautiful form of the tree, and the alteration of the fruit follows at much later periods. The varieties which have existed but half a century do not suffer from the canker at the ends of the branches, nor from diseases of the bark; the fruit does not crack, is not filled with a hard substance, covered with knots nor insipid or dry; the alternates, are but a year; these varieties can still be grafted on other trees, without their infirmities being augmented. It requires half a century more to end their sufferings, and the

general destruction of the varieties is the only remedy which can be applied to its diseases. It is painful to think, that soon the Saint Germain, the Beurre Gris, the Crassanne, the Colmar and the Doyenne [St Michaels] must submit to this destruction. None of these varieties any longer succeed with us [in Belgium] except when engrafted on the thorn and as espaliers; but this success is at the expense of their commendable qualities. During my youth these varieties in my father's garden, presented superb trees, in good health, and rarely was there any imperfection in their fruit. *O quantum distans ab illis!* What a loss in a time so short — in the space of sixty years! I repeat, the advantage of youthful variation, is being without any imperfections."

I ask permission of Mr Van Mons to doubt, a little, such an alarming rapidity in the enfeeblement of our varieties of Pears. I well know that almost all those, with which I have been acquainted for fifty years, are affected with different maladies; that in passing through the nurseries, trees are seen, which have been grafted from our fine pears, in the bark of stocks the of which, are numerous defects; the branches are cankered, the extremities of the young twigs are black and they lose their leaves before the natural epoch,— all diseases, which Count Lelieur places among the number of those that are incurable; but the author, although very particular, has nevertheless, found here and there trees upon which he did not discover any disease, and which he allowed the gardener of the Emperor to introduce into the gardens of the Crown. I am well persuaded, that our varieties of fruit trees, considering their origin, cannot have the tenacity, the indefinite life of the natural species; but I also believe that there are imperfections, individual maladies, which do not equally attack the whole variety; that the variety, for example, we call Beurre Gris, which is in a state of decrepitude, is extinct in some places, while it still exists in others. Mr Van Mons himself affirms it, in saying, that in Belgium, there are varieties, which no longer succeed, except as espaliers trained against a wall; and finally, I believe that, if scions had always been taken from the most healthy individuals to perpetuate the varieties, we should not have seen so many trees affected with diseases, which abridge their existence and which also contribute, for the same reason, to shorten that of the whole variety. If now then, it is adopted as a principle, never to take scions but from young and healthy trees, and to insert them only on vigorous free

stocks, the varieties will be longer preserved in a healthy state, than is the case at the present time.

Still, whether the deterioration of our fruit trees, be naturally slow as I think, or rapid, as Mr Van Mons and Mr Knight have asserted, it is not less certain, and it is well to think of some method for replacing them. Our manner of sowing the seeds and trusting to chance, for obtaining a good new fruit, is not certainly the best, as experience has sufficiently proved. Besides, chance does not merit the confidence of a reasonable man, especially when the probabilities are adverse. It is necessary then to have recourse to science, which is founded on reasons deduced from particular facts, and from whence flows that which is called a principle; and when this principle agrees with the course of nature, and is not contrary to any known fact, it seems to me, that it should be adopted as a truth, and be employed with confidence.

Such is, in my estimation, the theory of Mr Van Mons, and it is to be considered as the best and most prompt means of regenerating our fruit trees, that is to say, of replacing the old deteriorated varieties by new varieties, which are perfectly healthy and bear excellent fruit. I have presented, as clearly as was in my power, the process employed to put it in practice, to induce the friends of our country to naturalize it; and in order to inspire more confidence, I have dared to say a word on the transcendent merit of its author, for which I ask a thousand pardons of his modesty.

I might yet add to this corollary many remarks, made by Mr Van Mons on fruit trees and their culture, for his correspondence is very copious in facts; but I believe I have said sufficient to support the theory of this learned professor. I therefore, hasten to complete my memoir, by fixing the epoch of the removal of his nursery from Brussels to Louvain, and giving an idea of the incredible obstacles which he was obliged to encounter, in his pomological career, instead of the encouragements which were due to him, and shall finish, by a description of some of the excellent fruits obtained by Mr Van Mons, and few or none of which are yet known in France.

After Mr Van Mons had been a distinguished professor of physic and chemistry for seven years in the central school of the department of Dyle, and after the fortunes of war had separated Belgium from France, King William rendered justice to his merit, by naming him professor of the same subjects in the University of Louvain, in 1817, six months even before that University was re-established. Louvain

being only about six leagues distant from Brussels, Mr Van Mons could at the same time perform his duty as professor, superintend his nursery, and pursue his experiments. He was then at the apogee of his pomological career; he had more than 80,000 trees in his *Pepiniere de la Fidelite* [Nursery of Fidelity] the greater part of which were pears raised from the seed; several compartments were in their fourth, fifth, and sixth generations without interruption, from parent to son, and produced delicious fruits. He had for several years sent scions to Germany, England and the United States of America; nevertheless, except his friend Bosc, Mr Vilmorin, Mr Leon Leileric, and Mr Bonnet, there was scarcely an individual in France, who knew that Mr Van Mons existed; such is the empire which routine and apathy has among us. The English and American catalogues are filled with Mr Van Mons' fruit; and it was not until 1834 that we find a few of them described, in the new edition of Mr Noisette's *Jardin Fruitier*.

To decide upon the character of these new fruits, Mr Van Mons assembled three or four friends who were superior judges; they tasted them, wrote down the qualities of each, and Mr Van Mons preserved only the trees that produced fruit which was decided to be good and very good; the same proof was repeated two, three, and four times in succession, and it was not until after these repeated trials, that he decided to take grafts from the trees which bore them. On this subject, I should here make a few remarks, to dissipate the doubt which some persons still entertain, on the care which Mr Van Mons took to propagate only excellent fruits. In the first place, it should be observed that every year is not favorable to the perfect developement of the good qualities of fruit, and that if a fruit generally delicious, is tasted for the first time, in an unfavorable year, an inferior quality may be discovered. It was thus that in 1833 I did not find in several samples of *Poiteau's pear* those excellent qualities, which Mr Van Mons had recognised during four successive years, and which had determined this learned man, from motives of friendship, to honor me by affixing to it my name. In the second place, it was always impossible for Mr Van Mons to collect the scions himself, as he was too much occupied, which explains why it sometimes has happened, that an indifferent variety has been received, instead of a kind worthy of propagation. It was evidently from an error of this kind, that Mr Vilmorin received, under the name of Beurre Fourcroy, a Pear tree of a very late kind, the fruit of which had no merit; for Mr Van Mons had tasted the Beurre

Fourcroy several years in succession, and had found it worthy of being dedicated to that most learned chemist, who had accepted the dedication, a little time before his death.

Mr Van Mons fully enjoyed the result of his long continued experiments; he was happy in diffusing with real disinterestedness, and the greatest complacence, his new fruits, the greater part of which were superior to those with which we are acquainted, when in 1819, *ex abrupto*, the land on which his nursery of *Fidelity* was located was decided to be indispensable for streets and building lots, and he was summoned to vacate it in the short space of two months, under the penalty of seeing all his trees cut down and thrown into the fire. Such an injunction would have been fatal to many persons, other than such a man as Mr Van Mons; he was sensibly affected, but not frustrated; his noble character, his profound knowledge of men enabled him to surmount this reverse of fortune, and disposed him calmly to seek elsewhere, another place for his establishment. As professor in the University of Louvain, he resolved to transport his nursury to that city, that he might have it under his management, without leaving the University; but the period assigned for evacuating the land was unfortunately, that of mid-winter,—from the first of November to the last of December. Mr Van Mons had at his disposal, only a part of Saturday and Sunday in each week, when he could go to Brussels; to collect the scions, to mark the most precious trees and give the requisite orders for the others, was all that he could do himself: and another garden as extensive as that which he evacuated, was required for the reception of his trees. His loss was consequently great and irreparable, from the unfortunate position in which he was placed, being obliged to confide nearly the whole of the care and labor of removal, to persons not well qualified, and who were incapable of comprehending the deep interest which he felt for the preservation of his trees. It was with great difficulty that he saved a twentieth part of his nursery, and this twentieth consisted only of scions for grafting. The remainder were sold or given to whoever would take them. After such a catastrophe Mr Van Mons considered it necessary to guard against being ever again exposed to such a calamity. But incapable of distrust, he hired a piece of land in Louvain, which unfortunately belonged to the city, as a receptacle for the ruins of his nursery at Brussels, and continued his sowings and experiments.

Except, having a great number of young plants broken down and drawn out of the ground, by the masses of ice which were left on the

ground for several days, after a great freshet in the river which passes through Louvain, occasioned by an unusual thaw in 1830, and which overflowed his nursery to the depth of seven or eight feet; if, I say, we except this flood, Mr Van Mons enjoyed more or less quietly his new location, during thirteen consecutive years. His correspondence was renewed and extended, his losses were replaced by new acquisitions, the mass of his observations were augmented, and he continued to introduce into his nursery good new fruits, obtained by other amateurs, such as Messrs Coloma, Capiaumont, D'Hardenpont, the Abbe Duquesne, Gossart, Wirthum, Delneufcourt, Diel, Liart, Knight, and an hundred others, and he distributed scions of these good fruits simultaneously, with those of his own; for his sole end has always been to multiply those which were good, and to enable the whole world to enjoy them. But he never sacrificed any trees raised from the seeds, to receive the scions which were sent to him from all quarters—even from North America, before the character of its fruit had been decided: he therefore annually purchased stocks for the reception of the grafts, which were sent to him and for preserving his own varieties, that he might more liberally disseminate them. For this purpose, he adopted in his nursery at Brussels, a kind of grafting which he calls *graft by copulation*, and he continues to practise it at Louvain with great success. An engraving and description of this mode of engrafting is given at the beginning of this article.

Until 1823 Mr Van Mons had not distributed any of his trees or scions, without numbers being attached to them, which corresponded with similar numbers affixed to the parent-stocks in his nursery, that enabled him to answer all the queries which might be addressed to him, by the persons to whom he sent scions. At this period, having been confined to his bed by a severe wound, he compiled from his registers and published a catalogue, in which we find about 2000 varieties of fruits, in which the names are placed opposite the numbers of those from which scions had been taken and distributed, makes known the principle of his theory, describes some of the details of his culture and his manner of making experiments: there are also in it some remarks on the causes which compelled him to abandon his nursery at Brussels. There are several things worthy of attention in this catalogue; firrt, the interruptions in the series of numbers; for example, in the second series we find number 850 immediately after 840, which indicates that nine intermediate numbers were attached to nine trees of favorable augury, but whose fruit had not yet been decided

upon as to quality: second, the names followed by the words *by us* naturally indicate that the varieties thus designated have been produced from the seeds by Van Mons; third, when the name is followed by the words *by its patron*, they indicate that the name of the variety is that of the person who has obtained it from the seed. But there is one very important thing which Mr Van Mons did not think of, and which would have been very useful in the history of fruit trees, especially to ascertain the course and progress of their deterioration, this was, to have fixed the year of the birth of each of the new varieties, designated in his catalogue. Mr Van Mons was alone capable of doing it: when I spoke to him about it, he replied that his intention had not been to establish a science, but rather to do a good act, which would be immediately useful by the dissemination of good fruits; still he regrets having left this hiatus, which his notes do not now enable him entirely to fill up.

As I have before stated, Mr Van Mons enjoyed his fifty years of experiments, in enriching us with good excellent fruits; but *public utility* had sworn that she would finally embitter his old age. In 1831 we besieged the citadel D'Anvers, and although Mr Van Mons nursery was fourteen leagues distant from the army, the engineers could not find a more commodious place than that nursery, to bake the bread of the soldiers in; consequently a great part of Mr Van Mons's trees were destroyed, having constructed their ovens on the ground where they grew, and the fruit of the others was exposed to pillage. Still the philosophy of Mr Van Mons sustained him in this unexpected devastation; he hired two other tracts of land, into which he removed his young plants of the seventh, eighth and ninth uninterrupted generation, from parent to son; he was consoled because he had time to collect, although it was in the summer, scions of the trees which were sacrificed to afford a place for the erection of ovens; but *public utility* had not yet exhausted all her severities against him. Unfortunately there was not a Chaptal in the council of the prince, and the engineer, seeing nothing, decided again in 1834, in the name of *public utility*, that Mr Van Mons' nursery was the sole and only point on the globe, proper for the establishment of a gas-house for lighting the city. Heaven grant that these gentlemen may be enabled to see better for the future; but it is not in their power to prevent the true friends of intellectual light, and of public prosperity, from regarding their decision as an act of ignorance and the grossest vandalism.

Mr Van Mons is actually seventy years of age; he has consecrated

his whole, all his life, a larger part of his fortune to public utility, and yet it is the name of *public utility*, that they have slain him, assassinated him! O age of light, how dark thou art!

In the commencement of September 1834, Mr Van Mons, on sending me a box of pears which were the first of a seventh generation, observed in his letter, " when you taste these Pears, the trees which bore them will no longer exist." In fact, I learned a few days after, that the destructive axe had prostrated these trees and many others, that the nursery was dishonored, lost, and Mr Van Mons frustrated in his dearest hopes, which were to send us the products of his labor.

It is impossible to foresee, or rather I dare not express my fears as to what will become of the ruins of an establishment, which wanted encouragement, which was of a nature to elevate the glory of an empire.*

NOTE BY MR POITEAU.

Count Lelieur of Ville-sur Ance, believes with Mr Murinais and Mr Bonnet, that the stock has an influence on the seeds of the graft. During his residence in North America, he saw in the environs of New York a red and a white peach which perpetuated their stone without variation; but when he had budded the red on the white and the white on the red, they neither produced fruit perfectly red, or perfectly white, the two colors were mingled.

GRAFTING BY COPULATION, AS PRACTISED BY MR VAN MONS.

Mr Van Mons has always practised this mode of grafting in his nursery, preferring it to all others, as its results are very satisfactory. He has practised it in his house before the fire, with a root upon a root, to supply a tree which he required. When a tree has been killed by violence, its branches withered, dead in the estimation of most people, he has grafted from it with success by copulation. Scions thus placed on stocks which have been set out late are facilitated in their union, it succeeds with an herbaceous scion on a ligneous stalk, and can consequently be practised in summer as in the spring.

* I have learned that Mr Van Mons has been ordered to evacuate the whole of the land before the end of February.*

*As the above was written in 1834, the nursery must have been destroyed in 1835.—Translator.

Although the best condition for success is when the stock and scion are of the same diameter, the stock may nevertheless be larger than the scion, or the scion larger than the stock.

EXPLANATION OF THE PLATE.

Fig. 1. An example where the stalk and scion are of the same diameter: each is cut sloping, and the parts applied one on the other as exactly as possible, with the precaution that the interior bark of each coincide in the whole or greater part of their extent. To draw the sap it is advantageous to so cut the scion, as to leave a bud *a*, at the top of the stalk, and another at *b*, at the bottom of the scion; but it succeeds equally well without this precaution, which is not always practicable. When the two parts are adjusted, Mr Van Mons binds them together with bass ligatures, and covers the whole with grafting wax or other composition.

Fig. 2. An example when the stock is larger than the scion.

The scion or graft is cut as in the other case, leaving a bud very near the superior border of the slope of the scion, and they are united, as is seen, figure 3, in such a manner that the interior of the bark of the stock and that of the scion touch and coincide to the greatest possible extent, as it is only between the bark and the wood that the organic union can be effected.

It can easily be perceived in this example, that the large wound *a* of the stalk, will be a long time in healing over, and that the scion is exposed to be displaced by the wind, if put on a tall stock.

Fig. 4. Another example where the stock is larger than the scion. Here there is a modification which Mr Van Mons has not explained; but I suppose that the slope *a* is rather to facilitate the recovery of the wound, than for the reception of the graft, like that of figure 3; the scion *b* will be in a better condition than if placed upon the scaff *a*, although the scion *b*, in consequence of the great diameter of the stock, can only attach itself on one side.

Art. II.—*Leaves from my Note Book.—No. II.*

Mr Fessenden — In my last, I promised a further notice of this city of brotherly love. A long time has elapsed since that promise, but as the subject of a supply of good water in your own "city of the hills," has for a long time been a great desideratum, I shall make some mention here of the *Fairmount Water Works*, deservedly the pride of every citizen of Philadelphia. They are built a short distance from the city proper, on the river Schuylkill. The water is raised to reservoirs on the top of a hill, containing several millions of gallons, and thence distributed by pipes to every part of the city and suburbs. The pumps, of which there are four, for forcing the water to the top of the hill, are contained in a large and strongly constructed building of wood and stone on the banks, and are worked by the force of the current from a dam which extends across the river. They raise about five and a half millions of gallons in twentyfour hours, forty gallons on the wheel which works the pump being sufficient to raise one into the reservoir. Two attempts were made, in 1801 and 1811, to raise the water to the reservoir by steam, but it was found that the expense was too great, and the supply of water altogether inadequate to the demand. The present work was commenced by Mr Cooley, in 1819, but before it was completed, he was cut off by death. They were completed, and the steam engines stopped in October, 1822. The cost of the present works were upwards of four hundred and thirty thousand dollars; the total amount of operations have been about one million four hundred and fortyfour thousand. Two men are found sufficient to attend the works at an expense of four dollars per day, including fuel, light, &c. The cost to the city, being the interest of four hundred and thirtytwo thousand dollars annually, is about twentyfour thousand two hundred and thirty dollars, which only a trifle exceeds that formerly appropriated from the city taxes for the support of the steam works, besides consuming all the water rents of the works. The example of Philadelphia, it is hoped, will soon be followed by your own city, instead of longer suffering its inhabitants to drink the miserable apology for water now raised from their wells, and even these a portion of the year dry. The Water Works are also rendered a place of resort in summer, by being planted with trees, and having many artificial fountains around them. Summer-houses are constructed in various parts, commanding a view of the opposite side of the river and the adjacent

country; a full view of the garden of Mr Pratt is also had from this place, which want of time prevents me from visiting.

The streets of Philadelphia are beautifully regular, and each parallel to its neighbor. Trees line the principal avenues, which render them continually green in summer. I sometimes smile as I pass along the streets of the city, to see how proud people appear to be of their little parlor green-houses. Each fair lady seems trying to rival the other in the taste and beauty of her gay wintry companions; they seem striving to cheat the gay summer and autumn flowers into showing their fine colors in mid winter, and the effect produced is very pleasing to the passer-by. He catches a glimpse of some fair being hovering over her pets, and training each stray leaf with as jealous a care as the amateur in his more extensive but hardly more fascinating greenhouse. It makes us poor bachelors sometimes wish we were some flower, useful or ornamental, that we might catch a particle of that precious care which beauty and purity bestows on the senseless but more beautiful and useful plant. In Baltimore, the city of fair ladies, as they say, I was passing along Charles Street one beautiful day, and had been admiring the floral beauties in the windows of the superb mansions, when I come suddenly on a little gem of a greenhouse at the corner of one of the streets, filled with a great variety of flowers, many in bloom, and all open to the view of the passing eye. The effect was very fine, and I wonder they are not more common in our cities, for the purpose of supplying bouquets to the lovers of Flora's treasures.

But I must bid adieu to this fair city, and begin my journey to the far and beautiful West, the promised land of every discontented or ambitious New-Englander — the El Dorado of him who seeks for more of this world's goods than he can attain in your land of steady habits.

Our route lies through what has been truly called the "garden of Pennsylvania." Rich fields of the spring wheat spread around us on every side. Fruit trees of many kinds find a rich and congenial soil, and the agricultural and horticultural exhibitions of this giant State, equal if not surpass those of any State in the Union. As we progress towards the mountains, the scene every hour increases in interest and beauty. The rich farms, many of them the property of the German emigrant, now become more substantial in the appearance of their buildings than in the more Atlantic States, and the gray stone farmhouses of the inhabitants, many of them encircled by the sycamore

and other trees, speak an air of quiet and rural comfort which the rich denizen of the city might well envy. Stone is the principal material used in their buildings, and the spaciousness and comfort of their barns and outhouses are such as a farmer, who is content with the usual frail and ill-shapen outhouses of a New-Englander might well view with astonishment and admiration.

Many of the towns, also, have an appendage which the eye of a traveller and a lover of quiet beauty and taste often delights to linger upon — I mean the burying-grounds, or rural cemeteries. There are a few in this State which are an honor and an ornament to the towns to which they are attached. A gentleman who joined us from the route through Bethlehem and Harrisburg, gave me a very fine description of a rural cemetery in the beautiful town of Bethlehem, and which, from his glowing description may stand in humble distance with our beautiful and romantic Mount Auburn. Delightful, calm, beautiful Mount Auburn! I love to think, as I pass through these cities of the South, how much we owe to our Horticultural Society, and to the energy, perseverance and classic taste of DEARBORN, COOK, VOSE, and their associates; I am proud of *our* beautiful Auburn, and as I recount to the traveller the calm and secluded beauty of the place, it seems one link to attach me to "my own, my native land." — "Let me sleep with my fathers," is a beautiful thought, and one which the wanderer often brings to his mind; but it comes with a fourfold beauty and force, when that "sleep" is associated with a spot where nature and art have combined to provide a place where the footstep of the survivor may, with melancholy pleasure, hover round the graves of the departed, and plant and water the rose, the sweet briar, and the flower which he had loved while on earth. There is a feature in the cemetery at Bethlehem, borrowed from the Europeans, which I think might be introduced into the plan of our cemetery. At the entrance of the green lane which leads to the place, is a small stone building called "the Dead House," in which the bodies of the dead are deposited some time previous to their final burial. By leaving the head uncovered, if life by any chance should remain, it has a chance of renewing its energies before the turf closes over it forever. Even in the grave the rigid and cold rules of the Moravians continue — the males are divided from the females by an avenue through the centre of the rows of graves, — a small slab rests on the grave, on which is engraven the name of the departed, the date of his birth and of his death.

I love to linger amid the calm, cold places of the dead, when they are adorned and beautified by the charms which nature, aided and guided by the hand of taste, throws over the consecrated place. To some it may appear a singular and dreary taste, which loves to think of the grave. But if it be a singular taste, it is one which will render the heart purer, and cast a gleam of sunshine over the pathway to a better world. It must gratify the hearts of the liberal men who planned Mount Auburn, to know that its plan is admired and is being followed in many cities of our country; and the time will soon come when every city and large town will boast of its rural cemetery. A modern writer says: "The disposal of the dead is as true a test of civilization in a social community as the social relations of the living. The taste which embellishes life passes with the arts attendant upon it, from one nation to another, like a merchantable commodity; but the sentiment which would veil the dreariness of the grave, and throw a charm even around the sepulchre, that would hide the forbidding features of that formal mound and shelter the ashes beneath it from contumely, — this is a characteristic springing from some peculiar tone of national feeling, and radically distinctive of the community which possesses it."

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It was about twilight when we left the beautiful banks of the Susquehanna, and began to wander among the hills which here begin, and continue, till they terminate in the lofty peaks of the Alleghanies. Here begins a change in the face of the country, and in the appearance of the farms and farm-houses. You miss the substantial stone house of the low country farmer, and find the rude hut of him who years ago was considered an emigrant to the "far West" — but now the West has removed toward the Rocky Mountains by some thousands of miles, and even on the distant Arkansas, they tell you with a grave face of the emigrant to the "far West," as the inhabitants of Bangor and thereabouts tell you about the "downeasters."

* * * * *

We are now in the bosom of the Alleghanies, and the scenery around, beneath, above us, is truly beautiful; perhaps I may say sublimely beautiful, for it well deserves that appellation. On one hand lie the mountain tops enveloped in a dense mass of vapor, while ever and anon a peak seems to shoot up from the mass, and stands out proudly and calmly against the clear blue sky of autumn. I sometimes think it is an image of truth emerging from the dark cloud of

error and ignorance in which it has been enveloped, and startling us mortals by its dignity and purity. And then the glorious hues of autumn foliage — height above height, covered with the sere and yellow leaf, while the mountain wind sighs mournfully among the falling and fallen leaves, and seem mourning for the joys and glories of departing summer! Here and there, as you catch a glimpse deep down in the valley, you see a few huts, or rude log cabins inhabited by a race of unambitious and rude people, who earn a scanty livelihood by cultivating the small spaces which lie between the rocks, and hunting over the mountains. They say solitude has charms — if this be solitude, I should say with the good lady who kissed her cow, "every one to their fancy." The five or six horse team of the Pennsylvania wagoner are met with at intervals, while the rude music of their *gee haw*, and the tinkling of their bells echoing among the hills, lend an air of romance to the scene; and the loud and shrill echo of the swine drivers, as they urge their dull charge over the hills, and the gay colors of their apparel, all give their aid in cheating the long way of its tiresomeness.

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We are at length safely housed in the Exchange at Pittsburg, — a most delectable view of coal smoke from our window. All things seem covered by a dark dingy coat of the color of the chimney-sweep. The urchins you meet in the streets of the town have nearly all smutty faces, and even the ladies seem to have a tinge of the same dull smoky hue. I stepped into a church on the Sabbath, yesterday, and everything seemed to correspond with the aspect without, — even the sermon had a tinge of the color they say the gentleman of the lower regions wears. They say in Hingham, every man makes buckets to sell but the parson, and he makes his own. So here, I *reckon* every one deals in coal but the minister, and he digs his own—for coal can be had here for but little more than the trouble of digging for it in the mountains, which rise dark and gloomy on the other side of the river.

Pittsburg is a place of great business, and its fine situation at the head of navigation on the Ohio, together with the enterprise of its inhabitants, and its natural resources, have caused it to become a place of the first importance this side the Alleghanies. The immense and inexhaustible mines of bituminous coal, its great timber trade, glass-works, and iron manufactories, enable it to maintain a lucrative trade with every part of the Western world, and to a great extent also in

the East. Its growth has been rapid, and no town can more justly boast of wealth derived from small beginnings. Only a little more than seventy years since, the future "father of his country," a young man of twentytwo, was wrecked on a small island near the present city of Pittsburg, on his return from Le Bœuf, whither he had been despatched by Governor Dinwiddie. In the year 1754, and '55 it became celebrated by the bloody annals of Du Quesne, and a short distance from the city is the field where Britain's bravest and most gallant sons fell a sacrifice to the fool-hardy valor of Braddock, who atoned for his recklessness with his life. The field has long since been cleared, and the quiet labors of agriculture are now pursued in peace where the war whoop of the savage echoed on that bloody day amid the leafy forest. And ever and anon as the hardy husbandman turns up with his plough some relic of the battle; a rusty knife, a hatchet or a tomahawk, he may turn to his children and tell them of all the horrors that took place on that spot in the early days of our now happy and glorious country. There are a few stately oaks still standing on the field, and the inhabitants tell you that occasionally the dusky form of the savage may be seen gliding beneath their shadows in the calm moonlight!

Although occupying a fine situation, the town presents nothing of beauty to interest the traveller, owing to the manner in which it is laid out, the absence of public promenades, trees, &c. They have a supply of pure water, a great desideratum in my humble opinion, by means of a large open basin on Grant's hill, (so named from the defeat of that brave officer, at its base, in the French war,) which is supplied by a steam engine from the Alleghany river. It is thence conducted over the city by means of pipes.

A lovely morning dawned upon us as we left Pittsburg. Our course now lies between the beautiful banks of "La belle rivière," and among islands which seem ever green and verdant. We passed Economy, settled by Rapp, so justly celebrated for its strict adherence to what has truly been called Heaven's first law, — for its order and regularity are the most prominent and beautiful features of the place, — and their consequence are shown in fine orchards, flourishing vineyards, neat buildings and spacious streets. The town has been formed on the principle of owning all the property as a corporation — a new edition of the apostolic era, a community of goods. The main features along the Ohio, aside from the beauties of nature, are the flourishing and prosperous state of the so recently formed

towns, some of them as it were of the growth of yesterday. The windings of the river afford some of the most splendid views to be found in any part of our varied country — but when you have seen a few miles of its fine scenery, you have seen about all the variety the river affords till you get beyond Cincinnati. It is a continued succession of "bluff" and "bottom," with here and there something strange or interesting to attract the eye.

But I have already extended my letter to too great a length. If I am duller than travellers usually are, you must lay a part of it to the fact, that I cannot roam so far on the wings of fancy and description as they, being restrained by the particular character of your Journal. My next will date from the sunny South.

L'Ami.

Art. III.—*A few Remarks upon the Effect of the Winter on various Plants.* Communicated by Mr Joseph Breck.

To those who are destitute of a green-house, and of course confined to the cultivation of hardy plants alone, every new species that proves hardy, will be considered a valuable acquisition to the ornamental department, The winter past, though one of the most severe we have ever felt, has, notwithstanding, been favorable for the preservation of many plants, that in less severe seasons, with less snow would have perished. Before we had an opportunity to protect some of the more tender plants, as is our usual custom, the first snow storm took us by su rprise somewhere about the 20th of November, and contrary to the expectations of all, remained until the first of April.

We have had then, an alpine winter, the snows of which have afforded the best protection possible for tender plants.

The beautiful family of *Mimulus* have all survived and are in fine condition. The soil in which they have been kept is very wet; the only proper situation for them; for in dry soils they are good for nothing. The varieties or species are *M. roseus, rivularis, variegatus, smithii, guttatus* and *luteus.* We had the seeds of these direct from England last year, but they were mixed, or the flowers sported in such a manner that we could not distinguish the peculiariries of all the different sorts.

Our best Carnations we kept in frames, but those left in the borders

have stood the winter admirably. Pinks have never looked better than they do this spring.

Pensttemon diffusus appears to be perfectly hardy. *P. pulchella* has also survived, but somewhat injured. *P. atropurpurea* in low, wet ground has completely failed: on higher ground it has done better. This with *pulchella* should be protected in a frame, when they are easily preserved.

Cantua coronopifolia or *Ipomosis elegans* is very subject to damp off, and difficult to keep through the winter. Much protection is sure to kill the plants. It has generally been considered a tender plant and treated as such. Having many fine plants, we distributed them in various exposures, in hopes to save some. We are happy to state that about half of the whole number are in fine condition. The driest soil in the shade of a fence seems to be the most favorable situation for them: if the ground is inclining to moisture, there is but little chance for them: so fine a plant as the *Cantua* deserves a place in every garden. We would recommend for experiment to sow the seed in August, as perhaps, the small plants would endure the winter better than large ones.

Salpiglossis picta flourished finely with us last season and seeded abundantly; before winter set in, we found young plants, around the old ones which were taken up placed in pots, and kept in fine order in the frame.

Eschscoltzia Californica has kept very well generally; the winter before we lost all our plants; the driest soil is the best in which to preserve them.

Our *Lobelias* we thought most safe in the frame, where they are very easily kept, or even in a cellar.

Plants of *L. fulgens* and *syphilitica* have stood out, but the former somewhat injured. *L. cardinalis* does the best also when sheltered.

Chelone barbata in wet ground is injured, but in dry, in good order. *Polemonium Mexicana* has proved hardy. *Stenactis speciosa*, a new perennial, the seeds of which we received last season, is very hardy: not having seen any description of it we cannot tell whether it will be a valuable acquisition to the flower garden or not; from its specific name we should suppose it to be showy.

Spartium scoparium. Scotch Broom. This beautiful shrub has been very much injnred where not covered with snow. Prostrate plants are in perfect order, and will undoubtedly produce an abundance of their brilliant flowers. The only method by which we may

hope to secure this shrub in our vigorous climate, is to keep the plants prostrate, by pruning out the central branches and training the lateral ones in a horizontal position, in this state they are easily protected by a mat which may be pinned down to the ground at the corners.

Rhododendron ponticum is also in good order where it was covered by snow, but those branches exposed appear to be killed.

Our location is very bad for acclimatising half hardy plants; being situated on a river in the centre of a spacious valley surrounded by hills. In still cold weather the thermometor falls 10 or 12 degrees lower than it does on the neighboring hills. We have taken a piece of ground upon one of these hills for experiment's sake and find it a much more secure place for tender shrubs than the valley. The *Ailanthus* on the hills have not been in the least injured, which in the valley they have been killed nearly to the ground. The same is true of the *Chinese Mulberry*. As for *Altheas*, particularly the double varieties, we have given them up entirely, as they are killed by the winter with, or without protection: the single varieties are more hardy, and will stand without much trouble any where. *Dahlias* were cut down by frost three weeks sooner, last autumn, in the valley than they were on the hills. *Rhododendrons* and many other fine shrubs are considered hardy in England, which in this climate, require the protection of the green-house. We think that many of them may become acclimatized, by planting them on high ground and carefully protecting them with mats. How desirable it is, that this subject should be more attended too; especially by those who can afford to loose a few plants by the experiment. We know of one gentleman who is giving his attention to it, and we hope many others will follow his example.

Lancaster, April 26.

Art. IV.—*A Dream.*

Sir — I know no two things more opposed to each other than dreaming and horticulture, and I scarcely know how to offer it for admission into a periodical devoted to that subject — nevertheless, here it is, peradventure it may meet acceptance.

On the 30th of last April, I arrived at home pretty well fatigued

with my day's occupation, and sinking into an easy chair, took up the Transcript. After reading the news, &c. I listlessly turned to the advertisements, and was astonished at finding one from my intimate friend M., nearly as follows:

"Mr M. informs the young Misses and Masters who usually go out Maying, that on Monday, the 2d of May, if the weather is favorable, his garden will be opened to all neatly dressed and well disposed children, where they may gather flowers in moderation, and enjoy themselves until 8 o'clock."

I know not how it was, but I appeared to be standing at my friend's gate, the golden sun just bursting into the clearest atmosphere I ever witnessed. Already a few groups of lively rosy faces showed themselves at the end of the avenue. I walked at once into the garden, and was utterly surprised at seeing three long rows of daffodils in full splendor; on turning round a corner, I came in view of a swelling slope fronting the South, covered with myriads of the white, red and blue hepatica, such as may be seen wild at Mount Auburn; proceeding onwards, I was struck with seven or eight beds alternate violets in full fragrance, and the snowy Sanguinaria canadensis, which are found in abundance near Fresh Pond, but whose lazy petals, like the eyelids of many, will not open until the sun is high. Near a small artificial swamp, were two or three patches of the yellow dog's tooth violet, whose beautifully brown mottled leaves and elegant nodding flowers, are sure to attract admiration; and the surrounding rocks were covered with that first little harbinger of spring, the vernal saxifrage, — these, and a few snowdrops and crocuses were nearly all I can now remember. Just as I had turned to admire the exquisite blue of the periwinkle, which covered another large portion of the garden, I was overtaken by my worthy friend, whose countenance was radiant with that expression of quiet delight which we only remember observing in dreams. After a slight apology for having omitted inviting me to his breakfast party, he explained to me the plan of the entertainment, and assigned to me, as one of his guests, a portion of the duty of watching that the happy little ramblers did not overstep the bounds of moderation in the bouquets that each was permitted to gather. This duty never became irksome — the children seemed full of joy and delight, many of them in innocent prattle anticipating the pleasure their friends and parents would feel at receiving these little tributes of the coming spring. For myself, I was absorbed in the reflection of how much happiness may be diffused around by

one good and active heart, when the tinkling of a small bell announced that the presence of all, including the children, was desired on the lawn in front of the house. Here we found a well covered breakfast table for twenty persons, and about two hundred and fifty good slices of bread and butter with mugs containing half a pint of milk each, laid out on the grass for such of the children as might be inclined to eat. Each person's plate on the breakfast table was covered by an elegant bouquet of exotic flowers, the contributions of my friend's and the neigboring green-houses. All being assembled, a worthy minister poured forth a devout aspiration of praise and thanksgiving to the bounteous giver of all good, and invoked His blessing on the present assembly. Six of our host's vocal friends then commenced singing that beautiful piece —

> " Hail smiling morn, that tips the hills with gold,
> Whose rosy fingers ope the gates of day, Hail ! hail ! hail !
> Who the gay face of Nature doth unfold,
> At whose bright presence darkness flies away, Hail ! hail ! hail !"

Never did music appear to me more divine. After an excellent breakfast which appeared, more than any meal I had ever partaken, to be truly the " feast of reason and the flow of soul," we rose and perambulated the green-houses, listening with pleasure to my friend's history of the uses and cultivation of one plant after another ; when suddenly the burst of three hurrahs from the young visitors who were about to leave, made me start — and, unwelcome reality ! — I found myself seated on my easy chair, having, by an unlucky motion of my foot thrown down poker, shovel, tongs and bellows ; and burst the chain of dreaming fancy, in which I had been thus delightfully spell-bound.

Mr Editor — the cherub faces of these children have haunted me ever since to such a degree, that I have determined on breaking the vow of celibacy I had made, and have resolved to get married forthwith, if I can find any fair damsel who will have compassion on a repenting bachelor. Yours, truly, JUVENIS.

ART. V.—*Extracts from German Periodicals.*

SIR — I have always thought that borrowed sense was more profitable to read than original nonsense, and particularly where it is seasoned with the relish of novelty. Under this impression I am

about to offer for insertion in your Register extracts from some periodical works published in 1835 in Germany, which in all probability will be new to most of your readers.

Having received rather a large quantity of these sheets, a great portion of which is devoted to pure botany, my purpose is to wade through them by degrees, and to select such information as appears to me either useful or amusing to the horticulturist in this quarter of the globe.

No one will deny to the Germans the character of unwearied assiduity, and the extreme of perseverance in their various pursuits; consequently their learned and scientific men, their natural historians have always ranked high in Europe; much of the information I shall offer has been elicited at associations of such men, and, therefore, is to be considered of some weight. I need only mention the names of Dr Von Martius, Dr Mohl, and Professor Nees Von Esenbeck, to insure assent to this assertion.

At one of their meetings, Count Sternberg offered some information on the sprouting and growth of grains of wheat which had been found in the cases of Egyptian mummies. The first attempt to vivify the wheat by previous immersion in weak acid failed, owing, as it appeared, to great age having rendered the outside skin of the grain so tender, that the flowery portion of the seed soon liquified, and water alone produced the same effect. The next trial was made by dipping the grains into oil, and then planting them pretty deep in garden pots placed in a saucer partly filled with water; this was successful, and two plants were produced, one of which was placed in the open ground, the other received the protection of the greenhouse. Of course much curiosity was excited on the question of the species of wheat common in those early periods. The plant exposed in the open air was much injured by frost and hail, but late in the season produced a few ripe ears. That in the greenhouse flourished and produced several heads which underwent minute examination, and proved to be what is now called *Talavera Wheat;* its botanical character is *Triticum vulgare—spica laxa, mutica, alba, glabra.* It was incidentally mentioned that grains of Indian corn had been found in the tombs of some of the Incas of Peru, which had been brought to vegetate.

The conversation subsequently took a very interesting turn on the subject of the powers of vegetation of seeds, particularly of the grasses gathered in an unripe state. Dr Kurr of Stuttgardt, stated that he

had succeeded in sprouting seeds of wheat gathered immediately after the blossom was over.

Professor Mohl repeated the observation of De Candolle, that in these cases vegetation took place quicker, as the process of the return of the floury part of the seed into a saccharine state was thereby rendered unnecessary. To understand this observation, it is perhaps necessary to state, that previous to ripening, the seeds of most grasses are milky and sweetish; the act of ripening changes this milk into a farinaceous or floury substance, destitute of sweetness but fit for food. Just before the seeds which are committed to the earth, sprout, this farinaceous substance again becomes sweet, and it is probable that this saccharine juice is the first food of the young shoots. The operation of making malt for the brewer, is the action of producing this last change — the barley is soaked until it just sprouts, the farther vegetation is then stopped by a drying heat, the floury part of the grain becomes saccharine, and when steeped in hot water produces a sweet liquor which ferments and is beer.

It was remarked, that in the south of Europe, wheat was often cut when green, and yet gave excellent seed; and that the French were right in reproaching the German agriculturist for harvesting too late. Professor Kunze had succeeded in vegetating seeds of *Convolvulus nil* sown in an unripe state. Dr Von Martius mentioned that in the Brazils they only sowed unripe seeds of Mungava (Willoughbeia speciosa), maintaining that the fruit of such seeds was much better, less slimy and mucilaginous than that from plants produced by ripe seed.

Professor Raum laid before one of the meetings the result of his studies and experiments, on a peculiar action of the earth on the roots of plants, which he is inclined to refer to a species of galvanic influence. He, as well as others, found that seed was never produced in terrestrial plants grown wholly in water; he therefore instituted several experiments, by growing plants in various substances; the most favorable results appeared to him to arise from burnt clay. He also remarked the obstinacy with which the roots of many plants will cling to rocks and stones; and that cuttings will more easily strike root, if stones or broken garden pots are placed in contact with them. He has even found that unhealthy trees may be recovered by laying stones around the roots. Two plants of equal growth were tried, — that under which was placed broken tile, grew more luxuriantly; the soil of Basaltic regions, he observes, produces some of the finest plants, this rock having undergone the action of fire. Plants grow better

with stone — that is, broken stones — or earths of two different sorts than with one alone; thus bog earth is better when mixed with sand. But the most fruitful earth he conceives to be that which contains a mixture of alumine, silex and lime. His conclusion is, that independent of the action of light, heat and moisture on plants, there is a peculiar one of the earth somewhat related to galvanism. He calls this *Irdwirkung*, literally, earth action.

Connected with this subject, the following observations occur to me. In potting off greenhouse plants the roots are always most numerous and matted together in contact with the sides of the garden pot, which, of course, is manufactured of burnt clay. Now it is well known that the roots of plants will instinctively find out the places best adapted for them; and it appears in this case that they leave the earth with which the pot is filled, and which would seem to be most congenial to them, and choose the baked pottery which is apparently without any nutritious juices whatever.

In Loudon's Gardener's Magazine for November, 1835, there is a new method of striking cuttings, as follows. Take a large garden pot, fill it about an inch deep with broken bits of pottery, then take a small pot, stop the hole at the bottom and place it inside the larger one, so that the rims of both may be on a level, fill the space between the two with sand or other propagating soil, keep the small pot filled with water; then insert the cuttings in an oblique direction, so that the end of the cutting underneath the soil may touch the outside of the smaller pot; place the whole under a hand-glass in a shady spot, and scarcely a cutting will fail. This is evidently an application and confirmation of the foregoing ideas, although it is doubtful whether Mr Alexander Forsyth, the ingenious communicator of this method to Loudon, had ever heard of Professor Raum's experiments.

Dr Gartner laid before the assembly an exposition of his experiments carried on for several years on the interesting subject of hybridizing plants. The only novelty I observed was that the pollen loses its virtue in fifteen minutes after leaving the anther, and that a good test of the relationship between plants of the same species, is the facility with which seeds are produced under this operation; he instanced the pink family *Dianthus*, thus,

If Dianthus *barbatus* fertilized by the pollen of the same would produce	1000 seeds,
Fertilized by D. superbus, it only produced	711
D. japonicus,	666

D. armeria,	533
D. chinensis,	260
At length with D. prolifer, he could only produce	20

He also remarked, as his experience, that hybrids in general lasted through about six generations, at each remove less fruitful in seed, and at length they became entirely lost.

This subject of hybridizing is well worthy attention and experiment, as by this operation we not only raise new and beautiful varieties of flowers, but also all the valuable varieties of fruits, and many improved vegetables.

One other extract will suffice for this number; it is on the same subject; being the experience of Mr Von Berg, of Nuenkirchen, on the production of varieties of the Iris from seed.

From a handful of seed taken from Iris cœsia, he obtained one plant of Iris matthioli (*Tausch*), and of Iris florentina.

From seed of Iris repanda, he obtained Iris japonica. From Iris tardiflora, Iris squalens, and so on with about a dozen varieties. He enters into minute detail of the distinguishing marks of each, which are extremely interesting to the real amateur of this beautiful and showy family of plants. Certainly if these experiments are successfully pursued by others, the results will rather shake the existing faith in the distinctness of varieties.

The valuable recent publication of Drs Wight and Arnott, on the plants of India, has already made a slight inroad on this faith, by classing together, under the same name, several plants which have hitherto been considered as different varieties. Much has yet to be expected during the pursuit of this fascinating study.

Yours, truly,

J. E. TESCHEMACHER.

ART. VI.—*Gardeners' Work for June.*

MELONS, cucumbers, &c., which have been protected by glasses, may now be exposed to the open air. It has been recommended to place a piece of shingle, a bit of slate or of board under each fruit of the early melon to preserve them from the dampness of the earth, which would otherwise injure their flavor. If the season be dry, your vegetables, and particularly your cucumbers, will need water. Keep

your crops clean by hoeing and hand weeding. Sow cucumbers for pickling about the last of this month. Thin water melons, squashes, and pumpkins, leaving but three plants in a hill. Attend to cabbage, cauliflower, bean plants, &c., and if possible prevent their destruction by the cut worm. "If you perceive any plants injured, open the earth at the foot of the plants and you will never fail to find the worm at the root within four inches. Kill him, and you will save not only the other plants in your garden, but probably many thousands in future years." Hoe and bush your late peas; plant succession crops of potatoes, kidney beans, peas, small salads, &c. "Thin out and earth up all your plants; remember that frequent hoeing is both rain and manure to your vegetables in dry weather." Plant celery in trenches. Inspect grafted trees, and ascertain whether the scion has united with the stock. Take off the clay and loosen the bandages of such grafts as have succeeded; and rub off all superfluous, irregular or ill placed shoots or suckers.

Art. VII.—*Van Mons' Theory.*

We consider the account of this theory contained in the first thirtytwo pages of the present No., as the most valuable paper which the annals of modern horticulture have ever presented to practical and scientific cultivators of fruit. Good fruit is not only an innocent luxury, but the most wholesome aliment which Providence has ever conferred as a reward to the enlightened industry of the more civilized portion of the human race. Mr Van Mons, by pointing out a sure method of obtaining the best varieties of such an important article of human sustenance, will be ranked among the greatest benefactors of mankind that ever existed; and Mr Poiteau, and our excellent Translator should share with the inventor and discoverer of the new art of more than fourfolding the value of the products of our orchards and fruit gardens. We want words to express our obligations to these gentlemen, whose only adequate reward will be found in the thankfulness and gratitude of the countless thousands who will be benefitted by their economical and scientific researches and exertions.

THE

HORTICULTURAL REGISTER

AND

GARDENER'S MAGAZINE.

JULY 1, 1836.

ART. I. — *Additional Donations of New and Valuable Varieties of Fruits received from Dr Van Mons.* Communicated by Mr WILLIAM KENRICK.

In addition to the liberal donations of new and excellent varieties of fruits received of Dr Van Mons in the former seasons, we have, since the commencement of the present year, been favored with other and renewed manifestations of his bounty and goodness, with renewed donations of whatever was most new, valuable, and approved from the same illustrious source.

Most of those new kinds which we had received of M. Van Mons in the former years, were from various causes which were beyond our control, totally lost; and it was not till the spring of 1835 that a single package, a renewal of many before sent, fortunately reached us in good condition, the principal part of which we were enabled to save. The list of the *named kinds then* received, I published last July and August in the numbers of the New England Farmer, and Hort. Register. Of all, about 75 *named kinds* were then saved; those however, in that list with an asterisk prefixed, were totally lost in that year. But another list of 60 kinds which were designated by *numbers only*, were in that year also saved; these I omitted to publish at that time. Yet as many of these varieties must be of equally superior quality to the *named kinds*, I have therefore inserted them here.

All will be found accurately described, as M. Van Mons has assured us, in the second volume of the "*Pomonomie Belge*," a work written by him, which was still in press at the latest date, at Antwerp, and

which I have the promise of soon receiving. Some of them have indeed been lately described by M. Poiteau, in a volume entitled *Theorie Van Mons*, which he has very recently had the goodness to send me from Paris, the same which he had also sent to Gen. Dearborn, both brought thence by Mr De Wael, who sojourned for a time in that capital, while on his way from his native country and from Van Mons, to abide in ours for a season. Some of these descriptions I propose to republish here as soon as my leisure will admit.

In April of the present year, I received a large package of scions, sent by Dr Van Mons. These were forwarded to me from New York, through the kindness of Mr De Wael, who is now sojourning in that city. But in consequence of having been nearly four months on ship board, they arrived generally in bad condition. But the last package which was shipped at Antwerp about the first of March, was received here, via New York, about the middle of May. This, by a short and timely passage, and by being doubly protected by an envelope of straw, fortunately came in better condition than any heretofore received.

The scions of the varieties of the apple being sent in the former package, were nearly all lost, as were all those of the apricot and the peach; but the vines of two kinds, one of them *very early*, appear to have lost none of their vitality.

Agreeable to the intentions of Dr Van Mons, I have transmitted one half of every kind to our friend Mr Manning, believing that by the aid of his intelligence and skill, and our united exertions, we may be enabled to save one specimen at least of every kind which we found alive. His successful practice and manner of securing the kinds being by grafting, according to the most sure and approved modes. But my most sure mode in practice is by inoculations on thrifty stocks; after the complete union of the bud and stock has been effected, and the bud has begun to grow, the stock is headed down.

In the list of pears sent this year, there are a few repetitions of some of those kinds sent to us last year, and which list I published, and especially of all those kinds to which I have still preserved the asterisk, as these were all lost in that year. All, however, with this mark † are lost to the country, both the renewals of the former year and also those which had never been received before, having perished on the passage.

VARIETIES OF NAMED PEARS RECEIVED FROM M. VAN MONS, IN 1836, ALL WHICH IT IS EXPECTED WILL LIVE EXCEPT THOSE MARKED THUS †.

1 † Arbre Courbe
2 Arbre Mort
3 Baud
4 Beauchamps
5 *Belle Alliance
6 †Bergamotte Blanche
7 ——— Libboten
8 †Betterave Nova
9 Beurre Bronze
10 ——— de Mons
11 ——— Epine
12 ——— Liart
13 †*—— Manning
14 †*Bezi Crassanne Tardive
15 †*——— de Louvain
16 *——— du Printemps
17 † ——— Vaet
18 †Bon Chretien Fondante
19 Bonnet
20 *Bosc d'Eté
21 Bosch Peer
22 Bosman's franc
23 ——— du greffe
24 Boucquia
25 Brandes
26 †Cadet de Veaux
27 Caen de Franc
28 †Calebasse Bauchau
29 †——— Marianne
30 †——— Verte
31 Camperette
32 †Canning
33 *Capiaumont
34 †Capucine Van Mons
35 Charles de Bologna
36 *Charlotte d'Anvers
37 Claire
38 †Colmar de Metz
39 Colmar Epine
40 †——— Nova
41 Constantinopler
42 *†Crommen Boom
43 Curtel
44 Dearborn
45 †Delices de Charles
46 Delices d'Hardenpont
47 ——— de Jodoigne
48 De Meester
49 †Des Bois
50 †Dewez
51 †Diel
52 Dillen
53 Doyenne de la Cour
54 †——— long
55 ——— long bras
56 Dumortier
57 Duval
58 Fondante de Mai
59 †Grande Bretagne Precoce
60 ——— tardive 1833
61 †——— soleil
62 †Grise de Mons
63 *Gros Colmar Van Mons, ou de 2 ans.
64 Grosse Verte
65 †Hatel
66 Henckel
67 Henriette
68 Imperatrice
69 Invalides
70 Jean d'Autriche
71 Josephine
72 Josephine Nova
73 Kenrick
74 Lobo * * * *
75 Leon le Clerc
76 Leopold
77 Leutin
78 Lombard
79 Longue Verte
80 Louise de Bologna
81 *Louise de Prusse
82 †Marechal
83 †Marie
84 Marie Louise
85 Marie Louise Nova
86 Marlij
87 Marulis
88 Meuris
89 †Mondekin
90 M. L. Double imploi

91 †Napoleon
92 Navez
93 Niel
94 Nos**?
95 †Nova Grosse Verte
96 †Siegneur
97 Oken
98 Parent
99 Passe d'hiver
100 Passe long bras
101 Poiteau Nova
102 Princesse D'Orange
103 Quetelet
104 †Roi des Poires
105 Rousselette 1830
106 †Rousselette nova
107 Rameau
108 Sabine
109 Sabine Vrai
110 Saint Jean
111 Sentelette
112 †*Serrurrier
113 †Sucre Verte Nova
114 †Sur Reine
115 †Triomphe
116 Urbaniste
117 Urbaniste forme
118 Vacat au liste
119 †Valche Spreuw
120 †Verte au Mur
121 Witzhumb
122 Vacat
123 No. 163 * * * *

In all about 80 *named* kinds of this list, it is expected will live.

VARIETIES OF PEARS NUMBERED, BUT UNNAMED, RECEIVED OF M. VAN MONS IN 1836, ALL WHICH IT IS EXPECTED MAY LIVE.

Nos. 88, 128, 135, 200, 281, 354, 388, 399, 468, 507, 550, 644, 660, 717, 737, 754, 846, 868, 889, 958, 974, 990, 1012, 1054, 1103, 1155, 1157, 1170, 1177, 1182, 1279, 1295, 1311, 1325, 1334, 1344, 1378, 1386, 1406, 1412, 1419, 1432, 1451, 1513, 1520, 1546, 1572, 1575, 1579, 1586, 1595, 1609, 1629, 1641, 1644, 1653, 1678. In all 57 numbered kinds apparently alive.

VARIETIES OF PEARS NUMBERED, BUT UNNAMED, RECEIVED OF M. VAN MONS IN THE SPRING OF 1835, AND IN THE YEAR PREVIOUS, OF WHICH MENTION ONLY WAS MADE IN THE LIST WHICH WAS PUBLISHED IN THAT YEAR. ALL THESE ARE BELIEVED TO BE LIVING BOTH WITH ME AND WITH MR MANNING.

Nos. 55, 70, 89, 102, 104, 108, 154, 158, 164, 165, 168, 172, 173, 177, 182, 307, 365, 432, 546, 658, 688, 698, 707, 778, 879, 892, 896, 968, 969, 1027, 1028, 1036, 1074, 1080, 1081, 1154, 1190, 1192, 1199, 1218, 1230, 1242, 1253, 1255, 1268, 1274, 1283, 1335, 1336, 1409, 1420, 1454, 1482, 1502, 1530, 1535, 1602, 1618, 1636, 1638, 2127. In all 61 numbered but unnamed kinds received in the former years.

Besides all these, there are also the 70 kinds to which there belongs neither names or numbers, to which Dr Van Mons alluded in the letters subjoined, and which are all pronounced excellent; many of these we hope to save.

Many valuable letters have been received from M. Van Mons in the former years, each individually addressed, one particularly to Mr Manning, received in the spring of 1833, explains a subject to which he alludes in those letters which are here subjoined, in regard to the temporary loss of his voice. This was caused by the breaking in the

fire of a retort containing arsenic, through the carelessness of his assistant or operator, at one of the Professor's Chemical Lectures. The thick fumes of arsenic which, for the security of his audience, he was then obliged to inhale, caused not only the extinction of his voice, but for a time also endangered his life.

The work to which M. Van Mons alludes, as the "*Interesting Cultivator of America,*" must be no other than the complete set of the New England Farmer in 13 volumes, which Mr Manning had sent him.

The letters of this year, which have been directed to me from Dr Van Mons, and especially as they seem evidently not designed for me alone, but for others also, for Messrs Dearborn and Manning, I send for publication in your valuable journal. As well also that the knowledge of the unwearied zeal, the noble bounty, the philanthropy, and the disinterested liberality of Dr Van Mons towards our own country should be the more extensively known, and be perpetuated, and spread far and wide.

Nonantum Hill, Newton, June 9, 1836.

My Dear Friends all, — My honorable correspondents, Messrs Kenrick, Manning, Dearborn, — I recommend to you the bearer of the present letter, Mr De Wael, of Antwerp, who, after travelling nine months in England, repairs to America, in order to make you a visit. As a horticulturist, he is equally zealous and enlightened. He is of noble extraction, and of the most honorable personal character. Mr De Wael is the inventor of the graft by a cleft, (*en fente*) executed with the apricot tree. You will learn his method from the journal of Mr Poiteau. Mr De Wael has the goodness to take charge of some grafts for you; of books, he brings you the first volume of my Fruit Trees, of which I have already had the honor to present you with three copies, but which I send again, in case the first should have been detained on the road. I have informed you in the accompanying letter, that everything relating to the correspondence (*resemblance or affinity*) of the fruits in the first volume, whether in names or in forms and varieties, will be found amply detailed at the end of the second volume. I add, also, the sequel to my Chemistry; of which, the two first volumes have reached you with a bundle of grafts. I abuse the complaisance of Mr De Wael, but the opportunity is too good and safe for me n ot to avail myself of it.

Every graft of the apple is a particular variety, not yet named, nor

even distinguished by a number. I have done ill not to send you some of my apples sooner. The losses I have sustained in that species of fruit, are irreparable; for five hundred original trees, (*piede meres,*) have been exterminated without my being able to take grafts, and there were some among them which surpassed the best pears.

You will this year have saved the best pears I had, and you will be the sole possessors of them; for the grafts I had taken from them, have perished by four months of ardent and uninterrupted droughts, and those which I sent to Mr Poiteau have met with the same bad fate. I see that the winter has been long, in your country, which makes me hope the grafts then sent, reached you before the commencement of the season. We have had in succession two winters without frost, and two summers *without rain.* Thirty storms have each summer threatened to burst upon us, but every time, their explosions have been prevented, by the electrical conductors, (*paratonnenes.*) At length the storms have gathered in regions so high, as to be beyond the control and influence of these conductors, and have burst forth, sending to the earth masses of huge hail stones. Before the introduction of the metallic rods, we had in summer, at every change of the moon, a storm in a low region of the atmosphere, attended with an abundance of soft warm rain; these rains are no longer known.

I am recovering more and more from my double poisoning by the vapor of arsenic. The extinction of my voice has gradually passed away, after having lasted four months.

Our University has been suppressed by a decree of the Representatives; a free Catholic University is established in its place. I am sent to Ghent, twentyfive leagues from here, where the University is preserved. The gardens belonging to the house which I inhabit, will share the fate of my great nursery, — they will be exterminated.

Accept, my very dear and honored friends, the expressions of my lively attachment. J. B. VAN MONS.

December 1*st*, 1835.

My Dear Friends — I have this moment received, just as I am sending my packet to the Diligence, the rich presents which your affectionate goodness again makes me. I received a letter from Mr Kenrick, one from Mr Manning, three journals. I see, also a pamphlet of Sept. last. Your letters are dated Oct. 26, a month and five days ago; what a rapid passage! These journals are fallen from

heaven to assist me in the composition of the *Horticulteur Belge*, which at last has fallen into good hands, those of the celebrated Mr Drapier, with whom, and Mr Borij de Saint Vincent, I have compiled the *Annales Generales des Sciences Physiques*. There is, also, the Orchardist, and a treatise upon Silk and the Mulberry Tree. I shall see them all; I shall refresh my spirit in reading them all, and I shall make ample extracts. I had not sufficient time to read your letters, and much less to answer them, but for the occasion of transmitting to you by a safe conveyance, and one particularly friendly both for you and for me, the things which accompany this. I shall send to you again in about eight days, by the house of Antwerp, and I shall answer your letters by the post, if I see that a prompt answer is necessary. With sincere and unfeigned affection, adieu.

From your very much attached,
and very grateful servant and fellow laborer,
J. B. VAN MONS.

The graft of the apricot tree is of extraordinary quality; Mr De Wael will willingly show you how to place it *en fente*. I had forgotten to speak of it.

[The above letter must have been written the beginning of December, 1835.]

My Honored Correspondents — I present you with a variety of things: a graft of a walnut tree which begins to vegetate a month and a half after all others; a graft of a peach tree to be placed on a free stock of its own species by the crossette; one of the apricot tree; crossettes of vines raised from seed; scions for grafting from my free stocks of the fifth renewing, — every scion will give you an excellent variety. They will be yours when I shall no longer possess any, for I am compelled to remove the original trees (*arbres meres*) without having any place to set them out in. In short, here are grafts of all the kinds that you request in your letters, and many others that you do not request. I make up this bundle on the first of March.

I ought to have begun by thanking you for the precious journals which you have lately had the goodness to send me. This packet, and that anterior to the departure of Mr De Wael for your country, reached me in less than a month; I have made ample use of them in the *Horticulteur Belge*, which is now edited by Mr Drapier, with whom, and M. Borij de Saint Vincent, I have published the *Annales Generales des Sciences Physiques;* I add the first sheet of these Annales, also the continuation of the *Agriculture Belge*.

To return to Mr De Wael, who, as he set out from here in Oct. last, must long since have joined you You will have had pleasure in making his acquaintance. He has had the goodness to take charge of a bundle of grafts for you, of which some are perhaps here repeated, of the repetition of my *Pomonomie Belge*, and of the fourth and fifth volume of my Abridgement of Chemistry. I could have wished to add the second volume of my *Pomonomie*, but it is not finished; only three fifths of it are printed. There will, perhaps, be a third volume, on account of the length of the *Catalogue raisonné* of my Culture of Louvain, which is to be annexed to it. In this Catalogue you will find complete information as to all that you have received, all that you may now receive, and all that you shall receive for the future. With every number will be given the names or the figure, the size, the quality, and the epoch of maturity of the fruit. If in the verification of what are left me, I find that in pears of the first rank (I do not speak of apples and other fruits,) my losses do not exceed from eight hundred to one thousand varieties, I shall esteem myself truly happy. I am driven anew from two of my gardens; from that belonging to my habitation, and from a very large one, in which, at the destruction of my nursery, I found a refuge for most of the things that I was able to save. The first, with my dwelling, has fallen to the share of the University, (Catholic,) which has taken the place of ours. The other belonged to a suppressed convent, which has just been sold to a cloth manufacturer. I am myself expelled, and have been obliged to seek an abode where I could, for refuge for my furniture, my papers and my person, and in the embarrassment of a removal from a palace to a house of limited dimensions. I am still Professor at Ghent.

I do not speak of the superb copy of the second edition of the Orchardist, with which Mr Kenrick has had the goodness to favor me. This excellent work well deserves a success so brilliant. I have also received his treatise on the cultivation of silk, and the management of the mulberry tree; this last will be translated and published, perhaps at the expense of the government. Likewise the Catalogue of his Nursery. My *Pomonomie* has also gone off rapidly; thanks to the indulgent things which you and Mr Poiteau have said in regard to me.

I also thank Mr Manning, for the continuation of the interesting Cultivator of America, which he has the goodness to send me. You overwhelm me with so many benefits; expressions fail me to man-

ifest my gratitude. And Mr Dearborn, that eloquent painter of the progress of the human mind and of philosophic virtue, who is pleased to mingle my name with the elucidations of his sublime conceptions, — what can I do for you? My letters, and Mr De Wael will have informed you that I have recovered my health. I did not take any remedy. I sustained my strength by as much nourishment as I could take. My confrere said to me, "You are suffering yourself to die." I am not dead. I wrote my first volume pausing after every phrase. I rose at half past four or five o'clock. I have never in my life taken a remedy, and have never remained in bed a minute from indisposition, and only once in consequence of a shot in the leg.

There are seventy scions of as many different kinds: Beurre Manning, Libouten, and others, will be found under their numbers, but I cannot tell how, because my register is locked up and removed.

Next year I shall have inserted in a printed catalogue, such of my varieties as you succeed in propagating and thus avoid duplicates, (double emplois.) I have not, or do not know that I have, the Adelman, which is the best pear I ever gained. It must exist in Germany, but I am ignorant which of my correspondents possess it.

We have had hard frosts this winter. For fifteen days it has done nothing but rain. I am, in haste,

Your very much attached,
and sincere friend and fellow laborer,
J. B. VAN MONS.

Art. II. — *Remarks on Ornamental Hardy Herbaceous Plants.*

By Mr Joseph Breck.

(Continued from page 190.)

Natural order Leguminosæ. This large division of plants contains more than three thousand species, some of which are among the most useful and familiar with which mankind are blessed. The pea and bean are some of the most prominent esculents in the kitchen garden; while the Trefoil, Lucerne, and other staple articles, are of great importance to the farmer.

Many of the species are trees and shrubs, highly ornamental, especially those which are indigenous to tropical regions. It also contains

many beautiful hardy herbaceous plants, as well as many which in our climate require the protection of the hot or green-house.

Among so great a number of plants, it will naturally be supposed that their properties must essentially differ; and this is the case. Some are wholesome, and used for food by man and beast; some of the species are valuable for their timber, others for the coloring matter that is extracted from them, or for their various medical properties, and a few are poisonous.

This order is divided into three *sub-orders*, and these again into *tribes* and *sub-tribes*. Lupinus is the only genus containing hardy herbaceous ornamental plants in the *sub-order* Papilionaceæ, *tribe* Phaseoleæ. All the species of this *sub-order* have papilionaceous flowers, *(butterfly shaped, or like the pea blossom.)*

"Lupinous said to be derived from *lupus*, a wolf, because this plant devours, as it were, all the fertility of the soil; but this is of a very doubtful explanation."

Class Diadelphia, *(stamens united in two separate parcels.)* Order Decandria (10 *stamens.*) Calyx two-lipped; Anthers, five oblong, five round; Legume *(pod)* coriaceous *(leathery)*, torulose *(raised in bunches or vein-like protuberances or ridges,)* compressed. In this genus the stamens are united in one set, or monodelphous. Leaves of all the species with one or two exceptions, are digitate, *(when the base of several leaflets rest on the end of one petiole.)* Under the common name of Sun-dials, the annual Lupins of various colors are found inhabiting almost every country garden, where a dozen species may be the extent of the collection of ornamental plants.

One of the most splendid acquisitions to the flower garden of modern introduction, is *Lupinus polyphyllus*, or many leaved Lupin. Although it is about nine years since it was figured and described in *Lindley's Botanic Register*, yet it is still far from being common among us. To Mr Douglas we are indebted for this charming plant, who discovered it on the N. West coast of N. America. We received the seed of this fine Lupin four years since, only one of which vegetated; it produced radical leaves only, the first year, which were multifoliated, and borne on long petioles. The second year it was transplanted with much care into rich soil, having been exposed through the winter to all the rigors of the season without protection. In the month of May the flower stalks began to be developed, and produced in June, spikes of flowers, which were two feet in length, and from three to four feet in height from the ground. The flowers

are disposed in long terminal clusters, of a beautiful azure blue, with a reddish border, forming a kind of whorls, very near each other, round the stem. The leaves are composed of from twelve to fifteen green, lanceolate leaflets, hairy on the under side. The flowers resemble those of blue Sophora, *(Baptisa australis,)* but far more elegant. The third year it flowered abundantly, throwing up numerous flower stems so luxurious that many were broken by the wind before they were secured by stalks. The third year the roots should be divided, as they become large in rich ground; the central part first decays, and finally the whole root perishes, unless this operation is performed. There is also a white variety, the seeds of which we sowed, but none vegetated.

Lupinus perennis, is a well known species, indigenous to many parts of N. England, found frequently in large masses from a yard to rods in circumference, occupying the very poorest sandy or gravelly, arid soil; frequently in company with the pretty *Silene pennsylvanica*, or wild pink, and more commonly with *Viola pedata*, or bird's foot violet, all of which are in bloom about the first of June. It is very difficult, or even impossible, to transplant with success, this fine perennial. The only sure way to propagate it is by seed, which should be gathered before is entirely ripe, as it is scattered as soon as mature, by the sudden bursting of the pod, by which the seed is thrown to a considerable distance. Nor will it succeed, like the last described species, on rich ground; but whenever the seeds are to be sown, the soil should in the first place be removed, or a greater part of it, from a circle whose diameter is three or four feet, and the hole be filled up with a poor gravelly or sandy soil, and the seed sown in the centre.

The flowers are found in the wild state of various colors and shades, from pure white (which is rare) through all the shades of light to dark blue, inclining to purple; the margin of the flowers are frequently copper color, sometimes inclining to red; one variety has flowers of a dull pink. Stems erect, hairy. The digitate leaves are composed of about eight or ten leaflets, which are lanceolate, wedge-shaped, arranged like rays around the end of the petiole, hairy and pale underneath.

Many beautiful Lupins have, within a few years, been added to the list of herbaceous plants, chiefly through the exertions of Mr Douglas in his excursions in N. and S. America, most of which were found on the N. W. coast, from California to Columbia river, which part of the

world seems to be the central position or head quarters of this family of plants, more being found here than in all the world besides. We are unable to point out the most desirable, not having seen many of them in flower. We sowed the seed of Lupinus littoralis, L. rivularis, L. tomentosus, L. mutabilis, L. Crookshankia, and other varieties, the last season, most of which vegetated, but unfortunately were mostly destroyed by grubs, that were very destructive during the severe drought of June and July, to many young plants. Some botanists have placed Lupinus in the class Monadelphia, on account of their stamens being united in one bundle. *Lupinus villosus*, and *L. diffusus* are handsome biennials from the south, with entirely simple, oblong, silky or villous leaves, and producing long showy spikes of variegated purple flowers.

Lathyrus, Orobus, and Vicia, contain some handsome, hardy herbaceous plants, arranged in *Sub-order* Papilionaceæ, *Tribe* Vicieæ. "Lathyrus, from *La*, augment, and *thouros*, anything exciting." The genus has a calyx with the two upper segments shortest; a flat style, villous on its upper side, and widening above.

Lathyrus odoratus, is one of the most beautiful, and also one of the most fragrant of the species, and is deservedly one of the most popular annuals which enrich the flower garden. The varieties are, white, rose, scarlet, purple, black, and variegated. Each variety should be sown by itself in circles about a foot in diameter, three or four feet from any other plant. When the young plants require support, a light neat stake, or rod, should be stuck into the centre of the circle, to which they should be slightly fastened as they advance in height. Some are in the habit of supporting them with brush, which looks very unsightly before it is covered with the vines.

Lathyrus latifolius, or everlasting pea, is a most beautiful, large, diffuse perennial, producing a long succession of large light purple or pink flowers, in clusters of eight or ten each. The plant is suitable for the shrubbery, arbors, or for training to a trellis. When supported, it attains the height of six feet. "It attaches and supports itself, like all scandent plants, by means of the branching tendrils terminating its single pair of broad leaflets, and which twining economical processes are, in fact, reasoning from strict analogy, the abortive rudiments of other sets of leaves, though never developed."

A variety has white flowers. It may be propagated by dividing the roots, or more extensively by sowing the seeds, which ought to be planted where the plant is to stand, as it sends down a tap root to

a great depth. We have dug a root as large as a man's wrist which had penetrated the soil from five to six feet.

Young plants will flower the second year feebly, but the third or fourth year they produce a profusion of foliage and flowers. Some botanists have suggested that it might be applied to agricultural purposes with profit, on account of its yielding so great a quantity of fodder and seed.

There are a number of other fine perennial peas not much known among us, of which, L. grandiflorus is one, with purple flowers in pairs, a native of the south of Europe, four feet high, in June and August.

"Orobus, from *oro*, to excite, and *bos*, an ox; that is to say, nourishing for cattle. The Orobus of the Greeks, was some sort of vetch. *Generic character.* Style linear, cylindrical, downy above. Calyx obtuse at the base, its upper segments deeper and shorter.

Orobus niger, is a hardy perennial with which we have been acquainted for a number of years, and can recommend it as being pretty, with very dark purple flowers, which are produced in June and July; two or three feet high; stem branched; leaves in six pairs, ovate oblong; racemes one sided, many flowered.

Orobus atropurpureus, is figured and described in *Edwards' Botanic Register for May*, 1835. The flowers are a fine purple, in a dense, one-sided, many-flowered raceme, borne on long axillary stems; leaves abruptly pinnate; leaflets linear, which vary from one to several pair. A native of wild places near Algiers. It is also met with in Sicily. In the gardens it is a hardy perennial flowering in May.

Orobus luteus, is considered by some as the handsomest of the papilionaceous tribe. We have had it in our collection, but not in perfection; for some cause or other it has not flowered.

Orobus coccinea caused us some disappointment. The flowers, instead of being scarlet, are brick color, and very inferior in appearance. We sowed the seeds of O. Fischeri, and other species, last season, and shall have an opportunity to test their hardiness, and other qualities, the coming season.

"*Vicia*, from *Vincio*, to bind together; twining tendrils. In this genus the Garden bean is found, *Vicia Faba*, and its variety, or English Bean, as it is frequently called, known in the seed stores as the Mazagan and Windsor Bean. A number of the species are used for agricultural purposes in Europe, and many, also, serve to make up a variety in the borders. The genus has pinnate leaves; styles bearded

beneath the stigma; nearly all are twining plants, of low stature, and interesting to the botanist, at least. The species that have come under our observation, are pretty, and some worthy of attention.

In *Sub-order*, Papilionaceæ; *Tribe* Loteæ; *Sub-tribe* Galegeæ, the only genera containing plants under consideration, are *Tephrosia* and *Galega*, which afford a few beautiful species.

"Tephrosia is from *Tephros*, ash colored; in allusion to the color of the leaves. *Character of the genus.* Teeth of the calyx subulate, subequal; stamens monodelphous; pod compressed, coriaceous."

Tephrosia virginica. Synom. *Galega virginica.* A species, indigenous to some parts of New England, and which we think has been sadly neglected by those who are fond of beautiful plants, as we consider it one of the finest papilionaceous flowering plants, this section of the country affords.

It is found growing in large bunches, on the margin of some of our driest sandy woods. The roots are very long, slender, and tough, which has given it the name of catgut. The flowers are in a short terminal raceme; banner of the corolla whitish yellow, downy; wings scarlet; keel whitish and red; calyx woolly, red, with acute segments; legume linear, falcate backward, compressed; leaves alternate pinnate, with from eight to ten or twelve pairs of oval oblong acuminate leaflets, with an odd one. The whole plant is covered with a pale green down; one foot high; flowers in June and July. We know not the properties of this species, but *T. toxicaria*, a spreading shrubby plant from South America, has been introduced and cultivated in Jamaica on account of its intoxicating qualities. "The leaves and branches well pounded, and thrown into a river or pond, very soon affect the water, and intoxicate the fish, so as to make them float on the surface as if dead; most of the large ones recover after a short time, but the greatest part of the small fry perish on the occasion." *T. virginica* has been placed by some botanist in the genus *Galega*, "a name of unexplained meaning. The species are handsome border flowers."

Galega officinalis, with blue and a variety with white, and *G. orientalis* with white flowers, are said to be ornamental. Calyx with subulate nearly equal teeth. Legume with oblique streaks between the seeds. From three to four feet high flowering in July and August.

In the same division and tribe of Leguminosæ, *Sub-tribe* Astragaleæ, is the genus Astragalus, and in *Sub-tribe* Chitoriæ, genus

Glycine, which contain species of herbaceous plants suitable for the border. "Astragalus, from *aster*, star, and *gala*, milk. The name was given by the Greeks to one of their leguminous plants, but it is not known to which. The modern genus is composed of plants, the greater number of which are ornamental." Some of the species produce the Gum tragacanth of commerce. The genus is large, containing more than one hundred species, a small portion of which are found in the United States. Only a few of the ornamental species have found their way into our gardens. Most of the family have delicate pinnate leaves. The color of the flowers are white, sulphur, yellow, pink, violet, red or purple.

Character of the genus. Calyx five toothed; keel of the corol. obtuse; legume with a longitudinal half breadth partition attached to one edge, incurved at the suture below. *A. christiánus*, *A. alopecuroides*, *A. vulpinus*, *A. capitatus*, *A. narbonensis*, and *A. faleatus*, with many other species, are desirable plants for the borders.

"Glycine, from *Glykys*, sweet; the leaves and root of one species are sweet. *Glycine frutescens*, and especially *Glycine sinensis*, (now *Wistaria consequena*,) are most beautiful hardy climbing shrubs, with long pendulous branches of blue flowers, like the Laburnum."

Glycine apios, or ground nut, indigenous and common in rich moist woods and thickets, produces flowers in axillary, crowded racemes, of a blackish purple, and makes a pleasing addition to the various ornaments of the border. Its roots are strings of oblong cylindric tubers, frequently known by the name of Pig, or Indian potatoes; when roasted or boiled they are eatable, having a flavor approaching the common potato, and said to have made an ordinary part of the vegetable food of the aborigines. The leaves are pinnated, each consisting of from five to seven ovate acuminate leaflets. Stems round, twining; from six to eight feet high; flowering in July and August. Calyx two-lipped; keel of the corolla turning back, the banner at the tip; legume many seeded.

Hedysarum. Sub-order, Papilionaceæ. *Tribe*, Hedysareæ. *Subtribe*, Euhedysareæ. "Hedysarum is from *Hedys*, sweet, and *aroma*, perfume or smell; some of the species have fragrant flowers."

Calyx five cleft; keel of the corolla obtuse; loment (a pod resembling a legume, but divided by transverse partitions,) jointed, the joints compressed and one seeded. In this genus is the remarkable *Hedysarum gyrans*, or turning Hedysarum, a green-house plant, a native of Bengal near the Ganges. *Hedysarum alhagi*, is another

curious species, from which is obtained Manna; it is chiefly gathered about Tauris, where the shrub grows plentifully. The genus is one of considerable importance in European agriculture.

Hedysarum onobrychis, under the name of Saint-foin, is much cultivated in France and other countries, and considered by some to be one of the most valuable herbage plants, which Providence has bestowed upon man. Most of the family are uninteresting; but a few species may be selected for the borders.

Hedysarum coronaria, is an esteemed border biennial, with scarlet flowers; it is a native of Italy, and considered a splendid plant, attaining the height of four feet. Leaves pinnate; leaflets roundish elliptic; joints of the pod roundish aculeate (being furnished with prickles,) naked. We have often sowed the seeds of the French Honeysuckle, as it is commonly called, and raised a plenty of fine looking plants, and as often had them winter-killed. It appears to require the protection of a frame to keep it through the winter. It is called in France, *Sainfoin à bouquets*, and is there much admired.

Hedysarum alpinum, is said to be an elegant perennial, a native of Siberia, four feet high, producing purple flowers in long axillary racemes in June and July; leaves pinnate; leaflets, ovate lanceolate, smooth.

Hedysarum saxatile, with light yellow flowers, and *H. grandiflorum* with purple, are also said to be ornamental perennials.

Hedysarum canadensis, an indigenous perennial, is an ornamental plant suitable for the shrubbery or back of the border; four feet high. The flowers are purple on axillary and terminal branches, produced about July. Stem erect, hairy; leaves ternate; leaflets oblong lanceolate; stipules filiform; pods rough, consisting of four or five joints, which are imperfectly triangular, their sides curved, and their angles obtuse. Another handsome indigenous species is *Hedysarum cupidatum* with large purple flowers in racemes upon the terminal and lateral branches, in July. Stem erect, smooth; leaves ternate; leaflets large, smooth, ovate, acuminate. Loments, or pods, larger than the last, long and pendulous, with about six diamond shaped joints, which, with their peduncles, are covered with minute hooks, rendering them adhesive to garments when brought in contact with them. The genus *Lespedeza*, "named by Michaux, in honor of Lespedes, a governor of Florida, who protected that botanist in his botanical researches," is mostly composed of North American herbaceous plants, and hardly distinguishable from *Hedysarum*. The only essential dif-

ference is in its lenticular (form of a convex lens) one seeded, unarmed loment. "Of this rather elegant flowered genus there are a considerable number of species; they are either tall or diffuse herbaceous plants, with purplish flowers, and trifoliate leaves, subtended by minute bristly stipules." The plants, leaves, and flowers, are generally smaller than those of the preceding genus. We have six or eight species growing wild in the vicinity of Boston, most of which are pretty plants, and would give variety to an extensive border.

Coronilla. *Sub-order* Papilionaceæ. *Tribe* Hedysareæ. *Sub-tribe* Coronilleæ. "Coronilla, from *corona*, a crown. Its pretty flowers are dispersed in little tufts like coronets. *C. Emerus* is a popular shrub of much beauty." With us, however, the winter has always been too severe for it in the open ground, destroying it down to the ground every year.

Coronilla varia, is the only hardy herbaceous perennial with which we are acquainted in the genus. It is worthy a place in the flower garden, provided it is kept within due bounds. This may be done by digging round the plant every spring with a spade, and removing from the ground all its young, creeping roots, which otherwise would be too neighborly with the other plants in its vicinity. Treated in this way, if the soil is not very rich, it will give an immense number of its pretty coronets of purple and white, or pink flowers, in long succession, and they are generally admired. Leaves pinnate; leaflets numerous, lanceolate smooth. Stem lax, four feet high, requiring support from wire or light rods. The juice of the plant is poisonous.

Leguminous plants in Class Decandria, (ten stamens). Order Monogynia. There are quite a number of plants in this *Natural order*, which, in the artificial arrangement, are necessarily placed in class Decandria, on account of their ten stamens being distinct from each other, although from corresponding symmetry, it would seem they should not be separated into different classes. "Thus for example, *Baptisia* has exactly the corolla of the Pea; but as all the stamens are separate, it finds place in the simple class Decandria, instead of that of Diadelphia, which plants only differ from the present in the union of the filaments into two unequal parts. It would, perhaps, have been better, at least where natural classification is at all concerned, to have merged the mere character of an union of filaments, and classed such plants rather by the number and disposition or insertion of their stamens, by which means, in this and other cases, the artificial and natural methods might have been more hap-

pily and conveniently combined. Thus mere sections of the same natural order Papilionaceæ, would not need be sought for in two remote classes."—*Nuttall.*

"Baptisia, from *Bapto*, to dye; in allusion to the economical properties of some species; a blue dye is extracted from the leaves." Calyx half four to five cleft, two lipped; petals of equal length; standard reflexed at the edges; stamens deciduous; pod ventricose stalked, many seeded.

Baptisia australis, was formerly *Sophora australis*, and is commonly called by that name. The genus *Sophora* has been much altered, and now consists chiefly of fine trees. It contains, however, two species of ornamental herbaceous plants. S. flavescens with yellow flowers, a native of Siberia, and S. alepe chroides, with blue flowers, from the Levant; the former two, the last four feet high.

Baptisia australis, is considered a handsome border flower of the easiest culture, exceeding hardy and indigenous to some parts of N. America. It produces its blue flowers in terminal spiked racemes in June. Leaves ternate stalked; leaflet cuneate lanceolate; stipules longer than the stalk, lanceolate. A variety has white flowers.

Baptisia tinctoria, or Wild Indigo, is indigenous, and very common in dry pastures and sandy woods. It has small yellow pea-shaped flowers, which are borne on terminal racemes of two or three each. The plant is very much branched, with small, smooth, ternated subsessile leaves. Pods ventricose (swollen) pedicellated. Stipule setaceous, obsolete. This plant has been employed as a substitute for indigo. We cannot recommend this species as showy, or worthy to be introduced only in large collections.

Cassia. *Sub-order* Cæsalpineæ. *Tribe* Cassieæ. All the genera which we have described in Leguminoseæ, thus far, have papilionaceous, or pea-shaped flowers; but in this section of the natural order we find flowers of a different shape. "The genus Cassia presents a very anomalous structure, having a fine leaved calyx, and a spreading or open corolla, of five nearly equal petals. The stamina are unequal in length, and the three upper ones have blackish sterile anthers, the three lower have elongated or rostrate anthers, and are seated upon longer incurved filaments. The legume is flat and membranaceous, but does not readily open. All these plants have pinnated leaves, which remain folded at night; and yellow clustered flowers."

"Cassia is from Arabic; *Katsa*, to tear off." This large genus

contains but one hardy herbaceous perennial, our *Cassia marylandica*, a tall plant, common in many places by the road sides, and in moist places, bearing a profusion of flowers in August. It is a suitable ornament for the shrubbery. The leaves possess the same properties as the senna of the shops, and frequently used as a substitute, requiring, it is said, a larger quantity to produce the same effect. A number of the species possess the same properties, but *C. orientalis* is the true senna; an annual from the Levant. *C. acutifolia* and *C. senna* also produce the senna of Commerce.

Sub-order Mimoseæ. "Mimosa and its allies have, instead of the irregular arrangement which characterizes a papilionaceous flower, its parts of fructification disposed with the utmost symmetry." Some botanists seem to think that this and the last grand division of Leguminoseæ, deserve the rank of independent orders. With few exceptions, their fruit is leguminous, but their flowers are very differently constructed from those in sub-order Papilionaceæ, which, by the way, contains about three fourths of the genera in the whole order. In the sub-order Mimoseæ, we find Mimosa, Acacia, and a few other genera, most of which are widely separated from the other sub-orders in Linnæan arrangement, having their station in Class Polygamia: Order Monœcia; a class which is now generally abolished, it being inconvenient in practice, and incorporated with Diœcia. The genus Acacia contains many species, particularly valuable in the green-house department, flowering the greater part of winter and spring; some of the species have elegant bi-pinnate leaves, and most are beautiful trees or shrubs; but not one species that is hardy.

All the species of the elegant and curious Mimosa, are too tender for the open ground. *Mimosa sensitiva*, Sensitive Plant, is a well known annual from Brazil. It succeeds in the border during the summer months, if the seed is sown in March or April in a hot-bed, and the plants forwarded in pots, and turned out in June; thus heated, it will flourish and ripen seeds in favorable seasons, and grow to a large size.

This singular plant calls forth universal admiration; it has been a puzzle to many a philosopher. The cause of its sensitiveness has lately been more satisfactorily explained; yet it is still shrouded in mystery. The plant is most irritable in the greatest heat. Dr Darwin thus characterises it:

> "Weak with nice sense the chaste Mimosa stands,
> From each rude touch withdraws her tender hands;

Oft as light clouds o'erpass the summer glade
Alarmed she trembles at the moving shade,
And feels, alive through all her tender form,
The whisper'd murmurs of the gathering storm;
Shuts her sweet eye-lids to approaching night,
And hails with freshen'd charms the rising light."

ART. III.—*Levick's Incomparable, or Tipped Dahlia, &c.* Communicated by J. B.

THOSE who were present at the horticultural exhibition at the Odeon last autumn, and who observed the splendid show of Dahlias, will, undoubtedly, recollect with pleasure, the one of pre-eminent beauty, called "Levick's Incomparable," the color of which was scarlet, each petal being regularly tipped with pure white. As most of the flowers produced by this fine variety come selfs, or without the tipping of white, it may be interesting to some to become acquainted with the experience of growers of this flower, on the other side of the Atlantic. I therefore make the following extracts from Harrison's Horticultural Cabinet, published monthly in London, a work containing much practical information.

"*Levick's Incomparable Tipped Dahlia.*—An anonymous correspondent, in page 47, has made inquiry about the method of treatment required with Levick's Incomparable Tipped Dahlia, in order to have it produce tipped flowers. I have a plant of the sort growing in poor soil, which I had been advised to cultivate it in; and although there is an abundance of bloom, all are of dull red, not a single tipped bloom. I beg that Mr Levick, the raiser of the plant, or some correspondent who knows the suitable treatment, will favor us with the mode of culture. JOHN EMORY.

Pimlico, Sept. 3, 1833.

"*Answer to Mr John Emory, of Pimlico, on the Tipped Dahlia.*—I think I cannot better answer your respectable correspondent, Mr Emory, than by giving a short history of the Dahlia in question, which was named by John Ward, Esq., 'the Incomparable,' on account of its eccentricity. I raised it from seed gathered from an old sort known here as Wells's Comet, in 1827. At first, I thought it very much resembled the sort it sprung from; but I observed many

buds on the south side of the plant of a pale lilac color, and when they came into bloom, I was surprised to find them tipped with white. Many individuals supposed the tipping was produced by some chemical process. The year following, I struck a considerable number from cuttings, and then divided the old roots according to the number of shoots, all of which I planted in various situations. Some were planted upon an old onion bed, which had the year before been manured with night soil, and nearly all the flowers tipped. Others were planted on a north aspect, upon the site where an old thorn hedge had been stubbed, and all of them tipped. Others were planted in the regular way, and some tipped, and others did not. The year following, upon the above spots, scarcely any tipped. I was advised to try peat, river sand, and half rotten dung, and again all were self colors. I gave Mr Paxton (gardener to his Grace the Duke of Devonshire,) a plant, which was planted on a mound of rotten leaves, sand, &c., and every bloom was most beautifully tipped. The following year, Mr Paxton set a large quantity in the most conspicuous places, and, to his great disappointment, there was not a single tipped bloom. Any plan that may be taken cannot be depended upon; however, I would recommend maiden soil, rotten leaves, sand, and a little half rotten dung mixed together, to plant in; and, if the ground should be strong and wet, I would recommend a quantity of stone to be put, to act as a drainage. If the plant is grown too luxuriant, it seldom or ever produces tipped flowers. The more dwarf it is grown the better. Many persons in this neighborhood plant them in 12 sized pots, and, at the proper season, (say about the twelfth of May,) plunge the pot where they wish them to bloom, and frequently cut off the fibres which grow over the edge of the pot. This plan has been often very successful. JOHN LEVICK."

Sheffield, Oct. 17, 1833.

"*On the Treatment of Levick's Incomparable or Tipped Dahlia.* —Observing some of the correspondents to the *Floricultural Cabinet* are desirous of information on a method of treatment calculated to grow the Incomparable Dahlia with tipped flowers, I send you the method which I have adopted, and by which every blossom becomes beautifully tipped. Instead of planting in the soil of the border, I dig out a large hole, fill it up with well rotted dung, and then plant the Dahlia therein. After having planted the Dahlia, and spread two or three inches of soil over the dung to make a neat finish, as well as to

prevent evaporation from the dung. The above method has succeeded to my utmost expectation. WILLIAM BARRATT."

Wakefield Nursery, Nov. 6, 1833.

NOTICE OF STENACTIS SPECIOSA.—"*Stenactis Speciosa.* Syngenesia, Polygamia, Superflua, Compositæ. A hardy perennial, native of California, sent from thence by Mr Douglas, to the London Horticultural Society. The flowers are very handsome and shewy. A bed of it would have a splendid appearance. It grows two feet high, and flowers from July to October. Although a perennial, seedlings flower very freely the first year, and so early as to perfect abundance of seeds, and may thus be treated as an annual. Flowers from one to two inches across; the color of the ligulate petals of the ray are dark violet, and the disk is a deep yellow. Culture: increased by seeds, or division of the plant; soil, rich loam. Stenactis, apparently from Stena, to sigh: — the application we do not know."—*Harrison's Horticultural Cabinet.*

Stenactis Speciosa has already been noticed as being hardy, (see page 240 of the present volume). It answers to the above description, and will prove a valuable acquisition to the flower border. Its flowers have already begun to expand, (June 20th,) and give promise of a long succession; some are double, but mostly single. Its ligulate rays are very numerous, and the flowers resemble some species of our native *Asters*, but much larger. Leaves lanceolate acuminate undulate, sometimes contorted, sessile, margins ciliate, stem erect glabrous, (smooth). With me, it gave no indication of flower buds the season of sowing, although the seed was sown early, and we were favored with a remarkably fine autumn the past season for the perfection of plants. I think, therefore, there must be some mistake about its producing flowers the first season, as I had more than fifty plants.

PETUNIA VIOLACEA.—"*Petunia Violacea,* Purple petunia. Pentandria. Monogynia. Solaneæ. Synonyms, Salpiglossis integrifolia. Nierembergia phœnecia.

We adopt the first name in preference, for the followiug reasons. Salpiglossis is a genus more common in this country, with didynamous stamens and an imbricated corolla, two highly important characters, which are wanting in this plant. Nierembergia is, like it, pentandrous; but the peculiar form of the corolla, the absence of teeth upon the disk, and the singular lunate stigma of that genus, renders it im-

possible to place this in Nierembergia without violating every principle of generic distinction; if there is any one genus in Solaneæ more natural and more positively defined by obvious and important characters than another, it is Nierembergia, so called, with which this ought, on no account, to be confounded. But from Petunia, of which the now common Petunia nyctaginiflora may be taken as the type, the plant before us differs in nothing whatever, except the inflated tube of the corolla, and the size of its embryo: Petunia is remarkable for the thickened bases of its filaments, which all arise upon the same plane from the middle of the tube, for its capitate stigma, the oblique limb of its corolla, the leafy segments of its calyx, and for its disk, which bears a distinct tooth on each side where it touches the suture of the ovarium. Now there is not one of these highly characteristic marks, in which this plant differs from Petunia, to which we, without any scruple, refer it."—*Dr Lindley.*

I received the seeds of the above plant this spring from Mr George C. Thorburn, under the name of Nierembergia violacea, from which I have raised numerous plants, some of which have begun to shew flowers, and proves to be the same as Petunia Phœnecia, so universally admired the last season in the vicinity of Boston. It is very perplexing to the florist, to receive seeds under so many different names. We ought to obtain the true name, as soon as some eminent botanist has decided upon it. This Dr Lindley has done nearly two years since, and we can surely confide in him, as being the first rate authority.

Lancaster, June 20, 1836.

Art. IV.—*Miscellaneous.*

On the use of Camphor in Horticulture.

Camphor is dissolved in alcohol until the latter is saturated; the alcohol is then put into soft water, in the proportion of two drops to half an ounce. Withered, or apparently dead plants, put into this liquid, and allowed to remain there from two to four hours, will revive, if they have not been completely dead before being put in.

On the Propagation of Vines.

Cuttings are made from one and a half feet to two feet in length, and all the buds removed from them except one at the upper extrem-

ity. The shoot is then laid in the soil, to the depth of six inches, the end having the bud being brought up to the surface. A vigorous shoot is made in the first year; and in the second year the plants, if not removed, will bear fruit.

On the Preservation of Grapes and Plums.

At Berlin, grapes are preserved by cutting the bunch when ripe with about one foot of the wood, above and below the footstalk. The ends of the wood are dipped in hot pitch, to keep in the moisture, and the bunch is then hung up in a dry place. The Quetch plum is preserved till March by the following method: — Gather them when perfectly ripe and dry; put them in a glass jar or bottle, closely tied up, and pitched so as to exclude the air, and then bury them in dry soil seven or eight feet deep, so as to be out of the reach of any change in temperature or moisture. When taken out, they must be used immediately.

On Shortening the Tap Roots of Trees.

The following principles are laid down:

1. An injury to any one part of a plant occasions a change in the natural developement of the other parts.

2. Roots and stems are always in a certain degree reciprocally proportionate to each other.

3. The tap root does not form a part of every plant; but, where it does so, it is an essential part of that plant.

4. By shortening the tap root, one or other of the following consequences will result: — tender plants will be more easily destroyed by severe weather; all sorts of plants by dry weather, from their roots not being so deep in the soil: the wood of the timber trees will be less durable, their trunks shorter, and their heads broader and less high; and fruit trees will blossom earlier and more abundantly, and their fruit will be larger and better flavored.

5. To transplant trees without injuring their roots, is difficult in proportion to the age of the tree, and the extent of the roots.

6. All transplanting ought to be done when the trees are young, and then only can the roots be cut without injury.

7. When the tap root descends into a bad subsoil, it brings on diseases in the tree.

The general conclusion which the writer draws, is, that where the largest and best timber-trees are an object, the seeds should be sown

where the plants are to remain, and, consequently, the tap root never injured; but that, in fruit trees, it should always be shortened, to cause them to spread out horizontal roots near the surface, among the nutritive soil.—*Transactions of the Prussian Gardening Society.*

ART. V.—*Extract from a Tour through North America, together with a Comprehensive View of the Canadas and the United States.* By Patrick Shirreff, Scotland.

"FROM whatever sources arise the materials which compose and sustain organized bodies, no symptoms of decline can be discovered in them. Nature seems to be a system of continued reproduction, and, when aided by man, of progressive increase.

"The quantity of matter which has been organized since the beginning of time, must be immense. But, whether the world is viewed in whole or in portions, nature has no appearance of decay, but seems a manufactory producing new fabrics, which are again reduced to their elements, in endless succession. Generation succeeds generation, and year after year furnishes sustenance. In the operations of nature there is no loss of materials, and when they are aided by human industry, she generously rewards man with an increase of her returns, and continues to reproduce the increase. The bounties of nature seem inexhaustible, and, in some measure, proportioned to man's industry.

"The system of nature, such as I have ventured to describe, may be illustrated by the details of the farm. Pastures, which have continued under the influence of nature, annually yield herbage without decrease. When they are stocked with sheep, man is rewarded with an increase of the animals, and the herbage is reproduced as before. If the pasturage is improved by draining and top-dressing, there will be an increase in the returns from sheep, and the improvement in the pasturage continues from year to year. When an improvement in the sheep is effected, there will be an additional return from them, which, by continued attention, becomes permanent.

"When pasturage is superseded by grains and roots, their increased returns above pasturage are the reward of cultivation; and drainage, manures, and labor, greatly increase the returns. In such a system of farming man acts a prominent part with nature, and skilful indus-

try is required to continue the increase. Without skill and industry, the returns from cultivation yearly diminish, and ultimately fall short of those from pasturage or undisturbed nature. In this case it is not nature but man which fails to do his part; and the decrease may be considered a just retribution.

"A reflecting mind will discover much evidence of nature's economy throughout the universe; and the farm supplies familiar illustrations. Cows and sheep, by consuming grass, yield butcher meat, milk, butter, cheese, and leather. These varied fabrics emanate from the same source, and, when reduced to their elements, may again enter into the composition of grass. The straw of grain crops, and other vegetable matter, after being eaten by, or trampled under the feet of animals, decomposes, and enters into wheat, barley, and turnip, or any other plant. In this manner the vegetable and animal kingdoms assist each other; and so perfect is the economy of nature, that none of her materials are lost in the intercourse.

"By judicious management, the fertility of a farm may be maintained, or its productions reproduced year after year; the produce usually disposed of, being the reward of cultivation. If such produce were to be consumed on the farm, its fertility would be augmented, and the reproductive and progressive increase of nature, when assisted by man, exemplified. But the progression in fertility is checked by excessive luxuriance, which diminishes the returns. Thus lavish and niggardly cultivation is both punished, and illustrative of the maxim to use the things of this life without abusing them.

"Man seems to have been endowed with rational powers for supplying himself with the means of subsistence, which he accomplishes chiefly through the vegetable and animal kingdoms. Vegetables directly minister to his wants in various ways, and indirectly, through domestic animals, which are altogether dependent on them. The farm illustrates the direct supply in the production of wheat, potatoes, and flax; the indirect supply in butcher meat and wool. In farm economy, vegetables and animals may be viewed as manufacturing machines, assisting man and each other, and the united results of which are necessary to the formation of certain fabrics, such as milk. From this source man is supplied with many of the luxuries, as well as the necessaries of life. The results of the mulberry tree, silkworm, and cochineal insect, are united in some of the lustrous clothing of the fair sex.

"The materials entering into organized life may be varied, and

partly unknown to man. The most important elements of them, however, are to be found in air and water, and may, therefore, be said to pervade the universe. Should a difference of opinion exist regarding them, it is encouraging for the farmer to know that they abound every where within the sphere of his operations.

"The localities for manufacturing sustenance are almost as varied as the machinery of plants. The sea, air, and exterior of every organized body are stations, but the surface of the earth or soil is the chief. The localities may be considered workshops, differing in merit, without generally contributing materials towards the manufactures. Sustenance manufactured in the sea, and on the surface of the earth, equally sustains human life, and, in both cases, contains the same elements.

"Soil is not often regarded simply as a workshop, although no other view of it accords with the operations of nature and of man. It does not in any case appear to contribute materially to the formation of plants, and is only useful to them by affording support to their roots, and holding their sustenance; being a receptacle of air, water, decomposing organized bodies, and mineral substances. Soil may be rendered fertile or unfertile by imparting or withdrawing whatever promotes vegetation.

"In the preparation of human sustenance, then, soil is a workshop; air, moisture, light, heat, and decomposing organized bodies, raw materials; plants and animals, machinery; certain minerals and labors, oil for the machinery. In manufacturing produce, nature supplies air, light, heat, and moisture; man furnishes organized bodies, machinery and oil, which may generally all be obtained by capital. The parts performed by nature and man vary according to the fabric produced. In the case of pasturage, nature contributes the greatest share; in cultivation, the capital, skill, and industry of man are conspicuous. The neglected farm, incapable of producing turnips with a visible bulb, yields a full crop with a judicious application of labor and manure. The united exertions of nature and man insure success. She accomplishes much when unaided by man, but he cannot obtain anything without the assistance of nature. When she withholds heat or moisture, the manufacture is suspended, and she possesses the power of arresting or altogether destroying the machinery. Farmers combine nature's agency under the term climate; and they are familiar with the general effects of heat, frost, drought, and moisture. If given quantities of manure and labor were bestowed on equal por-

tions of soil, similar in quality, situated in Scotland, on a level with the ocean, and the top of a mountain, the difference of produce would be the effect of climate.

" Man has been doomed to earn his bread by the sweat of his brow. Experience confirms that the industry of an individual, closely applied to the cultivation of the soil in the temperate climes of the world, is more than adequate to supply sustenance to himself. It is a beautiful feature in farming, that agricultural improvements furnish additional food, increase almost every comfort, and ameliorate climate. The goodness of God to man is thus manifested, in providing him with the means of subsistence, and a reward according to his industry."

(From the Gardener's Magazine.)

ART. VI.—*On a Method of making elastic Walks for Gardens.*

MANY things have been invented to render the body of man easy and comfortable; and, of these, the improvements which derive their advantages from elasticity appear to be preferred: the Indian-rubber shoes, and the water-proof elastic hats, I think, are proofs of this. The object of this paper is to carry the employment of elasticity a little farther, and to introduce it into gardening, if it is not already in use. Among the various methods of making walks pointed out in your *Encyclopædia of Gardening*, I can find none that accord exactly with those that I would recommend in this paper: namely, *elastic walks*. Their object is to add pleasure to the flower-garden; for in many gardens the walks are of such a nature, that one would almost think they were intended, to make the persons walking on them do penance in the temple of Flora, instead of affording ease and pleasure while contemplating the cultivaetd beauties of the vegetable kingdom; but, I believe, if the plan be adopted which I shall presently recommend, the fairest flowers of creation will linger with delight among the ambrosial sweets of the flower garden, and walk with as much softness and comfort as if on a Brussels carpet.

The method I would recommend to make elastic walks is this:—Remove the earth one foot deep; and, if found necessary to have a draiu, make it in the centre or side of the walk. After the drain is finished, fill the bottom of the walk with small stones to the depth of three inches or four inches; then fill up the remaining eight inches

with flow-peat, or decomposed moss (Sphágnum). This kind of peat is light and spongy, it resists putrefaction, and remains longer unimpaired in its form, than any other kind of peat. After it is put into the cradle of the walk, it must be levelled with the spade, and trodden upon with the feet, so that no inequalities may appear on the surface: afterwards the roller should be brought over it. After this treatment, it will have become more compact, and will have sunk a little: this will allow room for two inches or three inches of fine engine ashes to be laid above it. The ashes that have undergone two burnings are the best for color, having a close resemblance to gravel. After distributing the ashes equally over the surface of the peat with a rake, they must be rolled over and over, until they form a kind of cake above the peat, and then the walk is finished. It may be thought that walks of this nature will be damp, but I have always found them as dry as those that are made with stones and gravel; and they are strong enough for all the ordinary wheeling that is required in the flower-garden. I have no doubt that the valetudinarian would derive great comfort from sbch walks; and if they tend to make the flower-garden a greater source of pleasure, I shall have gained my object.

Art. VII.—*Massachusetts Horticultural Society.*

EXHIBITION OF FLOWERS.

SATURDAY, JUNE 18.

From S. Sweetser, a bouquet of flowers containing Lophospermum, Calampelis, Echium, Asclepias, Fuchsias, &c. with numerous kinds of elegant new geraniums, among which, were Regulator, Yeatmanianum, Queen of Scots, Speciosissima and others.

From S. Walker, superb Seedling Violas, named Othello and Village Maid, were the finest we have ever seen, and deserve to be in every good collection; Bow's Claudius, and other pinks; also Astrantia, Lychnis, Fraxinella (White), Statices, White Rockets, Irises, &c.

From the Messrs Winship, Boursalt Roses, Harrison's yellow and new Florida Rose (similar to, or synonymous with R. Calypso of the French catalogues.)

From Hovey & Co., Oriental Poppies, Pentstemons, Phloxes, Veronicas, Calceolarias, Ranunculuses, Geraniums, Pæonia siberica, Sophora, Violas, &c.

From T. Lee, Esq. Lupinus Polyphyllus, Eschscholtzia, Rose Irene, Pentstemons and Tagetes lucida.

A meeting of the Horticultural Committee was holden at the Society's room this day and Mr S. Walker chosen Chairman.

SATURDAY, JUNE 25.

From S. Walker, Bow's Claudius, and Robinson's Navarino Pinks, both elegant; Double White Rockets, Pæonia Whittlejii, Roses, Phloxes, Irises, Glaucium, Chinese larkspur, Spiræas, &c.; Othello, Village Maid, Maculatum, and other fine Violas.

From Hovey & Co., Pæonia Whittlejii, Campanula aggregata, Phloxes, Geraniums, Pentstemons, Gaillardia, &c. &c.; also, Rivers' George the Fourth Rose, the new crimson Boursalt, and Spiræa bella.

ART. VIII.—*Gardener's Work for July.*

CLEAN and prepare ground on which you have raised, and from which you have gathered your earliest crops of peas, spinage, cabbages, &c. &c., and prepare such other vacant spots as may be cultivated for growing vegetables for your table in autumn and winter. Continue to sow crops of small salading every eight or ten days, but it will be best to sow them on shady borders, or else the young plants should be occasionally shaded by mats from the mid-day sun; and, if the season be at all dry, they should be frequently watered, both before and after their appearance above ground. You may now plant celery in trenches, that is, if the plants are about from six to twelve inches high. About the middle of July, and from that time to the end of the first week in August, you may sow turnips. It may be well in sowing turnip seed, to use some cheap and effectual preventive of the fly. "It appears from a trial of Knight, at the suggestion of Sir Humphrey Davy, that lime, slaked with urine, and mixed with a treble quantity of soot, if sprinkled on the seed at the time of sowing, will protect the seeds and germs from the ravages of this pernicious insect; but this antidote cannot be conveniently applied unless the sowing be in drills. A still simpler remedy has been recommended by Mear, an English gardener, viz: Steep the turnip seed in sulphur water, putting an ounce of sulphur to a pint of water, which will be sufficient for soaking about three pounds of seed." Thin and trans-

plant such lettuces as were sown last month, and sow more lettuce seed in the beginning, middle, and last week of this month, in order to have a constant supply for the table. Sow likewise radishes, and, the last week in this month a good crop of spinach may be sown for autumn use; it will not then be so liable to run to seed as in the preceding months. It is a good practice to sow early sorts of cabbages in this month, for a supply of young greens in autumn. Collect all kinds of seeds as they come to maturity, cutting off or pulling up the stems with the seeds attached as they ripen. Spread them in some dry airy place under cover, turning them now and then, that the seeds may dry, and harden gradually, and be careful not to lay them so thick as to hazard their heating and fermenting. When they are sufficiently dry, beat out and clean the seeds and deposit them in bags and boxes till wanted. Give water to such plants as require it, but let this always be done in the evening that it may be of use to the vegetables before the sun shall come to evaporate it.

You may now inoculate or bud your fruit trees, and, where it can be done without inconvenience, it may be well to let swine run in orchards to eat fallen and decayed fruits, and thus destroy the insects which such fruit contains. If, however, this cannot well be done, or you have not swine in sufficient numbers to devour all your fallen fruit, gather and carry it from the ground before the worms included in it, make their way into the earth, and thus perpetuate the plague of their visitations. The best management is to gather wind fallen fruit, as soon as possible after its lapse; boil it, together with a little Indian meal or some similar farinaceous substance, and feed it to swine after having been cooked and thus made the most of.

Art. IX.—*New and Valuable Fruits.*

Mr Kenrick's communication, announcing "*Additional Donations of New and Valuable Varieties of Fruits received from Dr Van Mons,*" together with the letters of the Doctor, present our readers with articles, which cannot fail to be highly appreciated. Had Professor Van Mons made the United States a present of a province, or a tract of country like that of Texas, or one of Bonaparte's kingdoms, he would have conferred a less favor on mankind, and given less cause for thankfulness to those who were the immedi-

ate recipients of the donation, than he has by the gift of his new sorts of fruits.

The Romans transplanted into Italy the fig from Syria, the citron from Media, the peach from Persia, the pomegranate from Africa, the apricot from Epirus, apples, pears, and plums from Armenia, cherries from Pontus, &c. &c., and those patriots who were instrumental in introducing those blessings, were thought worthy of the highest honors which their grateful countrymen could bestow. And surely such philanthropists as Dr Van Mons, and also Messrs Dearborn, Kenrick, Manning, Winships and others, who have been instrumental in effecting the benevolent purposes of the Professor, deserve to be held in honorable remembrance, and to receive at least the acknowledgements of gratitude from countless thousands who have been or may be benefitted by their benevolent exertions.—[Conductor.

Art. X.—*Catalpa Salicifolia.*

[Extract of a letter from Thomas S. Pleasants, of Beaverdam, Virginia, dated June 8, 1836, to the Editor of the Horticultural Register.]

"Some time ago, I was requested by my friend N. Hebromont, of Columbia, S. C., to send you a few seeds of the *Catalpa Salicifolia*, a splendid flowering tree, or rather shrub, brought to this country from Mexico by J. R. Poinsett, our late minister to that country. Various engagements have put it out of my mind; and though it is now late, yet as the seeds vegetate very readily, I have no doubt the plants will do well. It will be necessary in your climate to give it the protection of a conservatory during winter — in fact it is necessary here; but it well deserves all the attention which will be proper to keep it in a flourishing condition."

We are under great obligations to Mr Pleasants for his donation of the seeds above mentioned, and have distributed them in small parcels among our horticultural friends, who will pay every attention to their propagation.—[Conductor.

THE

HORTICULTURAL REGISTER

AND

GARDENER'S MAGAZINE.

AUGUST 1, 1836.

ART. 1.—*Remarks on the Cultivation and Properties of Hardy Herbaceous Plants in the Natural Order Ranunculaceæ.* Communicated by Mr JOSEPH BRECK.

"ACRIDITY, causticity and poison are the general characters of this suspicious order, which, however, contains species in which these qualities are so little developed as to be innoxious." Dangerous as many of the plants in this order are, in it are to be found some of the most interesting to the gardener and florist in the whole catalogue of plants. The gaudy Pæony, with its forty or fifty species and varieties, the glittering Ranunculus, one species of which boasts of varieties innumerable, the Anemone, with its hundreds of named sorts, which, with the Ranunculus have almost exhausted the wits of the florist to find them names, with many other species in this order, are highly esteemed border flowers.

The order is divided into five tribes, viz : 1. Clematideæ. 2. Anemoneæ. 3. Ranunculeæ, 4. Helleboreæ. 5. Pæoneæ. All the plants in this order about to be described, belong to the artificial Class Polyandria, (many stamens inserted on the receptacle.)

1. TRIBE CLEMATIDEÆ.

Genus CLEMATIS. *Character*, Petals 3, 4, 5 or 6; seeds compressed; styles permanent, becoming long plumose tails.

Clematis. "From a Greek word signifying a tendril; the climbing habit of the plant is well known. The species are mostly climbing shrubs of rapid growth, free flowers, very ornamental, and some are highly odoriferous."

One of the most luxuriant species is *C. Virginicum*, (Virgin's Bower) found growing profusely upon the banks of many of our rivers and brooks and other wet places, decorating the shrubbery to which it attaches itself by its petioles, which are given off at intervals in pairs, twining round objects of support, and serving the purpose of tendrils. Each of these opposite petioles bears three heart shaped leaves variously toothed and lobed.

Peduncles axillary, bearing cymes of white flowers, which are diœcious, the fertile flowers bearing imperfect anthers.

The most remarkable appearance of this plant, is, when in fruit; the long feathery tails of seeds appearing like tufts of wool. An arbor, thickly covered with this vine, would make a singular appearance near the close of summer and the autumnal months. The flowers are handsome when in perfection in the beginning of August. It will grow twenty or more feet in a season, most of which perishes, leaving only a small part of the plant shrubby.

C. viticella is a much admired species with blue flowers, which are produced from June to September, on long peduncles from the axil of the leaves. Leaves entire or ternate, decompound, the terminal leaf frequently ending in a tendril by which it sustains itself, being a climber of delicate habits, most of the plants dying annually near to the ground. Flowers with four petals, rather bell shaped and nodding; a variety has double flowers.

C. fammula, is a highly prized species, not much cultivated among us — a fine climber, producing white fragrant flowers. Leaves pinnate; segments smooth entire, or three lobed, round, oval, oblong or linear, rather acute. Of this species, there are four or five varieties.

C. florida is another fine scandent plant suitable for arbors, growing from ten to twenty feet in a season, with white flowers, having a variety with double ones. Besides these enumerated, there are as many as twenty species of *Clematis* which are considered ornamental.

"Any common garden soil will suit them, and they are readily increased by layers: or young cuttings placed under a common hand glass, will root freely. Seeds are often ripened in abundance: they are best sown in pans, or wide-mouthed pots, and placed in a shady situation, where they will remain some time before they come up; they may then be potted off, or planted out in the ground, where they will require to be shaded a little if the weather be warm, till they have taken fresh root.

There are a few species in the genus with different habits, being

erect in growth. A fine species is *Clematis erecta*, producing a profusion of fine white panicles in July: from two to three feet high: Leaves pinnate, leaflets stalked, ovate lanceolate, segments entire.

Clematis integrifolia. Entire leaved. A handsome upright plant two feet high, producing nodding, bell-shaped, blue flowers most of the season. Leaves entire, ovate lanceolate, smooth. A variety, *angustifolia*, has narrow leaves. *C. ochroleuca* has light yellow flowers.

Tribe 2. Anemoneæ.

In this section of the natural order, the most prominent genus is Anemone and type of the tribe, a well known florist's flower, of which there are hundreds of varieties.

Polyandria polygynia. Generic character.—Petals, five to fifteen; seeds numerous, naked. The corol is considered a calyx by some.

Anemone. "From Greek, signifying wind, because the flower grows in elevated places, much exposed to wind."

Two species are cultivated under the name of Anemone; the A. coronaria or poppy, anemone a native of Levant, and A. hortensi, the star or broad-leaved anemone, a native of Italy, both of which have been cultivated in England for about two hundred and fifty years. From the catalogue of Henry Van Eden & Co. Florists, at Harlem in Holland, we find one hundred and fifty varieties, enumerated with their names, arranged as follows:

Red or Blood color — Rosy and white flamed with purple — Sky Blue, Purple or Ash color — Rosy with Green and White — White and Rosy color — and Agathe or Agate colored. One hundred of the choicest varieties are offered for fifty francs.

Very little attention has been paid to the cultivation of this most beautiful flower, from the fact we suppose, that it will not stand our winters unless planted in a frame. Thus protected, it has succeeded admirably with some of our florists, repaying abundantly the extra trouble that is necessary to bestow upon it. If the roots are kept from dampness, they will do very well to plant out in April and produce very good flowers, if good roots have been procured. Many roots are annually sold at auction of inferior quality, and frequently in a mouldy state, which, if they vegetate, poorly repay the expense of cultivation, by which a prejudice has been given not much in favor of the flower.

Those who have seen a bed of Anemones of every color and hue

in full perfection, will no longer think lightly of the flower, and no doubt would make an effort themselves to cultivate it.

" The roots of Anemones are solid flattened masses like those of ginger, and like them are multiplied by division. A root which has remained in the soil two or three years, if it has no room to extend it, attains a great breadth ; but it is still only one root ; and hence the mode of sale by weight, and the roots are divided when planted."

Criterion of a fine double Anemone. " The stem should be strong, elastic, and erect, not less than nine inches high. The blossom, or corolla, should be at least two inches and a half in diameter, consisting of an exterior void of large substantial well rounded petals or guard leaves, at first horizontally extended, and then turning a little upwards, so as to form a broad shallow cup, the interior part of which should contain a great number of long small petals, imbricating each other, and rather reverting from the centre of the blossom ; there are a great number of small slender stamens, intermixed with these petals, but they are short and not easily discernible. The color should be clear and distinct when diversified in the same flower, or brilliant and striking if it consists only of one color, as blue, crimson, or scarlet, &c., in which case the bottom of the broad exterior petals is generally white ; but the beauty and contrast is considerably increased when both the exterior and interior petals are regularly marked with alternate blue and white, or pink and white, &c. stripes, which in the broad petals should not extend quite to the margin."

Propagation. By dividing the roots for fine sorts, and by seed for new varieties.

Soil and situations. " According to Maddock, a fresh, strong, rich, loamy soil is preferable to all others. Hogg recommends fresh loam, with a considerable portion of rotten horse or cow dung. The Rev. W. Williamson uses a stiff clayey loam with a fourth part of rotten dung. The situation should be open, but not exposed to violent winds or currents of air. The bed should be dug from eighteen inches to two feet deep, and not raised more than four inches above the level of the walks, to preserve the moisture effectually: at about five inches below the surface should be placed a stratum of two year old cow dung, mixed with earth, six or eight inches thick ; but the earth above this stratum, where the roots are to be planted, should be perfectly free from dung, which would prove injurious, rather than of benefit, if too near them. The fibres will draw sufficient nourishment from it at the depth above mentioned : but if the dung were placed deeper,

it would not receive so much advantage from the action of the air, which is an object of consequence."

Planting. According to English writers, this may be done either before or after winter. But with us, it must be deferred until spring, unless planted in a frame, that the roots may be protected from wet and cold, and air given in mild weather. The bloom will be stronger when planted in autumn, than in the spring; they should be planted as early as the ground can be worked. The roots should be planted in rows six inches apart, and the same distance from each other in the rows. About two inches is the proper depth to plant them. A little care is necessary in planting to place the roots the right side up. By close examination, the eyes from which the stems and flowers proceed can be distinguished, which of course must be placed uppermost. When in bloom, the beauty will be prolonged by shading the bed from the mid-day sun by an awning, which is always done when perfection is aimed at. Watering is necessary in dry weather.

Taking up the roots. It is a good plan to protect the bed from heavy rains after the bloom is over, that the roots may be regularly and gradually matured: if they have much wet, vegetation is prolonged, and it is rather difficult to ascertain the critical period for taking up; but if there is not too much moisture, the foliage will become brown and dry and point out the true time, which will happen about a month after the bloom. When properly dried and preserved from moisture, the roots may be kept two or three years out of the ground without much injury.

Anemone pulsatilla. Pasque flower. A hardy border vernal plant of some beauty. Its leaves are pinnate with multifid segments, the lobes linear: the flowers violet, somewhat nodding, with six spreading sepals — from six to ten inches high. April and May.

Anemone thalictroides, is a beautiful indigenous species, found in woods and pastures, with tuberous roots, and radical leaves which are compound, three times ternate. Flowers in a sort of umbel of several, accompanied by a number of simple heart shaped, three lobed leaves. This fine species is much improved by cultivation, producing instead of single stems, numerous ones from the same root, covered with its fine white flowers in April and May.

Anemone nemorosa is distinguished from the last by its solitary nodding, white, externally red or purplish flower. It grows in spreading clusters, with low stems, bearing three leaves connected together

at the base. It is one of the earliest flowers, found in abundance in the shade of thickets and woods.

Genus Hepatica. This genus contains some beautiful little dwarf plants, highly prized on account of their abundant blossoms and great variety of colors and shades. "Hepatica is from Greek, relating to the liver, the three lobes of the leaves have been compared to the three lobes of the liver."

Character of the genus. Calyx three leaved, a little distance below the corol, entire; petal six to nine; seeds without tails.

Hepatica triloba. Liver-wort. "This delicate little flower is one of the earliest visitors in spring, flowering in sunny spots before the snow has left the ground. The flowers appear before the leaves, on hairy scapes. Calyx of three ovate, obtuse, hairy leaflets, situated on the scape at a distance below the petals. Petals oblong, obtuse, purple, sometimes white. Seeds numerous, sessile, ovate, acute, hairy, supported by the persistent calyx. The leaves are heart shaped at base, and divided into three, rarely five, entire lobes." It is very much improved by cultivation. Some of the English varieties are splendid, especially the double red and double blue, and the white with red anthers. A patch of either of these, or our own indigenous species, which differs very little from the European, makes a very lively appearance, but are quickly spoiled by the sun unless shaded. The leaves of the Liver-wort have been used in cases of pulmonary complaints. A few years since it was somewhat celebrated among "herb doctors." We believe its reputation is somewhat on the decline. There is one thing that recommends itself in the use of it: if it does no good, there is no great danger of doing harm. There have been some well authenticated instances of its efficacy.

Genus Adonis. *Polyandria polygynia.* "*Adonis* is said to be the plant that sprang from the blood of Adonis when wounded by the boar. Handsome border flowers, especially *A. vernalis* and *autumnalis*, and of the easiest culture in any garden soil."

Character of the genus. Sepals five, appressed. Petals, five to fifteen, with a naked claw. Grains many, one seeded, spiked, ovate, pointed with the persistent hardened style.

Adonis vernalis is the only perennial species, producing its brilliant yellow flowers with twelve or fifteen oblong, somewhat toothed petals the last of April. Not common in our gardens, but richly deserves a place in every collection.

Genus Thalictrum. *Polyandria polygynia.* "Thalictrum is

said to be derived from Greek, to grow green, from the bright color of the young shoots. The species are vigorous growing plants with ramose roots and smooth, finely divided leaves; they grow in any soil and situation, and *A. tuberosum, cornuti*, and *aquilegifolium* are reckoned handsome ornaments in a border or shrubbery.

Character of the genus. Calyx none; petals four or five; seeds without tails.

We have in our collection *T. cornuti*, which makes a handsome appearance in the back of the border, now in bloom (July 12,) about four feet high. Flowers in corymbs, pale yellow; the stamens or anthers forming the most conspicuous part of the flower. Leaves decompound; segments bluntly three-lobed.

T. corynellum, is indigenous, a common, tall meadow plant with white flowers; its numerous filaments bearing oblong yellow anthers.

3. Tribe Ranunculeæ.

The only genus in this tribe containing handsome border flowers is that of Ranunculus, in which is one remarkable species, R. Asiaticus, famous for producing innumerable varieties of florists' flowers, whose roots in a dry state, consist of little tufts of cylindric tubers, forming one important item of the annual imports of roots and bulbs from Holland.

"*Ranunculus* is said to be so called from *rana*, a frog, because the species inhabit humid places frequented by that reptile."

Character of the genus. Calyx five leaved; petals five with a nectariferous pore, and small scales at their base on the inside; seeds without tails, naked, numerous. *Polyandria polygynia.* We have many species of this genus indigenous, well known by the name of butter-cups, the flowers of the different species having a close resemblance to each other, being of a brilliant varnished yellow, possessing in some species, acridity in a high degree. R. sceleratus when bruised and applied to the skin produces blisters. All these species are weeds naturally. There are some improved varieties with double flowers, truly beautiful, as *R. repens flore plena*, and *R. acris flore pleno.* The only difficulty with them is to keep them within due bounds, as they have a great propensity to extend themselves farther than is desirable.

R. aconitifolius is a handsome plant, and thus described by an American writer thirty years ago. "The double flowering variety of the *Ranunculus aconitifolius*, Aconiti-leaved Crowfoot, or *Fair Maids of France*, is greatly esteemed for the delicate beauty of its numer-

ous flowers. It is perfectly hardy, and grows generally from a foot and a half to two feet high, the stalks branching out at top into several divisions, at each of which there is one leaf of the same shape of the root leaves, divided into five lanceolate lobes each: the four sided lobes are upon foot-stalks coming from the side of the principal stems, and the middle one terminates it; they are deeply serrate, and have several longitudinal veins. The flowers are pure white, very double, each standing upon a single foot-stalk. The root is perennial and composed of many strong fleshy fibres, formed like that of *Ranunculus Asiaticus* or garden ranunculus, and increasing in the same manner. It is a native of the Alps of Europe, and is very scarce at present in America. This beautiful plant flowers generally in the latter end of May and June, and may be propagated by taking up the roots now (September) or at any time after the stems decay, separating the offsets, taking care, at the same time, to preserve the crown of each unhurt, and planting them in any good garden earth. Their thick fibres are to be spread around, and the upper part of each root is to be covered about two inches deep, if planted in beds and borders; but if in pots, one inch will be sufficient; raise the earth in the centre of the pot, place the root thereon, spreading the fibres around and downward, then fill in the earth and cover as above. The pots will require some protection and but very little water during winter, for no root or plant will bear as much frost when in pots, as if planted in open ground. This plant looks beautifully in rooms and windows, when in flower, as well as in borders and beds." We beleive this plant is still scarce; we saw it in bloom at the Cambridge Botanic Garden this spring, under the care of Mr Wm. E. Carter, the superintendent.

Ranunculus Asiaticus. "The Ranunculus, from a fasciculus of small tubers, sends up several bipartite leaves, and an erect branched stem with a terminating flower variously colored. It is a native of the Levant, and was cultivated by Gerrard in 1596. Though rather a tender plant, innumerable and highly beautiful double-flowered varieties have been raised from seed, chiefly by the English florists, from the middle to the latter end of the last century." The varieties are more numerous, it is said, than any other flower. More than seven hundred varieties are named in the catalogue of Henry Van Eden & Co., Harlem, Holland, and about five hundred varieties in the catalogue of Henry Groom, florist, near London. In the last, the highest prized one is Groom's Lady Grey, offered for the moderate sum of

about nine dollars our money; and one hundred varieties, two roots of each for five pounds sterling, or a little more than twentytwo dollars. Two hundred of the finest varieties are prized at one hundred francs in the other catalogue.

They are arranged in the following order, viz:—White, white spotted, mottled or edged. — Red and white striped. — Red and yellow striped. — Dark and dark purple. — Light purple. — Gray. — Crimson. — Red. — Rosy. — Yellow, yellow spotted, mottled or edged. — Orange. — Olive.

The Ranunculus is more tender than the Anemone, and may be treated in the same manner, but not planting more than one inch and a half deep. The surface of the bed should be raked perfectly even and flat, and the roots planted in rows, at the distance of about five inches from each other. It is better to plant in shallow trenches, made nearly two inches deep, than to make holes for the reception of the roots; there should be a little coarse sand sprinkled into the trench and the roots should be placed with their claws downwards, from three to four inches asunder, according to their size; when the trench has received its roots, it should be carefully filled up level with the same earth that was taken out, so as to cover the roots exactly one inch and a half deep, which is the only true depth to procure a good bloom: it is pointed out by nature in a singular manner; for when these roots have been planted too shallow or too deep, in either case, a second root is formed at the proper depth, by which the plant is weakened to such a degree that it seldom survives a repetition of it.

It is necessary to water freely in case of dry weather, but not without. Shading, too, is indispensable, especially to the dark colors, which are soon injured by a bright sun. The roots should be taken up as soon as the foliage begins to decay, and dried gradually, and then put away in paper bags until the time of planting. Like the anemone, the roots of the ranunculus will keep out of the ground for years.

Criterion of a fine double Ranunculus. The stem should be strong, straight and from eight to twelve inches high, supporting a large well formed blossom or corolla at least two inches in diameter, consisting of numerous petals, the largest at the outside, and gradually diminishing in size as they approach the centre of the flower, which should be well filled up with them. The blossom should be of a hemispherical form; its component petals should be imbricated in such a manner as neither to be too close and compact, nor too widely separated;

but have rather more of a perpendicular than horizontal direction, to display their colors with better effect. The petals should be broad, and have perfectly entire well rounded edges: their colors should be dark, clear, rich, or brilliant, either consisting of one color throughout, or be otherwise variously diversified, on an ash, white, sulphur, or fine colored ground, or regularly striped, spotted or mottled in an elegant manner." Mr Maddock observes, in no instance does the seed of the ranunculus produce two flowers alike, or the same as the original. This beautiful flower has as yet received but little attention among us. Those who have made the attempt and given it proper treatment have been well rewarded for their pains, and we hope it will soon be more generally cultivated.

Tribe 4. Helleboreæ.

In this section of Ranunculaceæ will be found the genus *Delphinium*, noticed in a former number, (page 54,) and the genera *Aconitum*, *Aquilegia* and *Trollius*, each of which contains more or less species of handsome herbaceous plants. The genus "*Helleborus*, famous in classical history for its drastic powers, and the *Nigella*, celebrated in ancient housewifery for its aromatic seeds, which were used for pepper, before that article was discovered," and *Coptis trifolia*, or Gold thread, a well known indigenous plant found in woods, producing a pure and powerful bitter, devoid of astringency, and a popular remedy with us for the sore mouths of children.

Genus Aconitum. Polyandria trygynia.— *Character of the genus.* Calyx none. Petals five, the upper vaulted; nectaries two hooded, stalked, recurved, siliques three to five.

Aconitum. So called from growing about Acona, a town near Bithynia. The species are robust free-flowering plants of some beauty and consequence. The stems rise from two to six feet in height, upright, strong, furnished with many digitate or palmate leaves, and terminated by panicles of loose spikes of blue or yellow flowers."

Aconitum napellus, "from napus, a turnip, its grumous roots resembling little turnips," is a well known inhabitant of the garden known by the name of Monk's hood; it should be as well known as a most powerful poison. The following account of it, will, undoubtedly, make those who cultivate it extremely cautious as to the use they make of it. "Linnæus says that it is fatal to kine and goats, especially when they come fresh to it, and are not acquainted with the plant; but that it does no injury to horses, when they eat it only dry. He also relates (from the Stockholm acts) that an ignorant surgeon

prescribed the leaves, and on the patient refusing to take them, he took them himself and died. The ancients who were acquainted with chemical poisons, regarded the Aconite as the most violent of all poisons. Some persons, only taking the effluvia of the herb in full flower by the nostrils, have been seized with swooning fits, and have lost their sight for two or three days. But the root is unquestionably the most powerful part of the plant. Matthiolus relates that a criminal was put to death by taking one drachm of it. Dodonæus gives us an instance, recent in his time, of five persons at Antwerp, who ate the root by mistake, and all died. Dr Turner also mentions, that some Frenchmen at the same place, eating the shoots of this plant for those of master-wort, all died in the course of two days, except two players, who quickly evacuated all they had taken by vomit. We have an account in the Philosophical Transactions, of a man who was poisoned in the year 1732, by eating some of this plant in a salad, instead of celery. Dr Willis, in his work, De Anima Brutorum, gives an instance of a man who died in a few hours, by eating the tender leaves of this plant, also in a salad. He was seized with all the symptoms of mania. The Aconite, thus invested with terrors, has, however, been so far subdued, as to become a powerful remedy in some of the most troublesome disorders incident to the human frame. Baron Stoerck led the way by administering it in violent pain in the side and joints, in glandulous scirrhi, tumors, ulcerous tubercles of the breast, &c. to the quantity of from ten to twenty grains in a dose, of an extract, the method of making which he describes. All the species are poisonous in a high degree."

The species are very numerous, most of which are beautiful, with blue flowers, and a few with yellow or white. Some of the finest are *A. japonicum*, *album*, *versicolor*, *variegatum*, *lycocontum*, and *speciosum*.

Genus AQUILEGIA. *Polyandria pentagynia. Character.*—Calyx none; petals five; nectaries five, horned between the petals; capsules five distinct.

"*Aquilegia.* From aquila, an eagle: the inverted spurs of the flower have been likened to the talons of a bird of prey. *A. vulgaris* is an old inhabitant of the flower garden: the whole plant has been recommended to be used medicinally, but it belongs to a suspicious order, and Linnæus affirms, that children have lost their lives by it. The species are smooth leaved, handsome flowering plants. *A. alpina* is the handsomest species."

A. vulgaris has varieties of every shade of blue and purple, white, variegated and flesh color, with single, semidouble and double flowers. Propagated from seed, or from divisions of the root.

A. canadensis, common in rocky situations, flowering early in May, has pendulous scarlet flowers, with styles and stamens exserted; leaves biternated, or twice three parted, incisely or deeply toothed on the extremity. We think this the most elegant species, being much improved by cultivation, producing much larger roots, with numerous stems and flowers. It forms "one of the most elegant vernal ornaments of the season." We formerly had a variety with pale yellow flowers, but have lost it, and think it is not to be found in any collection.

A. sibirica. Siberian columbine. This flowered with us for the first time the present season. It resembles *A. vulgaris*, except that the flowers instead of being pendulous, stand erect, and are of a beautiful indigo blue.

A. formosa is a beautiful new species from Kamtschatka, with red and orange flowers, not yet introduced into our country. About fifteen species are enumerated in Loudon's Hortus Britannicus, all ornamental and hardy, being mostly natives of Siberia and alpine regions.

Genus TROLLIUS. *Polyandria polygynia. Character.*—Sepals colored, five, ten or fifteen, deciduous, petaloid; capsules many, subcylindrical, many seeded.

"*Trollius.* A name given to this plant by Conrad Gesner. It is derived from *trol* or *trollen*, an old German word, signifying something round, in allusion to the form of the flowers. The species are showy flowers for the general border, and of the easiest possible culture."

T. europæus has yellow flowers and grows two feet high, flowering in May and June. *T. asiaticus* is another species with dark orange flowers, in flower the same time, and one foot high. *T. americanus* is a dwarf indigenous species, also with yellow flowers somewhat like the common ranunculus, and not much superior in beauty.

Genus HELLEBORUS. *Polyandria polygynia. Character.*—Sepals five, persistent, roundish, obtuse, large, usually green. Petals eight to ten, tubular, nectariferous. Stigmas orbicular. Capsules coriaceous.

Helleborus. "From Greek words signifying *to cause death*, and *food.* The dangerous qualities of Hellebore are well known. Leathery leaved plants, most of which are evergreen and flower in winter

and early in spring. *H. niger* and *fœtidus* have long been in use in popular medicine, especially the latter, as a vermifuge and cathartic. They are both admitted in the London Materia Medica, but being violent poisons, require caution in their application. *H. fœtidus*, from its deep green and finely divided leaves, forms a most ornamental evergreen bush for the shrubbery."

We have a plant growing in abundance in our meadows and swamps with large, oval, acuminate, pubescent, strongly plaited and nerved leaves, a foot long, and stems from three to five feet high, with numerous greenish flowers in compound racemes, known by the name of *Hellebore*, but it is improperly so called. The true name is *Veratrum viride;* "the root of this plant, when taken internally, produces violent effects, and is dangerous in considerable quantities." "The best antidote for this poison when taken is a strong infusion of nut-galls." The European species are equally dangerous.

5. Tribe Pæoneæ.

Genus *Pæonia*. *Polyandria di-pentagynia*. *Character.*—Calyx five leaved; style none; capsules many seeded like a pod.

"*Pæonia.* The physician Pæon was the first to use this in medicine. The Greek legend adds, that he used it to cure Pluto of a wound inflicted by Hercules."

This interesting genus contains many magnificent flowering plants, embracing, according to Loudon's Hortus Britannicus, fifty distinct species and varieties, all of which are desirable for the borders and perfectly hardy, standing our winter without the least protection; they flower stronger, however, with a little. Most of the genus is herbaceous: one species, *P. moutan*, Chinese tree, is shrubby. This species and two varieties, *papaveraceæ* and *Banksiæ* were introduced from China in 1789; since then a number of varieties have been raised from seeds of which some have already reached this country. We saw a plant at Marshall P. Wilder's conservatory, Hawthorn place, Dorchester, this spring, which he had recently imported at great expense, the variety *alba*, said to have pure white flowers. The variety *papaveraceæ* has large single white flowers, with rich purple centre, at least six inches in diameter; *moutan* and *Banksiæ* have purple flowers very large and double. We had a plant of *P. moutan* with fifteen or twenty flowers upon it this spring, which stood exposed all winter: the flowers were nearly as fine as if it had been protected by the green-house. The beauty of the flowers is much longer preserved if they are screened from the mid-day sun, and sheltered from

heavy rains. The varieties *rosea* and *Anneslei* have pink flowers. All the varieties thrive in any rich light soil. "Ripened cuttings, slipped off and planted in the ground in a shady place, without cover, will root freely."

Pæonia albaflora is a species which contains, next to *moutan*, some of the most splendid; as *W. Whitleji* with double white, and *Humei* and *fragrans* with double red flowers, coming into bloom a week later than *P. officinalis*, the common double red pæony. The single varieties, *candida* and *tartarica* (flesh colored) *vestalis* and *sibirica* (white,) *rubescens*, (pink,) and *uniflora*, (red,) have single flowers, but are handsome border plants.

Pæonia officinalis. The double red pæony, forms one of the most common ornaments of almost every garden, and formerly highly prized, being, when introduced into Antwerp two hundred and fifty years ago, sold for twelve crowns: a large sum for those days.

"It is a native of Switzerland, Dauphine, and other parts of Europe, and also of China and Japan. The roots were formerly much used in medicine."

The varieties of this species are *P. rosea* with rose, *P. blanda* with blush, *P. rubra* with red, *P. carnescens* with flesh colored, and *P. albicans* with whitish flowers. *P. paradoxa* is a handsome species from Levant with purple flowers, having two or three varieties. *P. tenufolia* is much admired on account of its finely divided fennel-like leaves, and globular, single, deep red flowers. *P. hybrida, decora, Grevillii, corallina*, and many other species, are fine border plants.

All the species have fleshy, tuberous roots, and are readily propagated by parting, taking care to preserve a bud on the crown of each offset. This operation should be performed as soon as the foliage has decayed, about the last of August and in no case should it be deferred until spring.

Genus *Actæa. Polyandria monogynia. Character.* Calyx four leaved, petals four, berry one celled, many seeded, nearly flat. Actæa from a Greek word, the name of elder, which this plant resembles in foliage and fruit. The berries of *A. spicata* are poisonous, and with alum yields a black dye. The tubers of *A. racemosa* are called snake root, and much used in North America by self-practitioners, and as an antidote against the bite of the rattle snake.

A. rubra and *alba* are indigenous, found in moist woods producing spikes of handsome berries, and look well where introduced into the shrubbery.

Art. II.—*Visit to the Ankoy Tea Hills.*

In November, 1834, G. J. Gordon, Esq. accompanied by Mr Gutzlaff, visited the Ankoy Tea Hills, for the purpose of obtaining some additional facts relative to the cultivation and preparation of that plant. An account of this tour has been communicated by Mr Gordon, and published in the Journal of the Asiatic Society of Bengal. Two or three other gentlemen belonged to the party, with a company of armed Lascars and coolies. Of the countries through which they passed, Mr Gordon gives the following account:

"The country through which we passed, swarmed with inhabitants and exhibited the highest degree of cultivation, though it was only in a few spots that we saw any soil which would be deemed in Bengal tolerably good; rice, the sweet potato and sugar-cane, were the principal articles of culture. We had now to ascend a barren and rugged mountain, which seemed destined by nature to set the hand of man at defiance: yet even here, there was not a spot where a vegetable would take root, that was not occupied by at least a dwarf pine planted for the purpose of yielding fire-wood, and a kind of turpentine; and wherever a nook presented an opportunity of gaining a few square yards of level ground by terracing, no labor seems to have been spared to redeem such spots, for the purpose of rice cultivation."

Respecting the disposition of the people, he remarks:—

"At every village the people poured out as usual to see us, vieing with each other in marks of kindness. The day, however, becoming very hot, we took shelter from the sun under the roof of the boat, to the disappointment of many who waded into the water to gratify themselves with a sight of the strangers. Coming at last to a high bank close to a populous town, they actually offered the boatman 400 cash if he would bring us to; and on his refusal, the boys began pelting the boat with clods and stones. On this, Mr Gutzlaff went on deck to remonstrate, and Mr Ryder to intimidate with his gun. Betwixt both, the effect was instantaneous, and the seniors of the crowd apologized for the rude manner in which the boys had attempted to enforce the gratification of their curiosity. On the road, the villages poured forth their population as we moved along. At one place, they were actually overheard by Mr Gutzlaff thanking our guides for having conducted us by that road, and proposing to raise a subscription to reward them. At Koe-boe we learned that some petty officers

had been inquiring after us, which frightened our guides, and made us desirous to hasten our return."

The following is Mr Gordon's account of the tea plant, as it appears in the field:

"We accordingly got up at day break, and proceeded to visit the spot where the plants were cultivated. We were much struck with the variety of the appearance of the plants; some of the shrubs scarcely rose to the height of a cubit above the ground, and they were so bushy that the hand could not be thrust below the branches.—They were also very thickly covered with leaves, but these were very small, scarcely above three fourths of an inch long. In the same bed were other plants with stems four feet high, far less branchy, and with leaves from one and a half to two inches in length. The produce of great and small was said to be equal. The distance from centre to centre of the plants was about four and a half feet, and the plants seemed to average about two feet in diameter.

"Though the ground was not terraced, it was formed into beds that were partly levelled. These were perfectly well dressed as in garden cultivation, and each little plantation was surrounded by a low stone fence and a trench. There was no shade, but the places selected for the cultivation were generally in the hollows of hills, where there was a good deal of shelter on two sides, and the slope comparatively easy. I should reckon the site of the highest plantations we visited to be about seven hundred feet above the plain, but those we saw at half that height, and even less, appeared more thriving, probably from having better soil, though the best is little more than mere sand. I have taken specimens from three or four gardens. Contrary to what we had been told the preceding night, I found that each garden had its little nursery, where the plants were growing to the height of four or five inches, as closely set as they could stand: from which I conceive that the plant requires absolutely a free soil, not wet and clayey, but of a texture that will retain moisture; and the best site is one not so low as that which water is apt to spring from the sides of a hill, nor so high as to be exposed to the violence of stormy weather.—There is no use in attempting to cultivate the plant on an easterly exposure, though it is sufficiently hardy to bear almost any degree of dry cold."

Another expedition to the Bohea or Wooe Hills by the same party, was defeated in consequence of the jealousy of the Chinese government. It was their intention to have penetrated two hundred miles

into the country and have spent a month there. But having ascended the Min river for seventy miles, through a delightful country, and having passed through one large city and many populous villages on its banks, they were fired upon by the military and compelled to return.—*Missionary Herald, Vol.* 32, *No.* 2.

[From Paxton's Magazine of Botany.]

Art. III.—*Observations on the different species of Hardy, Deciduous and Evergreen Shrubs.*

Æsculus.

Æ. discolor, Æ. carnea, Æ. rubicunda, and *Æ. pavia* are all handsome. They all readily unite if grafted on the common kind, and in shrubberies make a beautiful show when in flower in spring. They flourish in any soil and situation. No plants are better calculated for shrubberies, for although they are deciduous, the variation in foliage from the ordinary shrubs has a charming effect. The Æ. discolor seldom grows above six feet high, and therefore will stand pretty forward; Æ. carnea, from sixteen to twenty feet; Æ. rubicunda from ten to twelve, and the Æ. pavia from six to eight feet: the knowledge of their relative heights will determine their situations in the shrubbery.

Azalea.

Azalea nudiflora, with all its varieties, particularly *Nudiflora thyrsiflora,* and indeed all the kinds are ornamental. All the hardy species grow from four to six feet high; and they should be planted on a border by themselves, composed of sandy peat, (heath mould) and are propagated by layers and cuttings.

Amelanchier.

A. sanguinea or scarlet-wooded *Amelanchier,* bears a strong resemblance to the *Snowy Mespilus,* and is very ornamental; it is deciduous, and seldom grows above four feet—it is a native of North America. *A. florida.*—This species bears a good deal of resemblance to the *sanguinea,* except in the racemes of flowers which are produced after the manner of the bird-cherry. It is also a native of North America. Both the species will require a light sandy soil,

and about the same situation in the shrubbery, and are readily propagated by layers.

ANDROMEDA.

A. speciosa, and all its varieties are very beautiful; they are natives of N. America and flower in great profusion, and continue in leaf nearly the whole year, although they are not strictly evergreen shrubs; they grow about three feet high, and should be planted on the peat border with the *Azaleas*. *A. buxifolia*, *racemosa*, &c. are well deserving a place in the flower garden; they are all propagated by seeds and cuttings.

BENTHAMIA.

B. fragiffera. This beautiful new shrub is an evergreen, and flowers in profusion during June, July and August, and produces a large crop of large red mulberry-like fruit in the autumn; it was introduced a few years ago from the East Indies. Our plants grow freely in common light soil, and no doubt but they will be increased by layers and seeds.

CATALPA.

C. syringifolia. This handsome flowering shrub is deserving a place in every shrubbery; it was introduced by Catesby, who found it in the vicinity of the Ohio and Mississippi. If planted in a warm sheltered place it will flower finely when it has become ten or twelve feet, although the ordinary height it reaches is twenty feet. Common garden soil suits it very well, but if made a little rich it grows more luxuriant. The usual way of propagation is by the cuttings of the roots planted under a hand-glass, or by seeds, which may be bought at most of the seed shops.

CHIONANTHUS.

C. Virginica, or Fringe tree, is a fine large deciduous tree, growing twenty feet or more high; the leaves are broad like those of the *Magnolia grandiflora*. It is a native of N. America, where it was found growing upon the mountains, and is very hardy. A light loam suits it well; but propagation is difficult; budding and grafting on the common ash tree is the usual mode practised. The seeds are a long time before they vegetate after being sown, sometimes more than two years.

CHIMONANTHUS.

C. fragrans. This species, together with *grandiflorus* and *luteus*, are most usually considered to be green-house plants, as during the

winter their delightful fragrance and lively flowers greatly enliven the appearance of a collection. They, however, grow very freely out of doors on a warm border, or under the wall of a stove or greenhouse. They are natives of China, and grow to six or eight feet high in favorable situations. Any light soil will do for them to be planted in out of doors, but if cultivated in pots use about equal parts of sandy loam and heath mould (peat). The mode of propagation is by layers, which merely require pegging down without any tongue; this should be done in the spring, just when the plants begin to grow. — They may also be increased by cuttings of the young wood, which should be planted in sand, and be covered with a bell glass, and the pots plunged in a gentle heat.

Calycanthus.

All this genus are natives of North America; they are very easy of culture, growing freely either in peat or loam, or both mixed. The flowers are a dark brown color, and very fragrant, resembling the odor of ripe melons. The usual mode of propagation is by layers, which strike soonest if they are tongued and laid down in sandy peat. They will also grow from cuttings, but not very freely if planted under a hand-glass in spring under a north wall.

Cotoneaster.

C. frigida. A low, handsome deciduous tree, a native of Nepal, where it was discovered some years ago by Dr Wallich. It bears a profusion of white blossoms in spring, and is covered with bunches of red berries in the autumn. *C. microphylla* is a very different species from *frigida*, being an evergreen shrub, seldom exceeding a foot in height, and bearing solitary white flowers. The foliage is glossy and very handsome. It is a native of Nepal. *C. laxiflora.* — This is a low deciduous shrub, inferior in beauty to the other two, but possessing many good qualities to recommend it. This and the first are propagated by layers and seeds, and will grow in any common soil. The *microphylla* may be propagated by cuttings planted under a hand-glass in peat earth on a warm but shady border in August, and they will be ready to pot off the following May.

Cratægus.

To stand as single trees, or to be incorporated with others in a shrubbery, perhaps *C. heterophylla, oxyacantha, punicea oxyacantha superba* and *coccinea*, yield in beauty to scarcely any plant, particu-

larly during the month of May, when their leaves are literally hid from sight by a profusion of crimson scarlet or white flowers, and in the autumn, when they are covered by red berries. They will grow in any soil and situation, and are readily increased by grafting on stocks of the quince and common thorn by layers and by seeds.

Colutea.

C. Nepalensis and *Pocockii* are very ornamental when planted near the front of the shrubbery; they flower freely, and will grow in nearly any soil or situation, and are readily increased by seeds, which ripen in abundance.

Cytisus.

These are so well known that little need be said about them. The *C. purpureas* and *nigricans* are pretty ornaments on the flower borders, where, trained to a stake, they grow from three to four feet high. They also look very pretty grafted upon the laburnum stock, but being feeble growers the stock soon destroys them; the *falcata*, no doubt, would answer this way. They are readily increased by layers and seeds, which ripen freely,—also by cuttings.

Deutzia.

D. scabra. This is a native of Japan, where it is found growing upon the Fakon Mountains. It forms quite a small shrub of slender growth, and may be propagated by cuttings planted under a hand-glass on a warm shady border. It will grow in any common garden soil.

Edwardsia.

E. grandiflora. This is a native of New Zealand, and is nearly hardy; if planted on a warm border or under a wall, and sheltered with a mat in severe weather in winter, it will flower very freely, and produce plenty of seeds, by which and cuttings it may be increased. The cuttings should be planted in pots of sand, covered with a bell glass, and placed in a gentle heat. The seeds may be sown in a slight hot-bed, transplanted when large enough, and afterwards exposed by degrees.

Ebenus.

E. creticas. A small evergreen shrub of considerable beauty; seldom grows more than a foot and a half high; looks very pretty on the flower border or rock work. It is a native of Candia, whence it was introduced a few years ago. It produces seed freely, and strikes

freely from cuttings, planted in a light soil under a hand glass on a warm border.

Enkianthus.

These are elegant little bushes, belonging to *Ericeæ*, generally considered green-house plants; but they are more hardy than most plants requiring that shelter. They do not bear the cold of our winters out of doors well, but only require sheltering in a frame or pit if in pots, and the shelter of a mat in open borders. The best soil for their growth is sandy loam and peat (heath mould) and care is requisite not to overwater them when not in a growing state. They are propagated by cuttings, which strike without difficulty. The cuttings must be taken when the wood is ripened, and be planted in sand under a hand glass without heat.

Gaultheria.

G. shallon. This new and very pretty evergreen shrub, is a native of North America, from whence it was brought to this country by Mr David Douglass.

Halesia.

H. tetraptera. A native of Carolina, where it was found growing on the banks of rivers. It grows very well in a light rich loam, but is very difficult to propagate; the best way is by seeds, which are imported from its native country. It may also be increased by cuttings of the roots, planted under a hand glass without heat.

Indigofera.

I. violacea. A dwarf slender shrub, very handsome when in flower but not very hardy, it should therefore be planted in a warm situation. It will thrive in any common garden soil, and increases by cuttings planted in pots of light soil, or sand, covered with a glass in a gentle heat. It also occasionally produces pods of seeds, which should be sown in a gentle hot bed in March.

Lonicera.

All the species of this genus, as now constituted, are upright shrubs, the climbing kinds being referred to *Caprifolium*. *L. tartarica* and its variety *rubra*, form beautiful shrubs, ten feet or more high, being clothed in April and May with flowers from top to bottom. They are perfectly hardy, and thrive in almost any soil and situation. They are natives of Russia, and are propagated easily by cuttings, layers and seeds.

Magnolia.

The whole of the trees in this are highly ornamental, and very valuable. All the American species and varieties are hardy, but those from China require the shelter of the green-house.

M. grandiflora is a splendid evergreen tree, rising, in its native country to sixty feet or more high, but with us scarcely exceeding thirty or forty feet. The leaves grow from eight inches to one foot long, in form not unlike those of the common laurel; the flowers are white, of a large size, and emit a pleasant fragrance. The plant is not so hardy as some other species, and should, therefore, be planted in a warm situation. We have a plant growing exceeding fine, trained against a south wall. All the varieties belonging to this species,as *elliptica*, *crispa*, *lanceolata*, *obovata*, *rotundifolia*, &c., require similar treatment.

M. glauca. This is also a native of N. America, where it is found growing in low, wet, swampy ground; it is deciduous, and grows to about twenty feet high. The flowers are cream color, bordering on light yellow. In America the tree is best known by the name of "*White* or *Swamp Laurel.*" The blossoms are delightfully fragrant, and a recent traveller states that on the windward side the scent may be distinguished for some miles before reaching the tree. All the varieties of this species are found in similar situations. The *M. glauca* is very hardy, and may be planted in almost any conspicuous situation, where it will not be exposed to the violence of the cutting winds.

M. macrophylla. This species is found in similar situations to the last, but to thrive requires more shade. The leaves are very large, measuring, on a healthful growing plant, nearly three feet long and a foot broad. The flowers, too, are very large, being a foot across when fully expanded. They are of a delicate cream colored white, tinged with deep purple at the base of the petals. They also emit a pleasing fragrance.

From the above remarks we learn that *M. glauca* and its varieties may always be planted in situations more exposed and moist than will suit the varieties of *M. grandiflora* and *macrophylla*, which, in their native country are sheltered from cold by the extensive forests in which they grow. The best kind of soil for all the hardy species of magnolia is peat; but, if all other circumstances agree, they will thrive exceedingly well in light loam, or a mixture of that and peat.

There are two ways of propagation practised, viz. by layers and

by seeds. The usual way, and probably the best way of increasing them is by layers, which should be tongued on the upper side, and layered down in March or April, and most likely by the autumn they will be ready to separate; if, however, they have not made good roots it is advisable to allow them to remain where they are until the following spring.

When the layers are separated, pot them in fortyeight sized pots, filled with a mixture of sandy loam and peat, or peat alone, place them in a frame, and keep them close shut down until they begin to grow; then gradually admit air, and treat the layers like green-house plants, potting as they require it until they are established, and have grown to a good size; then plant them in suitable situations, and they will speedily show flower.

The seeds imported from America should be sown immediately on their arrival, in pots or pans filled with light sandy loam or peat, or peat alone, covering the seeds very lightly. Place the pots in gentle heat, and they will soon begin to vegetate. When they are of sufficient size, plant them out in sixty sized pots, one plant in each pot; replace in the frame, and shade them until they have begun to grow.

When they have become established, take them out of the frame, and treat them while small in every respect like green-house plants; when they have grown to a good size, plant them finally in the situations where they are to stand permanently.

Malachodendron.

M. ovata. This beautiful tree is a native of North America, where it is found growing on mountains. The flowers are cream-colored and of a large size. It is hardy, but requires a warm and sheltered situation, otherwise the unripe wood is often killed in winter, and this causes the plant to flower weakly. A mixture of loam and peat is the best kind of soil for it; and it may be increased both by layings and cuttings. Let the cuttings be made of the ripe wood, and planted in autumn on a warm border under a hand glass in sand; or they strike quicker if introduced into a gentle heat. The best time for pegging down the layers is early in spring; they strike in less time if they be tongued on the upper side, and the branch slightly twisted.

Philadelphus.

P. grandiflorus. This is the handsomest of the genus: it is a native of North America, where it is found growing on the banks of rivers. It is perfectly hardy, and will grow in almost any soil and sit-

uation, forming a spreading shrub about six feet or more high, and is easily propagated by layers.

P. hirsutus. This shrub grows from four to five feet high; like the last, it is a native of North America, where it was discovered by Mr Nuttall. It thrives in the shrubbery in any common garden soil, and is propagated like the last.

P. coronarius, or Common Syringa, greatly resembles the other, grows about five feet high, and is delightfully fragrant when in bloom. It may be propagated like the last.

Prunus.

P. candicans. This is a delightful hardy deciduous shrub, growing about six or eight feet high. It is very easy of cultivation, and in May and June, when in full flower, is a perfect picture, the white flowers nearly hiding the young leaves, which are beginning at that time to cover the branches. It may either be propagated by layers, or by budding and grafting on the common plum stock.

P. Sibirica scarcely grows so large as the *candicans*, thrives well in almost any soil and situation, and makes a pretty ornament when in flower. It may be increased both by layers and budding, or grafting on a common plum stock.

Pyrus.

P. coronaria. This beautiful crab tree is a native of North America; it grows upwards of twenty feet high; in May, when it flowers, a delightful fragrance is emitted, which in the evening perfumes the whole of that part of the garden. It will grow in almost any low situation; and may be propagated by grafting on other crab stocks, or by layers. Deciduous.

P. floribunda. This forms a broad spreading but not very lofty bush, which in spring is thickly covered with blossoms, and in autumn with purple berries. It grows freely in common garden soil and may be propagated by the same means as *coronaria.* Deciduous.

P. spuria. A small deciduous shrub, very hardy and easy of propagation; grafted upon the common stock or crab or pear stocks it grows very freely.

P. angustifolia. This very pretty shrub rarely loses all its leaves; for although not an evergreen, the leaves of the previous year seldom fall until new ones are produced. It resembles in size *P. coronaria,* seldom growing above eight feet high. It is propagated by grafting on the crab stock and by layers.

P. spectabile is a native of China, and should be planted in a warm situation. Any light soil will suit it. Propagation is the same as the other species.

P. grandiflora. This is a handsome shrub, rarely exceeding six feet. It will grow in any soil and situation, and propagated the same as the other species.

Rhododendron.

Rhododendrons are easy of culture, merely requiring to be planted in situations rather shaded and damp, and the soil to be sandy peat, (heath mould,) or peat and loam mixed. They are propagated by layers, by cuttings, by separating the plant at the roots and by seeds.

R. cinnamomeum is a splendid plant, growing to the height of twenty or thirty feet, and spreading wide in proportion. The situation in which it is planted must be well sheltered from cold winds, and have a little morning sun, and there will be little doubt of its thriving.

R. azaleoides and its variety *odoratum* are low bushes, seldom exceeding four feet: they are more hardy than the last, and thrive well on a north border.

R. Caucasicum and its two varieties usually grow from two to three feet high; but rarely exceed two, except in very favorable situations; they are very beautiful, and require only ordinary care to bring them to perfection.

R. campanulatum is rather tender, and should be treated like *cinnamomeum.* It is a native of Nepal, where it grows upon the mountains.

R. cartoni, purpureum, maximum, ponticum, hybridum and *myrtifolium*, are nearly all alike hardy and require the same treatment, both as respects situation and other particulars.

R. nudiflora exima is a hybrid of great beauty, raised by Mr Smith, between the *Azeala nudiflora coccinea* and *Rhododendron arboreum;* it will prove, no doubt, a beautiful addition to the flower border.

R. arboreum venustum. This beautiful little variety grows about eight inches high. It is a hybrid raised by Mr Smith from seeds of *R. Caucasicum*, fertilized by *arboreum.*

R. lapponicum is a beautiful low spreading shrub, scarcely exceeding six inches in height; it has been long known and deservedly cultivated in the gardens, being a great ornament in front of the American border, flowering with the greatest freedom.

Propagation of Rhododendron by layers.—When the plants are in full growth, merely peg down the young shoots, without any inci-

sion, and cover them with about two inches of soil, and by the following spring they will be ready to separate.

Cuttings of half ripened wood planted under a hand glass in September, on a north border, in peat earth, will often strike and make good plants, but layers are preferable.

Separating the plant at the roots. This is merely tearing off or separating with a sharp knife, those branches with roots attached to them, which is the case when many branching stems spring from the same root.

By seed. Sow the seed on a bed of peat soil (heath mould) if there is a considerable quantity, but if only a small portion, sow in a pan or box because of the ease with which the latter can be protected by placing it in a frame. If sown on a bed, shelter the plants while young from heavy rains, &c. by mats or hoops. Transplant, when large enough, into other beds, or into pots, and continue to shift them every two years, till they are large enough to plant into their permanent situations.

Ribes.

"It is well known that of *Ribes*, the genus to which the gooseberry and currant belong, many species, indigenous to both northern and southern America, do, in their native soil, produce excellent fruit, while the same species, when transported to an English climate, seldom bear any, or, when they do, the flavor is either almost insipid, or in no small degree astringent. A few exceptions however occur.

"Among the numerous species introduced within these few years, and chiefly natives of America, few possess greater claims to our attention as ornamental shrubs, than the *R. sanguinea*. This plant in its natural state produces abundance of fruit, but of so musky and unpleasant flavor, that the berries continue to hang on the bushes throughout the winter, even the birds refusing to make them a part of their food. It can hardly be expected to improve materially by culture; certainly never to such a degree as may entitle it to the rank of an edible fruit; but it possesses considerable recommendations of another kind. Whether we consider the delicate tint of its blossoms, which appear in March and April, the elegance of its foliage, the facility with which it is increased and cultivated, or its capability of enduring the severest of our winters without the least protection, it may be regarded as one of the finest and most interesting additions that have been made to our shrubberies for many years."

R. speciosa. This belongs to the gooseberry division of *Ribes*, and

though inferior in beauty to the *R. sanguinea*, it certainly is very handsome. The flowers are a bright crimson, far superior in brilliancy to those of *R. sanguinea;* they are pendant, and resemble in form those of *Fuchsia.* The plant, however, does not make as conspicuous appearance on the border as *sanguinea*, because its flowers are not so numerous, and are partially hid among the leaves. Our plants appear very hardy, are easily cultivated, and may be propagated by cuttings. Any light soil appears to suit them.

R. fragrans. This also is a native of North America. The flowers bear a resemblance to those of *R. aureum* (to which, if not the same plant, it is very nearly related.) They are rather showy, and delightfully fragrant. The plant grows freely in almost any soil, and is readily increased by layers and cuttings.

Syringa.

This genus is remarkably well known. The varieties of *S. vulgaris* are well calculated to plant back in large shrubberies, and the *Persica*, *Chinensis* and *Josikœa*, for small clumps. They are all increased by layers and suckers from the roots.

Spiræa.

S. grandiflora is a native of Kamtschatka, is perfectly hardy, will flourish in any light loam, and is easily propagated by layers and cuttings. *S. trilobata* and *chamædrifolia* also require precisely the same treatment as *grandiflora.*

Symphoria.

S. racemosa. This is a pretty little deciduous shrub, a native of North America. It will thrive if planted under the shade of other trees, in any light soil, and may be easily increased by cuttings planted under a wall in early spring.

Besides such as are mentioned in the above list, we may name white and red cedars, common and Portugal laurels, arborvitæs, hollies, berberries, sweet bays, lauristinas, and roses, both deciduous and evergreen for the borders; also, standard roses and robinias, for the grass lawn, than which, perhaps nothing has a more graceful appearance ; cypress and plane trees to plant near old ruins, and many other plants which are too common to need enumerating here.

ART. IV.—*Northern Exposure to Trees; Tarring Trees injurious.* Communicated by Mr JOSEPH HARRINGTON.

ROXBURY, July 22, 1836.

THOS. G. FESSENDEN, Esq.

Dear Sir — My own garden is an inclined plane, facing, as we may say, to the North West. I have found from observation during five successive years that vegetables on land of a southerly aspect, have been affected by frost, when those of the same kind in my garden, were untouched. If the fact be true, I would ask, what philosophical principle must be summoned to give an explanation.*

I would state a fact, showing, as I suppose the effect of Tar upon fruit trees — my neighbor and I own two adjoining orchards; the canker worms have visited them, without mercy for eight successive years; my neighbor tarred his trees in the usual way, — mine were many of them large, and taking into the account the expense and trouble and chance of injury from the tar itself, I suffered the insidi-

* *By the Editor.* The following remarks originally appeared in the Hampshire Gazette. President Dwight, in his "Travels in New England," &c. says: The common opinion that tender plants and fruit trees ought to be placed in a warm southern exposure to preserve them from frosts is erroneous. He adduces many facts to prove that fruit trees should be planted on northwestern, northern or western declivities, where they may be exposed to the northwestern, northern or western winds. A white frost being merely frozen dew, the next object should be to keep the dew from resting on the plants. This can be effectually done, only by exposing them to the free access of the northwestern winds, the source of almost every white frost. Plants from which the dew is swept away by this wind will escape; while those, which, by being sheltered from its current, retain the dew, will be destroyed. Major White, of South Hadley, had an orchard, on the northwestern declivity of a hill, exposed to the strong winds that blow through the gap of Mount Tom and Mount Holyoke. These winds swept the dew from this orchard so effectually, that its blossoms regularly escaped the injuries of such late frosts in the spring as destroyed those of the surrounding country. The inhabitants of South Hadley styled such a frost *Major White's Harvest,* because, in such years, his cider commanded a very high price. A Mr Lyman informed President Dwight that in his garden, which was exposed to the northwest winds the white frosts had never done any injury to the vegetables.—*See N. E. Farmer, vol. V., page* 348.

Another advantage in a northern exposure is obtained by its keeping vegetation back till late in the spring. If vegetation commences early, subsequent frosts congeal the sap in its pores, and kill the young plant by bursting or tearing its fibres; as a glass or earthen vessel is broken by water's being frozen in it.—*See N. E. Farmer, vol. V., page* 260.

ous invaders to range unmolested. The last season, the worms were few, compared with preceding years, and many trees were permitted to produce as they were wont. My neighbor's trees, abreast of mine, of the same age and kind bore but sparingly, while mine produced in great abundance — the tar must have been the cause.† This matter is, no doubt, well understood, but as it came under my own eye, I pass it to you; it may not be useful to publish.

Yours, truly, JOSEPH HARRINGTON.

(From Chaptal's Chemistry.)

ART. V.—*On the Preservation of the Fruits of the Earth by Drying.*

IN all vegetable products, water exists in two different states, one part of it being found free, and the other in a state of true combination; the first portion, not being confined except by the covering of the vegetable, evaporates at the temperature of the atmosphere; the second is set free only at a temperature sufficiently high to decompose the substances containing it: the first, though foreign to the composition of the vegetable, enters into every part of it, dissolving some of its principles, serving as a vehicle for air and heat, and being converted by cold into ice; by these several properties it greatly facilitates decomposition: the second portion, from which no evil of the kind arises, is found combined and solidified in the plants, and its action is thus neutralized. Drying, then, consists in depriving the

†The following process has been recommended for defending trees against canker-worms — *A strip of linen or canvass* is put round the body of the tree, before the females begin their ascent, and well smeared with tar, &c.—*See American Gardener, art. Insects.* A gentleman informs us that in Plymouth, Mass. they make use of the following mixture as a substitute for tar, in preserving fruit trees against cankerworms, viz: white varnish, soft soap and whale oil, one third of each, to be mixed and applied at the times and manner of the usual application of tar for the same purpose. The advantages of the mixture, we understand, are that it is not so soon hardened by the weather, and of course need not be so often applied, and does not in the least injure the trees to which the application is made.

product to be preserved of the water contained in it in a free state, by heat; and from what has been observed, it follows, that too great a degree of heat must not be applied, as, in consequence, the taste and the organization of the substance would be changed by a commencement of the decomposition of its constituent principles: the temperature should never be higher than from 35° to 45° of the centigrade. (= from 95° to 112° Fahrenheit.)

Drying can be performed either by the heat of the sun or in stove rooms. In the southern climates the heat of the sun is sufficiently powerful to dry the greater part of the fruits, and thus to preserve them unaltered: the drying is effected by exposing them to the rays of the sun upon hurdles or slates, where they will be protected from rain, dust, and injury from animals. Practice alone is sufficient to enable one to judge of the degree, to which each kind of fruit must be dried in order to its preservation.

When the outer skin or rind of the fruit is of a kind to prevent the water from passing off freely, incisions are made in the rind to facilitate its evaporation. In this manner are prepared most of the dried fruits, which form so considerable an article of commerce between the south and north.

Those fruits which contain much sugar, as prunes, figs, musk grapes &c. may be prepared in the above manner, and preserve nearly all their qualities, but the acid fruits acquire a disagreeable sharp taste by the concentration of the juices; some of them, however, may be kept advantageously in this way.

In the hottest countries the process of drying is often commenced by subjecting the fruits to the heat of an oven, after which they are exposed to the sun; some kinds of fruits are thrown into a weak ley, till their surface becomes wrinkled, when they are taken out, carefully washed in cold water, and afterwards dried in the sun: cherries particularly are treated in this manner. When the heat of the sun is not sufficiently great to evaporate all the water contained in the pulp of large, fleshy fruit, they may be cut in pieces and then dried; in this manner apples and pears are prepared for keeping.

But this method is neither speedy nor economical enough for such preparations as have but little value in commerce, and which can never supply, for domestic purposes, the place of those whole fruits, which may be easily preserved from one season to another: it is therefore customary to perform the drying either in stove rooms or ovens. In the first case, the fruits, after being cut, are placed upon

hurdles arranged in rows in a chamber heated to 112°: in the second the fruits are put into an oven, from which bread has just been drawn: this is repeated if the fruits be not sufficiently dried the first time.

Some of the fruits referred to above, may be dried without being cut: of this kind are the tender pears, which cannot be preserved fresh through the winter; such as the rousselet, the butter pear, the doyenné, the messire-jean, the martinsec, &c. These are first peeled and then thrown into boiling water, after which they are put upon hurdles into an oven heated less than is required for bread: after an interval of three or four days the pears are again exposed to the same degree of heat, having been however first flattened between the palms of the hands; whence they have acquired the name of *pressed pears*.

Fruits prepared in either of the above ways are susceptible of fermentation upon being soaked in water, and they thus serve to make a cheap and useful drink.

In those countries where these fruits abound, the drying of them is commenced about the first of August, and those are made use of, which then fall from the trees; in autumn, when the harvest is gathered in, the soundest and finest fruits are carefully selected to be used fresh, whilst the rest are dried and preserved in a place free from moisture, to be employed in making drinks.

The herbage, which serves as food for domestic animals, can be preserved only by drying, and this in all countries is practised at the time of cutting. Fodder, which is imprudently stacked up whilst still damp, ferments, and the heat thus produced is sufficient to change the quality, produce mouldiness, and is sometimes even great enough to set the whole on fire.

There are some fruits, which may, by a few slight precautions, be preserved throughout the year. The first of these precautions is, that of depriving their surface of all moisture before putting them up; and the second consists in keeping them in dry places, where the temperature will constantly be between 50° and 54° Fahrenheit; the third, in separating the fruits, so that they shall not come in contact; I have seen apples preserved in this manner eighteen months. It is necessary to be particular in selecting fruit for preservation; that only should be taken which is perfectly sound.

Wood and other portions of vegetables, and various animal substances are likewise preserved by drying; this process increases their hardness and renders them less accessible to the action of air, insects, and other destructive agents.

The process of drying is not confined to preserving fruits from decomposition: it furnishes the means of securing their juices unaltered for the formation of extracts of them.

When the juices of plants can be extracted by pressure alone, it is only necessary to evaporate these juices at a due degree of heat and in suitable vessels, till, being deprived of all the water which retained them in a liquid state, they are reduced to dryness. Evaporation, if continued for a long time at the temperature of boiling water, changes these juices a little; the albumen, which is contained more or less abundantly in all sweet fruits, is coagulated, and after this they are no longer susceptible of undergoing the vinous fermentation.

The must of grapes, operated upon in this manner, furnishes an extract called *raisiné*, which is an article of food both wholesome and agreeable, and which, when soaked in water, decays without producing alcohol. The fermentive power of this substance may however be restored by mixing with it a little of the yeast of beer, as this repairs the loss, which the juices had sustained by heat during evaporation.

All the juices obtained from sweet fruits may be converted into extracts and thus furnish agreeable food; the quality of the extract varies according to the quantity of sugar contained in the fruit, and the care taken in the operation: when the juices are several times clarified, and evaporation carried on in a water bath, care being taken to stir the liquid to prevent its adhering to the sides, the color and taste of the extract or jelly obtained is far superior to that procured without employing these precautions.

The sweetest fruits, however, even the well ripened grapes of the south, contain a portion of acid, which when concentrated by evaporation, acts upon the copper boilers in which the operation is carried on, so as to form an acetate of copper: this by producing colics, would render the use of the extract dangerous, especially at the south, where the principal article of food for children is the *raisiné*. In order to obviate this serious evil, an ancient and generally followed custom is observed: as soon as the must of the grapes begins to boil in the coppers, a bunch of keys is thrown in, and allowed to remain till the operation is completed: these keys attract the copper and become covered with the precipitate thus formed, and nothing remains in the extract but the acetate of iron, which is not injurious.

I have observed that the juices of all succulent fruits might be converted into extracts, and thus preserved for use in the course of

the year; but the greater part of these juices, when concentrated by evaporation, are so excessively acid as to be totally unfit for food, and they only form, when mixed with water, a very sour drink. In order to correct or conceal this acidity, these juices are boiled with an equal weight of sugar and thus made into sirups and jellies.

As it is of importance to be able to extract and preserve for domestic purposes, for pharmacy, and for the arts, certain vegetable products which can be only very imperfectly obtained by mechanical pressure, recourse is had to other means; those liquids are made use of which will dissolve the wished for principles, and the solution is afterwards evaporatad to dryness.

The fluid most generally employed for solutions is water; this dissolves the extractive matter, mucilage, sugar, and the greater part of the salts, and mixes with the mealy portions of plants; it may be applied cold or hot to the vegetables, or they may be boiled in it, according to the nature of the principle to be extracted; water will dissolve all that is soluble in them, and the extracts may be obtained from the solution by evaporation.

The resins, which are found so abundantly in some vegetables, are not soluble by water, and the place of this liquid must be supplied by alcohol, in which the plant must be digested; evaporation will separate the alcohol from the resin which it holds in solution. In order to avoid the accidents that might occur from the dispersion in the atmosphere of a very inflammable vapor, the evaporation must be so conducted that the dissolvent may be received into an alembic or close vessel.

In addition to the methods of preserving fruits by drying, and by reducing their juices to the state of sirups and jellies by natural or artificial heat, M. de Montgolfin has applied the action of the air pump with great success. I have tasted juices prepared and thickened in this manner, and I thought they were much superior to those that had been evaporated in either of the modes hitherto usually practised. I do not doubt that, when this method becomes better known, it will be generally adopted.

Art. VI.—*Massachusetts Horticultural Society.*

EXHIBITION OF FLOWERS.

Saturday, July 11, 1836.

By E. A. Story, from the establishment of the Messrs. Winship of Brighton :—Achillea montana, Aconitum napellus, Anchusa paniculata, Asclepias vinicetexicum, Astrantia major, Allium moly, Campanula azurea, do. medium, do. medium pleno, lephylanthe new white Clematis, integrifolia, do. alpina, Coreopsis lanceolata, do. semifolia, do. verticillata, Centaurea purpurea, do. atro-purpurea, Delphinium elatum, do. grandiflorum, do. Chinense, do. urceolatum, do. azureum, Epilobium angustifolium, Digitalis purpurea and lutea minor, Lupinus polyphrytus, Ledum ochroleucum, Lychnis chalcedonica, do. pleno, Lysimachia ephemerum, do. verticillata, do. stricta, Lythrum salicaria, Œnothera frazerii, Orobus niger, Phlox carnea, do. Carolina, Rudbeckia laciniata, Sambucus ebulus, Scutellaria galericalata, Spiræa ulmaria, do. lobuta, do. filipendula, do. sorbifolia, do. aruncus, do. trifoliata, Symphytum tuberosum, Thalictrum album, Tradescantia virginica, Verbascum lutea, do. var. purpurea, Veronica spicata, do. lutifolia, do. hybrida, do. teucrium, Pæonias whitleji and fragrans, German tamerisk and six varieties of Pentstemons, &c. &c.

By John A. Kenrick, of Newton. *Roses*,—two kinds of Moss climbing tea scented and several other varieties. Delphinium sinensis, do. elatum, Azalias, two varieties, Spiræa sorbifolia; Rhododendren maximum. *Dahlias*,—Stanhopia, Kalmia latifolia, Queen of Wurtemberg, Pæony fragrans, Humei, &c.

From Messrs Hovey. Seedling pinks, Veronica elegans, Digitalis lutea and purpurea, double white and scarlet Lychnis, Astrantia major, Spiræa ulmaria, Pentstemon diffusum, Gaillardia picta, Campanula trachelium pleno, Delphinium sinensis fl. pleno, Aconitum napellus, &c. &c.

From Col. M. P. Wilder, of Dorchester. A bouquet, containing Pentstemon digitalis, do. diffusus, Pæonia Humei. *Dahlias*,—King of Whites, Crimson Globe, Belladonna, Alstromeria psittacina, Geranium grandissima, do. Sesostris, Hibiscus rosa sinensis, &c. &c. Also, a variety of French Roses.

From J. Lee, Esq. of Brookline. Hardy climbing Tea Rose, Hieracium incarnatum, Calendonia grandiflora, do. speciosa, Gaillardia bicolor, Malva alba, Rhododendron maximum and Magnolia glauca.

Mr William Kenrick, of Newton, and Mr S. Sweetser, of Cambridgeport, each presented bouquets.

From Samuel Walker, of Roxbury. Ranunculuses var. Wirtemberg, Venus, Rubens, &c. &c.

The specimens of the tea scented hardy climbing rose exhibited by Mr Lee, and also by Mr John A. Kenrick, were very beautiful. One of the seedling pinks, by the Messrs Hovey, deserves a name and a place among *pretty things*. Col. Wilder's roses, were, as usual, very fine. Mr E. A. Story's specimens of Delphinium sinensis, Clematis alpina, Spiræa filipendula, Z. lobata did him credit; it would give us pleasure to see these plants more extensively cultivated.

For the Committee,

S. WALKER, *Chairman.*

SATURDAY, July 18.

By Messrs Hovey. Phlox roseum, do. carnea, Campanula trachelum fl. pleno, do. callina, do. Lorrejii, Astrantia major, Asclepias, Spiræa lobata; do. ulmaria; Delphinium sinensis, &c. &c.

By Mr Sweetser, of Cambridgeport. Agapanthus umbellatus, Lychnis chalcedonica, alba fl. pleno, Dahlias, King of the whites, do. William and Adelaide, &c. &c.

Robert Treat Paine, Esq. presented a specimen of one of the bulbs received from Baron von Ludwig; accident having deprived us of our minutes of this plant we are unable to give particulars.

By Mr William Kenrick, of Newton. Pæony fragrans, purple striped Lilies, &c. Purple Beech, &c. &c.

By Col. M. P. Wilder, of Dorchester. Erythrina cristo galli, Dahlias, Erecta, Angelina, Globe.

By Mr E. A. Story, from the Messrs Winship, of Brighton. Betonica grandiflora, Veronica hybrida, Achillea flore pleno, Thalictrum cornuti, Hemerocallis flava, Daturea arborea, Hoya carnosa, Crinum unifloro, Volkameria Japonica, Fuchsia striata, Passiflora alba, Lilium martagon.

By S. Walker, Roxbury. Pinks var. Hawkins' beauty, Seedling carnations, Viola, var. Roxbury belle, do. Village maid, Sednum atratum? Phlox, var. Young's seedling, very fine color and flowers large.

For the Committee,

S. WALKER, *Chairman.*

Art. VII.—*Gardener's Work for August.*

Be very diligent in keeping your crops free from weeds, using the hoe where most convenient, and in other cases let your thumb and fingers be employed. Pull up the haulm of peas, beans, &c. and remove it to your compost bed, bury it between rows of plants, or throw it to swine to be manufactured into manure. Your dunghills and compost heaps should, during the summer months, be kept free from weeds, for if the seeds are permitted to ripen and fall, the dung, when carried into the garden will disseminate weeds innumerable. This month as well as the latter part of July is the proper season for inoculating or budding. M'Mahon says: "Cherries, plums, or any other fruit trees may be budded in August, if the bark parts freely from the stock. Pears ought to be inoculated the early part of the month, or when the sap flows freely; but the peach, nectarine, almond and apple will succeed any time between the first of August and the twentieth of September, provided the stocks are young and vigorous."

Preserve peach, plum, cherry, and apricot stones, &c. to sow for raising stocks to bud and graft on. These may either be sowed immediately, or be kept in common garden earth, or moist sand. But it will be necessary to sow them before the stones open, and the varieties begin to shoot; otherwise, many of them will be broken or torn in sowing. Every day they are kept out of ground is an injury to them; and if they remain in a dry state till spring, very few will vegetate till a year after, and the greater number not at all. Continue to collect and preserve seeds as directed last month.

Cut such herbs as are now in flower, to distil, or to dry for winter's use. Cut them when they are dry, and spread them in a dry, shady place; for if they are dried in the sun, they will shrink, turn black, and prove of little value.

Destroy Wasps.—"Hang up glass phials filled with honey or sugar water, in different parts among the wall, espalier and standard fruit trees, in order to destroy wasps, ants, &c. which would otherwise infest and devour the choice fruits; by the sweetness of the water they are tempted into the phials, and frequently drowned; but these should be hung before the fruit begins to ripen, for then the insects would be much sooner tempted to the water, than after having tasted the fruit; where a sufficient number of glasses are placed in time, and properly attended to, and the water occasionally renewed, very little damage is done by these insects."—*M'Mahon*

Art. VIII.—*Miscellaneous Matters.*

Nettles.—Every body knows that the leaves of stinging nettles are thick set with sharp prickles that penetrate the skin when touched and occasion pain, heat and swelling, which symptoms were imagined formerly to ensue from the prickles being left in the wounds they made. But the microscope discovers something much more wonderful in this common vegetable, and shows that its prickles are formed and act in the same manner as the stings of living animals. Every one of them is found to be a right hollow body, terminating in the most acute point possible, with an opening near its end. At the bottom of this cavity lies a minute vessel or bag, containing a limpid liquor, which, upon the least touching of the prickle is squirted through the little outlet, and if it enters the skin, produces the mischief before mentioned by the pungency of its salts. Hence it comes to pass, that when the leaves of nettles are considerably dried by the heat of the sun, they sting but very little; whereas such as are green and juicy produce pain and inflammation.

American Vine.—The expedition to the Rocky Mountains found on the borders of the Arkansas, near the eastern side of the great desert, hundreds of acres of the same kind of vine *(vitis vinifera)* which produces the wines of Europe. These vines were growing in a wild state and were surrounded with hillocks of sand, rising to within 12 or 18 inches of the end of the branches. They were loaded with the most delicious grapes, and the clusters were so closely arranged as to conceal every part of the stem. These hillocks of sand are produced by the agency of the vines, arresting the sand as it is borne along by the wind.

Lightning Rods.—Professor Fansher of Yale College, says:—"In a dry atmosphere its influence extends to from 30 to 40 feet. In a damp do. from 20 to 25 feet. When it rains profusely, from 15 to 20 feet. From this statement it will be obvious that conductors should always be erected with reference to the most watery state of the atmosphere.

Garlick.—A writer in a Philadelphia paper states that when the *fall fever* raged violently in the neighborhood of a canal then in a state of progress, numbers of the workmen engaged on it eat plenti-

fully of garlick, and wholly escaped, while those who abstained from the use of this article were severely afflicted by the disorder.

The Bee Miller.—The following method of destroying a very pernicious insect has been recommended and is at least worth the trial. To a pint of sweetened water (sweetened with sugar or honey) add half a gill of vinegar; set this in an open vessel on the top of the hive, and at night, when the miller comes to his work of destruction he will prefer this composition and, diving into it, immediately drown.

Improvement in Vegetables.—There is scarcely a vegetable which we at present employ that can be found growing naturally. Buffon states that our wheat is a factitious production, raised to its present condition by the art of Agriculture. Rice, rye, barley, or even oats are not to be found wild, that is to say, growing naturally in any part of the earth, but have been altered by the industry of mankind, from plants not now resembling them even in such a degree as to enable us to recognise the relations. The acid and disagreeable *acid graveolens* has been thus transformed into delicious celery; and the *colewort*, a plant of scanty leaves, not weighing altogether half an ounce, has been improved into cabbage, whose leaves alone weigh many pounds, or into a cauliflower of considerable dimensions, being only the embryo of a few buds, which, in the natural state, would not have weighed many grains. The potato again, whose introduction has added many millions to our population, derives its origin from a small bitter root which grows wild at Chili and at Montevideo. If any of my readers should be sceptical upon the subject of such metamorphoses, let them visit the fairy bowers of horticulture, and they will there perceive that her magic wand has not only converted the tough, coriacaceous covering of the almond into the soft and melting flesh of the peach, but that by her spells, the sour sloe has ripened into the delicious plum, and the austere crab of our woods into the golden pippin; and this, again, has been made to sport in almost endless variety, emulating in beauty of form and color, in exuberance of fertility, and in richness of flavor, the rarer productions of warmer regions and more propitious climes.—*Dr Paris on Diet.*

Preservation of Grapes.—In a cask or barrel, having its crevices well closed, to prevent access of the external air, place a layer of bran, which has been well dried in an oven; upon this place a layer of bunches of grapes well cleaned, and gathered in the afternoon of

a dry day, before they are perfectly ripe; proceed then with alternate layers of bran and grapes till the barrel is full, taking care that the grapes do not touch each other, and to let the last layer be of bran; then close the barrel so that the air may not be able to penetrate.—Grapes thus packed will keep for a twelvemonth. To restore their freshness, cut the end of each bunch, and put that of white grapes into white wine, and that of black grapes into red wine, as flowers are put into water to keep them fresh.

To improve dried Figs.—These fruits, when they are brought to table, are commonly covered with a scurf, composed of a mealy, sugary substance, very disagreeable to the teeth. The way to get rid of the scurf, and render the figs as plump and clear skinned as when they are newly gathered from the tree, is, first to keep them in a cool and rather moist cellar for twentyfour hours before using; and secondly, just before presenting them at table, to put them into a receiver, and exhaust the air. After remaining there two minutes, they should be taken out and gently brushed, when they will be found perfectly plump and clear skinned.

Preserving Strawberries.—Weigh the strawberries after you have picked off the stems. To each pound of fruit allow a pound of loaf sugar which must be powdered. Strew half of the sugar over the strawberries, and let them stand in a cold place two or three hours. Then put them in a preserving kettle over a slow fire, and by degrees strew on the rest of the sugar. Boil them fifteen or twenty minutes, and skim them well.

Put them in wide mouthed bottles, and when cold, seal the corks.

If you wish to do them whole, take them carefully out of the sirup one at a time, while boiling. Spread them to cool on large dishes, not letting the strawberries touch each other, and when cool, return them to the syrup, and boil them a little longer. Repeat this several times.

Keep the bottles in dry sand, in a place that is cool and not damp.

Gooseberries, currants, raspberries, cherries and grapes may be done in the same manner. The stones must be taken from the cherries, which should be morellas, or the largest and best red cherries, — and the seeds should be extracted from the grapes with the sharp point of a penknife. Gooseberries, grapes and cherries require longer boiling than strawberries, raspberries, or currants.

Raspberry Jam.—Allow a pound of sugar to a pound of fruit.—Mash the raspberries and put them with the sugar into your preserving kettle. Boil it slowly for an hour, skimming it well. Tie it up with brandy paper. All jams are made in the same manner.

Preventive against moths.—Calamue, or sweet flag root cut in thin slices and scattered among woollens of any kind will effectually repel the assault of this destructive insect.

Selection of Plums.—To those persons who feel lost in the labyrinth of a modern catalogue of fruits, the following selection of plums, of first rate excellence, for a small gardeu, may not be unacceptable.

Yellow Fruited.	*Green Fruited.*
Washington,	Green Gage,
Coe's Golden drop,	Imperial do.
Drap d'or,	Flushing do.
Yellow Gage,	Luscomb's Nonsuch.

Blue or Purple Fruited.

Reine Claude Violette, or	Purple Gage,
Blue Imperatrice,	Nectarine,
Kirk's,	Red Gage.
Imperial Diadem,	

The Reine Claude Violette, or Purple Gage, is one of the most delicious of plums. The Blue Imperatrice is excellent, and keeps a long time after ripening. Coe's Garden Drop and the Washington are very large and luscious fruit; and the Nectarine and Kirk's plum are very beautiful, of large size, and fine flavored. The Azure Hative may, in addition to the above, be recommended as a very early variety, and the White Magnum Bonum, or egg plant, as being suitable for preserving.—*C. & A. J. Downing.*

Transplanting Evergreens.—The unfading verdure of the resinous trees forms a pleasant relief to the eye amid the desolate fields and snow-crowned hills of winter. These beautiful inmates of the northern forests, are peculiarly intractable to the skill of cultivation. The spruce and the fir, when removed from the cold and bleak solitudes where they best love to fix their roots and send up their tall pyramids of green, to a more genial situation, wither and perish. These beautiful and stately plants are desirable as the ornaments of the garden or the groves of cultivated scenery. The English books recommend that they be removed in the depth of winter with frozen masses of earth around their roots, to holes dug for their reception during the preceding autumn.

THE

HORTICULTURAL REGISTER

AND

GARDENER'S MAGAZINE.

SEPTEMBER 1, 1836.

ART. I. — *On the recent Introduction of the Waterloo Cæsarean Evergreen Cabbage into England as food for Cattle.* Communicated by J. E. TESCHEMACHER.

SIR, — In Loudon's Gardeners' Magazine for October, 1828, I find the follownig short notice.

" *The Cow Cabbage.* — There is a plant of this valuable variety now coming into flower in the garden of a friend near this, from which I hope to obtain a fresh supply of seed in a few months, some of which I shall transmit to you for distribution, and the remainder I shall retain for those who may wish to apply to me for it.

W. HAMILTON.

In the number for February, 1829, is the following communication with an excellent wood cut.

" *Cow Cabbage.* I received a packet of seed of this extraordinary cabbage from a gentleman of Cirencester, who brought it from Jersey, and have sown it. In his garden I have seen fine healthy plants which weathered last winter in the open garden remarkably well, and seem to be equally hardy with their congeners."

It is much cultivated in Jersey, (England) and attains the height of from four feet to ten and twelve feet. The little farmers feed their cows with their leaves, plucking them from the stem as they grow, leaving a bunch or head at the top. The stems are very strong, and are used for roofing small out buildings; and after this purpose is answered they become dry and are used for fuel. When the gathering of the leaves is finished at the end of the year, the terminating bud or head is boiled, and is said to be particularly sweet.

I am particular in giving all the information I can collect on this subject because I had lost sight of it until recalled to my mind by the receipt of the following extraordinary and almost incredible notice amongst my last accounts from London.

Waterloo Evergreen Cæsarean Cow Cabbage.

"This singular and extraordinary species of cabbage, almost unknown in England until introduced by the persevering efforts of Mr Fullard, three years since, grows to the height of twelve feet, and from fifteen to twenty feet in circumference.

"Five of these stupendous cabbages now raised to the greatest perfection both of quality as well as size, have been found by proper management an ample allowance of food for *one hundred* sheep, or ten cows per day."

The nutrition supplied by this delicious vegetable, will speedily produce the most surprising improvement in the growth and utility of every description of cattle.

It is stated as an evidence of the beneficial tendency of feeding sheep on this cabbage, that they have been found to produce wool of a finest silken texture *twentyfive* inches long, a circumstance which, if generally realized, cannot fail to attract the utmost attention.

The celebrated agriculturist, Mr Coke of Holkam, England, is said to have pronounced the highest encomiums on this cabbage.

Mr Fullard, or his agent's advertisement of this new article, savors a little of puffery, unless, as he affirms, it is strictly the truth — and then, indeed, language can hardly say enough on its importance. The agent for the sale of the seed, the price of which is twenty shillings sterling (about $5) for a packet containing twenty seeds, is Mr Brown, No. 46 Cheapside, London, who says that in order to obviate scepticism, and to afford the highest satisfaction and confidence as to the perfect rectitude of this statement, agriculturists, graziers, and all who feel an interest in this species of produce, are requested to apply to him as above, where he will exhibit specimens of the cabbage and also of the wool taken from the sheep fed with it. The packets of course contain the requisite directions for its successful cultivation, and the seed is stated *never* to fail. The names of the King, the Duke of Wellington, and a host of others are given as having purchased the seed to make the experiment.

In the climate of England it seems to be a perfectly hardy evergreen, that is, to retain its leaves during the winter. If such should be the

case here, it would be an invaluable winter food for cattle, as its height of nine to twelve feet would keep it above the snow, and render it approachable — of this, however, I fear we can hardly flatter ourselves.

With the same notice is another as follows, which I give as I received, being very desirous that everything new, particularly when useful, should be introduced here without delay.

"Mr Fullard has also supplied Mr Brown, No. 46 Cheapside, with a portion of the original and most perfect quality of the *Zealand Melon Golden Swede Turnip seed.*

"This species of turnip, as attainable by Mr Fullard's seed only, will be found the most delicious and useful of any ever introduced into the country. This, produced in such great perfection, is yet comparatively little known in England, but its value over all others is immense, and the proprietor of this seed can, therefore, with pleasure and confidence guarantee to every farmer and grazier the utmost satisfaction with a single trial.

"Seed wheat and oats truly singular and extraordinary in their nature and utility, of Mr Fullard's cultivation, may also be purchased as above."

I wish to be clearly understood that I have nothing whatever to do with any of the parties concerned in the sale of this produce, that I give the information as I received it; but that I should not have sent it to you for publication if I did not myself think that credit might be attached to the statement.

Remarks by the Conductor. We have heretofore published in the New England Farmer, notices of this Cow Cabbage, which seems revived and coming forward under new auspices. In the N. E. Farmer, vol. viii. page 326, are published the articles given above from Loudon's Magazine for October, 1828, and for February, 1829, together with a cut representing the gigantic vegetable in full growth. In page 342 of the some volume of the N. E. Farmer, is a communication from Dr Thacher of Plymouth, Mass., a gentleman whose zeal, industry, and talents have given him a high standing in the scientific world. In this article Dr Thacher mentions having received a parcel of the seeds of the Cow Cabbage, recently imported from France, from Dr James Mease, of Philadelphia. Dr Thacher observed that "the plants in this town (Plymouth), the last summer, [1829] from the seeds sent by Dr Mease, discovered a very rapid

growth, and attained the height of from four to five feet before checked by the frost. Little care was taken of them, and all that were exposed without defence were killed by the winter frost, though they yielded not till near the close of winter. Fortunately one of my neighbors, from a curiosity to ascertain their worth, took up his plants in autumn and put them into his cellar. They flourished well, and he cut the leaves and young sprouts several times in the winter, and found them excellent for table greens. Vegetation in the plants was not checked while in the cellar, and in April he transplanted them into his garden, where they have flourished luxuriantly, throwing out new sprouts in great abundance, which he cut several times. *One of the plants is now six feet high*, and its sprouts to the very summit, are covered with yellow blossoms from which a large quantity of seed will be produced. This plant appears to be endowed with surprising prolific powers, and from the experiment just related, our farmers have ample encouragement to cultivate this article," &c. All this is well, but in an article published in N. E. Farmer, vol. xiii. p. 14, dated July 18th, 1834, Dr Thacher stated as follows. "It is not a very pleasant duty to comply with your request in the last Farmer respecting the Cow Cabbage concern. I have merely to say that the plant has proved to be a worthless article. I distributed a very considerable quantity of the seed produced the first year, and I believe in every instance in New England it degenerated to such a degree as to disappoint expectation, and its cultivation was relinquished. But the letter which I published on the subject gained for me quite a flattering *notoriety*. It was noticed in various parts of the United States, and I soon found myself involved in an extensive correspondence which I believe however was productive of little profit to either party. Some of the letters came post paid, others not. When I sent seed to the western and southern states, I requested to be informed of the result of the trials in those climates, but they disappointed me in every instance. The last letter which I received came to me at twentyfive cents postage, the writer stated that he had seated himself on a new plantation, and having heard much in favor of Cow Cabbage for winter fodder, he would be glad if the Doctor would send him some seed for trial, but it might be sent part of the distance by water and he would pay the expense. Upon the whole, Mr Editor, the Cow Cabbage concern has been one of my poorest speculations."

It is possible, however, that the correct cultivation of the Cow

Cabbage may not be understood in this country, and methods may be adopted, which may cause it to realize expectations. With that hope, we should be glad to hear further from Mr Teschemacher, or any other person who is acquainted with the habits and culture of this plant, and believes that it may be rendered useful in our soil and climate.

ART. II.—*Sketch of a Botanical Excursion by Robert Dwight, Esq. in the neighborhood of Courtallam, and in the adjacent mountains.* Communicated in a letter to Dr Greville from Sir W. Jackson.

COURTALLAM, or Kootallum, as it is usually pronounced, is a very inconsiderblae village, situated in N. lat. 9°, and E. lon. 77°, 26′, near the foot of the range of mountains which traverses the peninsula of India, from north to south. At this part the range seems to retire towards the west, forming, as it were, a small recess surrounded on three sides by hills, which near Courtallam undergo a considerable diminution in their height, and are besides divided by a deep but narrow pass, leading directly across to the Malabar coast. Owing to this break, and diminution in height, part of the western monsoon passes over in the form of thick clouds, frequent showers of rain, and very strong westerly winds. The united influence of these causes reduces the temperature of this spot from 10 to 15 degrees below that of the surrounding country. This of itself would be sufficient to attract visitors during the hot months of June, July, and August; but there are other inducements of a not less enticing description. There, all is green and lively, when the plain below is burnt up, and scarcely a blade of grass to be seen; the scenery is rich and varied, and enlivened by a series of beautiful cascades, the fall of the lowest of which, though two hundred feet in height, is so broken in the descent as to be a favorite bathing place, where the visitors enjoy a shower bath on the most magnificent scale. The surrounding scenery is, I think, the richest I have anywhere seen in India. You are aware that I am no painter; you must not therefore be disappointed if I fail in presenting to your mind's eye such a landscape as now offers itself to mine. I shall, however, with the aid of

geology, make the attempt. The hills are all trap, presenting the characteristic features of that class of rocks, such as sharp broken ridges, high peaks, and nearly perpendicular sides, traversed by deep ravines and chasms, down which the mountain streams tumble with noisy impetuosity. The shelving and less steep flanks of these hills are covered with a loose red and very fertile soil, formed partly of decayed vegetable matter. These shelves and slopes are densely clothed with a vegetation highly varied, and of truly tropical luxuriance, the whole presenting to the view a mixture of delicate verdure, dark forests, and black, almost perpendicular naked cliffs, forming together a rare combination of beauty and grandeur. The narrow glen, along which the principal stream pursues its rapid course, looks almost as if excavated from the solid rocks, as its sides at some places are close to the water's edge and nearly perpendicular ; at others, however, they open into small amphitheatres covered with deep and very fertile soil. On these favored spots are cultivated some of the most esteemed vegetable products of the East, such as Cinnamon, Nutmegs, Coffee, &c. ; the two last are of excellent quality and in considerable quantity. The woods on either side which shelter these gardens are generally composed of fine large trees, mixed with smaller ones, bound together by a profusion of twining shrubs. Under the shade grow a variety of Satamineæ, among which Cardamons, Arrow Root, Ginger and Tumeric may be mentioned, several species of Pepper, and three or four of Peperomia ; some curious Urticeous a species of Dorstenia, four or five Bignonias, that very curious plant Bragantia (or Trimereza), many Orchideæ, Asphodeleæ, Aroideæ, and of Ferns in great profusion. Among the trees I found several Annonaceæ, a large arboreous Phoberos, several arborescent Leguminosæ, a number of Rubiaceæ, one of the most interesting of which I considered the Morinda umbellata, climbing as it does to the tops of the highest trees. Two species of Myriotica (nutmeg) I was enabled to distinguish by the mace only, the trees being so large that I could not obtain specimens. Menispermaceæ abound. Here I saw for the first time, Cocculus macrocarpus, a powerful twiner. The stems and larger branches are at this season covered with loads of fruit, hanging in large clusters, vieing in size with grapes, and most enticing to look at, being covered with a fine white bloom. I also found what appears to me a new species of Clypea, the male plant only ; the flowers are collected into flat dense heads, somewhat resembling a Dorstenia, hence the temporary name I have given it,

until the discovery of the female flowers shall determine whether it is new or not. I have no room to say more concerning the inexhaustible treasures of this matchless glen, for if I do, I fear there will be little space left for an account of the excursion to Botany Peak, the main object of my letter, and were I to fill three other sheets in expatiating on its Flora, I should still fall short in adequately portraying its merits as a botanical garden, for such I consider its most appropriate designation. The hill occupying the southeast point of the recess of Courtallum is the loftiest of this part of the range, the highest peak of which my companions humorously designated, in honor of the collections of the day, Botany Peak. It is distant about three miles from the houses of the Europeans. About 6 A. M. we left home, and rode to the foot of it; at 7 we commenced the ascent, carrying a barometer, provisions for the day, two large botanical boxes and sundry quires of paper. The Europeans, three in number, were armed with double barrelled fowling-pieces, loaded with ball in case of accidents, as it was rumored that there was an elephant in the way. This we did not believe, but we were afterwards convinced of the truth of this report by seeing his foot marks, though not the animal himself. About 9 we arrived on the bank of a small stream, half way up, and this being the only one we had to cross in the ascent, we stopped and breakfasted. There I found several plants new to me, and saw growing, for the first time, the Rhus decipiens. It is a tall handsome tree: one I measured was nearly forty feet long; it had been blown down, but not so as to stop its growth, and was not at this time in flower. The Plantain was also growing wild, along with a species of Maranta, (arrow root.) I likewise found a Labiate plant, apparently of the genus Lamium. A few other plants were found at this place, and added to the considerable number gathered in the previous ascent. Having refreshed and rested ourselves, we pushed on with all possible speed, to leave ourselves more time to accomplish the steeper and more difficult part of the ascent which was still before us. For nearly a quarter of a mile from the stream we passed over a piece of cleared land, where some of the common Cerealia are cultivated and which at this time was covered with Paspalum frumentaceum, among which I found two species of Torenia, T. asiatica, and another very handsome, large flowered species; also a magnificent Lobelia, apparently intermediate between L. nicotianafolia, and L. excelsa, but not in a good state for preservation. On leaving this green spot we entered a deep and dark wood, forming a

belt of uncertain length, but nearly a mile in breadth, composed of a great variety of stately trees, mixed with many smaller ones and under shrubs of every description. Among the herbaceous plants growing under the shade, is the Cardamon and several other species of Scitameneæ, a great variety of Arums, some of them very handsome, two or three species of Didymocarpeæ, and many highly curious Orchideæ, one of which grows like a moss on the moist rocks, a shrubby Chloranthus in great abundance, and several Ferns. The trees I am not so well prepared to specify, as they were difficult to get at, and required more time than could be spared; but I obtained specimens of one or two Annonaceæ, and a variety of shrubby as well as herbaceous Rubraceæ. I picked up one or two of the fruit of a very large Nutmeg tree, much resembling (in fruit) the aromatic nutmegs, both in size and in the kind of mace which covers the fruit. To have got specimens of the tree, we must have cut it down, which would have been a week's work.

I protracted my stay in this forest to the utmost, both in ascending and descending, and then left it with regret, wishing that I could have devoted a month to the examination of the plants growing on this spot, and satisfied that I should still have left much for future investigators. On quitting the forest the hill became very steep and so thickly covered with bamboos, that we had the greatest difficulty in making our way through them, though much more pliable and innocuous than those of the plain. About 12 we reached the first halting place, familiarly known by the name of Hatfield's Peak, from a gentleman of that name who had formerly visited it. Here we rested, set up the barometer which indicated a height of about 3600 feet above the sea, and made some rough trigonometrical experiments to determine the heights of neighboring peaks. In the mean time I oocupied myself in examining the Flora, and was so fortunate as to add a few good plants to my collections, among the most interesting of which was one agreeing in habit with Crassula, but differing in flower; a Euphorbiaceous shrub, apparently a new genus; a most beautiful Phillyrea, but not in fruit; and an Acacia, certainly new to me, but neither in flower nor fruit. At this height we met with many young plants of Caryota urens, but none of considerable size, which surprised me. Here the Bentinckia abounds, setting at defiance the almost hurricane blasts that sweep the hills at this season, rising above all the plants by which it is surrounded, and producing and ripening its panicles of shining black, desirable looking, but most austere

berries, in as great profusion as in the most sheltered valley. The Euphorbiaceous plant is characterized by a large five-parted calyx, five minute petals, attached to the inner edge of a large cup-shaped torus. Male flowers; stamens five, the filaments embracing a sterile three-cleft style. Female flowers; stamens none, styles three, the stigmas two-cleft, ovary closely embraced at the base by the torus, three-celled, with two pendulous ovules in each, without the interposition of a carunculus as in Savia. It is a small shrub with alternate leaves and flowers on a rather long thick peduncle, like those of Erythroxylon. Should an examination of the fruit prove this to be a new genus, I propose calling it Macrochnia, on account of its peculiar torus.

On the most exposed part of the narrow ridge leading to Hatfield's Park, we came on the lave of a wild hog. It resembled a hay stack in miniature, made up of tufts of grass heaped one above another, and apparently brought from some distance, as there was no marks of the grass being dug round the place. These tufts were so nicely adjusted as to bid defiance to the wind which for months at this season, blew almost a hurricane at this place. It was not, however, proof against the ruthless hands of man, for it was speedily broken into in search of pigs; but none were found.

Leaving two of my collectors under the shelter of some bushes, to transfer the plants collected from the boxes to paper, we pushed on to our final destination, the highest point of the mountain, which we reached a little after one o'clock, and ascertained the elevation by barometrical measurement to be four thousand three hundred and fifty feet above the level of the sea. This was by far the most difficult part of the ascent, on account of its steepness, the broken character of the ground, and the closeness of the bamboos. We found ourselves enveloped in clouds and mist, though there was a bright sun shining below. The thermometer fell from 75 degrees, the usual height on the plain, to 60; the barometer to 25,800. The few trees that are scattered about here, are stunted in their growth, and enveloped in a thick coat of lichens. Had time permitted, and locomotion been easier, I should have tried to ascertain what they were; but the bamboos were so thick that we were obliged to cut our way and clear a spot in order to set up the barometer. The bamboos had undergone a similar change to the trees, for in place of fine tall tapering plants, not unlike clumsy fishing rods, they had acquired the appearance and name of reeds. A species of Oxalis is very abundant

among them, but whether an alpine variety of O. sensitiva or a distinct species remains yet to be determined. It differs greatly in habit in having a long branched stem, each branch being terminated by a tuft of leaves and flowers, like those of O. sensitiva, but it is less sensitive, which may be owing to the lower temperature of its place of growth. The bamboo among which it grows is peculiar, and so far as I have been able to discover a nondescript species, which, however, I cannot adequately describe, for want of the parts of fructification. It is a tall, straight, nearly branchless, reed-like plant, attaining in sheltered situations, a height of between twenty and thirty feet, with a slender, smooth, hollow stem, very firm and ligneous below; the leaves lanceolate, sheathing, confined to the extremities of the shoots, and furnished with a short but distinct petiole; in size these leaves greatly exceed those of all the other bamboos I have seen in this country, the larger ones being from eight to ten inches long and from two to three broad, tapering at both ends. Altogether they are so like those used by the Chinese in packing tea, except in being less coriaceous, that I am inclined to consider our plant, if not essential, a very nearly allied species, perhaps variety, the difference depending on situation.

Having at length accomplished the main object of our journey, we commenced the descent; the first part of which was performed as rapidly as the close growth of the bamboo, or reeds, as they are usually called, and the broken nature of the ground would permit. Although much Botanizing was out of the question, I got a few plants which I had overlooked in the ascent; but on re-entering the forest I took the liberty of dropping behind my companions, who were not botanists, and enjoyed such an hour's herborizing as rarely falls to the lot of even the most enthusiastic individuals; to the dismay, however, of my friends, who at length fancying that I had lost my way, or been attacked by wild beasts, or a score of other things equally near the truth, set up such a shouting as to leave me no alternative but to rejoin them, which I did with great regret; I had, however, again filled my boxes and formed a large parcel besides. I could not but lament my inability to spend several days in that noble forest, not at one season, but at every season in the year, if the climate would permit it. To go there for one day only is extremely tantalizing, as one is lost and perplexed by the endless variety of forms at once presented to the eye. From the time of our leaving the wood the descent was so very rapid, that we had all remounted

our horses before five o'clock, and in a little more than half an hour we were enjoying ourselves in a shower bath. I must now endeavor to give you some idea of the richness of the Flora of these hills, deduced from the observations of this excursion only, as it would take too much time to go over my herbarium to arrive at a more satisfactory result. My visit to Courtallam was a professional one, and extended to eight days only, those of my arrival and departure included. In that time I made five excursions, none exceeding one fourth of the distance of that which I have above described, and returned to Palamcottah with species belonging to about eighty Natural Orders, exclusive of about fifty species still undetermined, and of a great number of plants lost in the drying from having run short of paper. The number of species of which I have actually specimens, considerably exceeds three hundred; I cannot say how many were lost. Besides these, no specimens were gathered of a large proportion of high trees, which we had time neither to cut down nor climb; but several of them were ascertained from the fallen fruit to be new. The more common plants, of which I had already specimens, or could easily obtain at any other time, were altogether rejected, making a total of probably not fewer than five hundred species seen in flower or fruit in the short space of five days, and at a rather unfavorable season of the year. These numbers afford data, from which I think we may safely infer, that a very small portion of these hills, say twenty miles square, possesses a Flora of probably little short of fifteen hundred species of vascular plants, including Ferns in the wider sense of the term; and if the field be extended to the higher hills to the north and south-west, I have no doubt that five hundred more may be added. I say five hundred, for the hills alluded to rise more than fifteen hundred feet above the one we ascended; a height at which an almost new Flora presents itself. If there is any truth in this calculation, it follows that on this mere speck of ground, there is a Flora exceeding the phænogamous Flora of the whole British Islands, and nearly equalling in amount the number of species described in Roxburgh's Flora Indica. Surely if ever a country deserved the scrutinizing search of an able and diligent Botanist, it is this; so satisfied am I on this point, that I have now three native collectors employed here. It is true I do not expect much from their exertions, as natives are always timid explorers of the jungle, unless led by a European, when they will cheerfully follow; but as the field in itself is one of the richest I know, I send

them to it, as one from which I have the best chance of procuring valuable additions to my already extensive collections, and one which my other occupations do not permit me to investigate by my own exertions. As this letter greatly exceeds its anticipated limits, I must conclude with the hope that my unfavorable expectations respecting the success of my collectors, may not be realized.

SEPT. 4, 1835.

P. S. There being no ships about to sail when I finished the preceding communication, I kept it open in case anything additional should occur to be added. And it so happened that my services being required a second time at Courtallam, I availed myself of the opportunity to make several excursions, by which I have nearly doubled my collections, and added a great many new plants. Among them may be mentioned several Annonaceæ, five or six handsome Balsams, one so very curious and distinct that I propose to constitute it a new genus, under some such name as Koryanthus, in allusion to the helmet formed by the two upper sepals. Two or three very remarkable Melastomaceæ will form, I believe, a novel and very distinct genus. I have also a very fine new Ceropegia; two undescribed species of Didymocarpeæ, one of them, I think, constituting a distinct genus, allied to the Wulfenia of Wallech's *Tent. Fl. Nepal.;* a great variety of Orchideæ; a number of Aroideæ, among which is an enormous Pothos, and two or three genera quite new to me. Of the Bamboos, I found flowering specimens, but not in a good state, and several Carices which I have not seen before; and lastly, a very curious species of Phallus decorated with a wide loosely pendulous net hanging from the inside of the hood, reaching to the ground and covering the stem like a veil, (P. Dæmonum) *Hook. Bot. of Beech. Voy. vol.* 1, *p.* 78, 120. The result of this second excursion more than confirms my previous calculation of the riches of these hills, in distinct vegetable forms.

I am now disposed to think that two thousand species may be found within the limits assigned above to fifteen hundred. I have come to this conclusion from having extended my excursion on one occasion to a more distant part of the hills, and found many more new plants than on any former day. Hitherto I had explored only the northern slopes; but on this last occasion I examined the southern side, and certainly paid for my temerity by having to stay in the jungle all night, having gone too far and lost my way in returning home. I

was, however, well repaid for my privations by an unusually large harvest of good things. The hills here are not like those of Clova, for you can rarely see a hundred yards before you, on account of jungle. I have re-examined the Macroclinia and suspect that it is too closely allied to Savia to be separated; differing only in having the filaments united into a tube the whole length of the styles, and in the want of the fleshy mass to which in Savia the ovules are attached.

Art. III.—*On the Discrimination of Soils.*

There is no subject which can occupy the attention of the gardener which ought to be considered of greater importance than the due discrimination of soils; and yet there are few that have been treated of so vaguely. The press teems with periodicals, and we have regular and accredited works upon horticultural subjects; nevertheless, let us read what we may, we find little else than indeterminate terms and general directions. The consequence is, that if a regular and practised gardener, or an amateur, attempt to cultivate a plant with which he is wholly unacquainted, he but too frequently finds himself disappointed in the results which he has anticipated. He reads of loams, peat, bog earth, sand, manures, &c. and he follows the directions that are given, but his plants sicken, the leaves, perhaps, turn yellow, and he can obtain no blossoms. He consults the Encyclopedias and scientific catalogues, and compares the recorded periods of bloom, the size of the plants, and their general habit and character, with the specimen before him, and perceives nothing in common that can raise his hopes. He makes some alteration, chiefly in the temperature of his climate, the volume of air admitted, and the quantity of water, but his plants do not thrive, and vexation succeeds his pleasurable anticipations; and how pleasurable these are, none can tell but those who are gifted with an ardent love of plants, and feel, too sensibly, that "hope deferred maketh the heart sick."

The cultivator in the immediate vicinity of the metropolis knows, or did know, what the nursery terms loam and bog earth imply. We, among others, are perfectly aware that by the former term was not

meant the soil of a garden or field, but that peculiar pale, yellowish, or amber-colored soil, which nurserymen purchase at sufficiently high terms, about the neighborhood of Hampstead, — a soil which would suit nearly every species and variety of stove or greenhouse exotics, either alone or blended with certain proportions of "bog earth."

Now this loam, as far as our recollection serves us, was soft or unctuous in texture, not gritty, capable of some adhesion of particles, yet so light, that if a portion in a medium moist condition was pressed in the hand, it would become a mass; yet if suffered to fall from the height of two or three feet upon a hard surface, would crumble and fall apart. There are few gardeners, remote from London, who can obtain such a choice material; and if indeed, any person possess what he believes to be a light rich loam, he may be disappointed in its application. It is in inquiries concerning the nature of soils, that chemistry can afford an efficient aid; and, therefore, we would recommend every gardener to cultivate it to an extent that may enable him to analyse his loam so far as to be able to determine its chief constituents. To do this, he will require a bottle of good muriatic acid, (spirit of salt as it used to be called); another of sulphuric acid, which ought to be diluted with three times its weight in rain water; and a third of solution of potassa; that is, a liquor produced by dissolving one ounce of salt of tartar in two or three ounces of rain water. Two drachms, by weight, of any soil, dried on the stock or hob of a sitting room grate, and powdered in a mortar, may be tested by adding two drachms of muriatic acid, mixed with an equal quantity of pure water. If any sensible effervescence, or hissing arise, the earth contains chalk or limestone; and, after standing together four or five hours, the liquor may be strained through blotting paper, washed till sweet, and then dried in the same heat of the grate. The loss of weight will prove the quantity of chalk naturally existing in the soil. In 120 grains, from five to ten grains may be found; and to that extent it will prove useful, as it tends to add firmness of texture and moderate adhesiveness. Beyond ten grains in 120, it might not be applicable to many greenhouse and stove exotics.

After the abstraction of the chalk, and of the remaining acid, by the frequent washing with soft water, the soil must be again dried and weighed, and four times its weight of the diluted sulphuric acid added. The whole must then be boiled in a glass vessel for one hour. The boiling can frequently be effected in a short phial of thin glass, or a Florence flask, placed upon the cheek of a common fire-grate,

first at a distance from the fire. A small piece of paper should be put under the phial; and, as the liquor becomes hot, the vessel may be safely made to approach the fire till the heat is found sufficient to create ebullitions. When that is perceived, the boiling should be maintained for one complete hour.

The sulphuric acid will take up iron from the soil, and also the alumen, or pure clay which it may contain. The iron would be abstracted without heat; but the aid of boiling is required to effect the solution of the alumen.

When the liquid has become cold, the contents of the phial are to be poured upon a paper filter, previously weighed, and every grain remaining in the vessel must be carefully washed out by repeated rinsings of pure water, all the washings being poured into the filter. More water is to be added till the drainings come away free from acid taste, after which, the filter and its contents are to be dried, first by absorption on a piece of chalk, and finally on the grate or other hot surface, till they become completely dry. Being then weighed, and the weight of the paper substracted, the net product will be the amount of iron and alumen.

A good loam will lose, perhaps, ten grains out of the one hundred and ten, which we will suppose to have been the weight of the soil submitted to the test of sulphuric acid; and of these, four will be iron, and the remaining six alumen or pure clay. The substance upon the filter may weigh from ninety-four to one hundred grains, or nearly so; it will consist chiefly of siliceous or flinty earth.

The proportions adduced approximate to the results of actual experiments; and we know that the loam so tested was most admirable. Some latitude must be permitted, and some soils may contain some few grains more or less, of iron, chalk, and clay. But as a general rule in analysis it may be stated, first, that in one hundred and twenty grains of a rich light loam, from ninety to one hundred ought to consist of flinty insoluble earth; second, that the soluble portion ought to contain from six to ten grains of clay, and perhaps nearly as much chalk and iron. The later ingredient varies much in soils of different color. Those of the gryaish brown, or umber tint, appear to be the best, the iron being in that peculiar state of chemical oxidation which is most propitious to the health of plants. If a loam be very deficient in chalk, or the matter of pure clay, — as the well conducted experiments of analysis will demonstrate, — the chemical horticulturist can amend it. Caution and precision, both of which will be attainded by practice, will be of course required; but if a soil

be found so deficient in clay that one hundred and twenty grains contain but two grains, discoverable by the test of sulphuric acid, it will be very easy to add three, four, or five grains of clay, dried and reduced to fine powder; or of pipe clay two, three, or four grains; the same may be said of chalk. If, on the contrary, a soil be found to consist chiefly of coarse gravelly sand, it will not be difficult to separate a portion of that predominant quality by washing off some of the soil, and adding those fine separable matters to the bulk. Thus one third of a barrow of harsh soil should be washed in two or three waters; the matters that float, or rather that are not deposited within the period of a second or two of time in water being poured over the remaining two thirds, and the whole intermixed as the water of lixiciation dries off. Thus the heavy sharp sand of one third would be abstracted, and the mass become proportionably ameliorated. A young active chemist, alive to the charms of horticulture, could effect wonders with his soils. We, of course, speak of those intended for pot culture, wherein a barrow, with the aid of vegetable soils, &c. goes a great way.

The quantity of vegetable matter which exists in any soil may be pretty accurately determined by burning; that is, by keeping a known weight of it at a red heat, till it retain no blackness upon becoming cold. Vegetable matter is essential to the fertility of the soil; and, therefore, if a loam which is found to contain the staple earths above mentioned in fair proportion, and is of a free working texture, be very deficient in decomposable matter, it must be enriched by leaf mould, decayed vegetable mould, or completely reduced manure.

The best substitute for a perfect natural loam, is the reduced grass turf of a meadow or common. Vegetable matters, it is probable, are resolvable by decay in earth very similar in quality to that upon which they grow; and when short grass turf is cut into thin layers, it will in a short time become a fine mould. The turf, not thicker at first than an inch and a half, should be piled in a heap, the grass face downward, and be kept so two or three months. They should then be chopped to pieces, turned, and thoroughly incorporated; and these processes are to be repeated, at intervals, till the whole become a mass, replete with tender vegetable fibres. Such a soil, at the end of a year, will form a valuable substitute for good native loam, and be available for every purpose of the gardener. A stock ought to be prepared every year.

We will now dismiss the subject of loam, hoping that a certain degree of experience will teach the horticulturist the real value of chemistry. He, by the aid of a few books, and a little patient assiduity, will acquire a tact; and his pleasure be much enhanced by the confidence his mind will acquire. None but the ignorant scoff at knowledge; the enlightened mind feels indeed, and is sensible of its own imperfections; but it possesses that which no one can have any conception of but he who has it.

Sand is another substance of the components and qualities of which most are entirely ignorant; as, however, the cultivator of exotics in pots requires only a few sorts of sand to enable him to strike cuttings and to give openness of texture to his soils and composts, we shall mention but two species; *the first* is that fine, pure, siliceous substance termed *silver, or writing sand;* some of this ought always to be at hand; and where pit sand only can be obtained, we recommend that it be washed repeatedly till it cease to yield any considerable quantity of light earthy matter to water. That clear heavy substance which precipitates in a second or two, leaving the water void of color, is sharp enough for the purposes of striking cuttings, and blending with loam and vegetable earth.

The *second sort* of useful sand, is the drift of a road, that has been carried down by rain; this is next in value to river sand, and may be procured readily where that is wholly unobtainable.

In some districts these coarse sands are compound in their nature; they may contain lime, alumen, and iron, but in a state of chemical union which renders them nearly insoluble. In gravelly districts, road and river sand are the reduced, washed fragments of abraded gravel stones; they consist chiefly of flint colored with iron. In countries where limestone abounds, the grit contains that substance, and will effervesce with acids.

Both these sands are of great utility, because they give lightness and freedom to the loamy composts that are used in the culture of plants in pots.

Heath Soil. This substance is of primary importance; it is the earth which is found at the surface of commons or wastes, where heath grows naturally. It is the peculiar soil of these plants to which the distinctive title "American" is applied. Thirty years ago the nurserymen in the neighborhood of London called it by the name of *bog-earth*, and this title, though erroneous, was at least definite and understood; of late years, however, it has been fashionable to adopt

the term peat and peat-earth; they are not only indefinite, but utterly vague and inappropriate. Peat, strictly speaking, is the black decayed vegetable matter dug out of bogs or tubaries; it is to most plants inert and useless; but to a few it affords an aliment of great power; we may mention as examples *Thunbergia* and *Amaryllides;* not however, to dwell upon a subject which is now irrelevant, we shall only observe that, by the term *peat,* writers of the day mean to express heath-soil, the bog-earth of the last century; hence we read of sandy peat, turfy peat, black peat, &c. All these terms are applicable only to heath-mould, and they express the varying texture of that material, which certainly admits of much variation in the proportions of its ingredients. The sandy heath soil of Bagshot is of a greyish black tint, it contains a very great proportion of pure white sand, with perhaps scarcely one tenth part of black, decayed vegetable matter. The best heath soil contains much fibrous matter, and is either black or of a brownish hue, which depends upon the peculiar nature of the vegetable matter. All these soils abound with pure white sand, hence the peculiar applicability to plants whose roots are very fibrous, tender and delicate. Heath mould and loam in different proportions are the staple soils of the gardener, and with them he can effect almost every species of culture.

Peat, pure peat, or the earth of turf bogs, contains very little sand; it is a heavy, dead soil, forming, when burnt, a rich manure for cold inert land; but in most instances it is adverse to the gardener.

We earnestly advise our horticultural readers to desist from the use of the term *peat,* unless they really mean to express the substance dug out of bogs and peat-mosses, and whenever this may be the case, to style it *pure peat.*

When the soil of heaths is understood, we recommend the invariable adoption of the term *heath mould,* and to qualify it by adding the descriptive words sandy, turfy, or the like, as occasion may dictate.

We shall close our remarks by referring to another vague and unsatisfactory title which is given to an earth of a still more compound nature than any we have hitherto noticed. In descriptive catalogues and horticultural periodicals, we continually meet with the word *rich mould.* Now, we ask, what can any one understand by the terms, for nothing can be more general and indiscriminate. Good garden soil is a rich mould, so is a compost of loam and vegetable or animal manures. We cannot detect the exact meaning of

the writers; but that we may in some degree give to mere empty sound "a local habitation and name," we shall venture to describe a soil or compost, which, in our opinion, may merit the name of *rich mould*, and be found suitable to the purpose of the gardener in pot culture. Let one part (say a handful) of pure maiden loam, or the earth of decayed couch, harrowed from a loamy field, be thoroughly blended with equal quantities of the soil from decayed leaves of two years old, and perfectly reduced horse or sheep dung; let these be turned three or four times during the winter months, and they will form a uniform homogeneous mass; the practised gardener will readily render this compost more or less light by the additions of a little more loam, or of pure silver sand.

In our future articles upon the propagation of plants, we propose to abide by the opinions which are expressed above, and always to employ those terms that we recommend to others; thus we shall have made the attempt at least to remove difficulties, and to introduce simplicity and uniformity of expression, for nothing tends more directly to confuse and mislead than the adoption of words, which, to say the best of them, convey a doubtful meaning. — *Paxton's Mag.*

ART. IV. — *Description of some New and Valuable Varieties of Fruits.* Communicated by WILLIAM KENRICK.

THE following are the descriptions of the new varieties of Pears which were sent to Paris by Professor Van Mons of Louvain. With the exception only of the two first, I have extracted them from a very recent work, lately sent me from France, and from that city, by the celebrated author, M. Poiteau, entitled "*Theorie Van Mons.*" Nearly all the descriptions which I now shall offer are new, and have never been seen in our country before. A good proportion of the fruits here described have preceded the descriptions, having been sent to America during the last two years. W. K.

WILHELMINE. Forme of the Doyenné, skin pointed with gray in the shade — laved with red next the sun — flesh yellowish white, beurre — juice abundant, sugary, perfumed. Feb. and March. — *Bon Jardinier for* 1836.

FORTUNE'E. The fruit is large, roundish, flesh beurre, melting,

delicious. This fruit keeps till July, and is the best of all pears, according to M. Parmentier of Enghien, who has originated this fruit or brought it into notice. — *Bon Jardinier for* 1836.

Doyenne' d'Ete', V. M. The tree does not resemble that of our Doyennes. It owes its name to the form of its fruit, which is turbinate, and two inches in height; the eye is small, stalk thick, short and fleshy at its insertion; skin clear yellow, shining, marked with small red points in the shade, and sometimes slightly washed and spotted with red next the sun; the flesh white, melting; the juice very abundant, sugary, slightly acid and good; ripe, end of July and beginning of August, and the best pear of the season.

Marie Louise Nova, V. M. Originated by Van Mons in 1821 or 1822. The form obtusely conical, swoln towards the base, the height three inches; the skin speckled and spotted with red, and slightly washed with red next the sun, changing from green to clear yellow at maturity; flesh white, melting; juice abundant, saccharine, high flavored. This very fine fruit ripens early in Sept.

M. Poiteau who by permission of Van Mons was authorized to affix a name to some of the unnamed kinds which were sent to him at Paris, has renamed this fruit *Van Donkelaar*, which name I omit, as Van Mons had previously bestowed the same name upon another fruit. M. Poiteau seemed also aware of this circumstance. I retain only the original. Fears had been entertained by him, lest this name should be confounded with the Marie Louise of former years.

Beurre Witzhumb, V. M. Originated in 1811. Very beautiful, oblong, obtuse; the height three inches and an half, by three inches in its transverse diameter; the eye middling large, a little sunken; the skin covered with small points and spots or stains of red, becomes of a beautiful yellow at maturity; the flesh is very white, like our Doyenné; apparently, its season when mature is soon past, since we were unable to seize on the suitable time properly to judge of its merits; but, judging from the name of the celebrated amateur which M. Van Mons has affixed to this fruit, we must believe it to be naturally excellent. This magnificent fruit ripens in the former part of Sept.

Sur-reine. Originated by M. Van Mons in 1828. The fruit is oval, swoln or turbinate, two inches and a half in height, the same in its transverse diameter; the stalk an inch in length, and fleshy at its insertion; the eye slightly sunk in a regular cavity; the skin pointed with red, becoming of a clear yellow at maturity; flesh white,

fine, melting; juice abundant, saccharine, agreeable. The period of ripening is the beginning of September. The name would indicate a fruit of pre-eminent good quality.

Ferdinand de Meester. Originated by M. Van Mons in 1822. Fruit oval, swoln, height two inches and an half, diameter the same; the stalk six to eight lines; the eye large, in a knobby cavity; the skin pointed and marbled with red, stained or streaked with red next the sun, and changing to yellow at maturity; flesh white or yellowish white, half melting, slightly granulous; juice abundant, saccharine, high flavored, excellent. Ripe early in September. This fruit, which deserves to be multiplied extensively, bears the name of the gardener of M. Van Mons. It has the flavor of the Messire Jean, but its melting flesh renders it very superior.

Fondante Spence. Originated by M. Van Mons in 1816. The fruit is very large, irregular, swoln, obtusely formed at summit and base; the height nearly four inches by three in its transverse diameter; the stalk inserted in a cavity; the eye of medium size; skin a beautiful yellow with specks of red, and washed or streaked with red next the sun; flesh white, fine, melting or beurre; juice abundant, sugary, highly flavored and excellent. This excellent and very large pear ripens in the beginning of Sept. and deserves to be extensively multiplied.

Saint Germain Van Mons. Originated in 1819, in the garden of the Comte D'Arenberg, from a seedling tree sent him by M. Van Mons. Fruit not quite so long as the common St Germain; height two inches and a half; stalk equally as large, green, and fifteen or seventeen lines in length; skin of a beautiful yellow, pointed and touched with small spots of red; flesh white, slightly tinged with yellow, melting, slightly granulous; juice abundant, sugary, good. Ripe the beginning of Sept. A very excellent fruit.

Claire. Originated by M. Van Mons in 1824. Fruit turbinate, swoln; the height two inches and three-fourths, the diameter nearly the same; stalk large, eight lines in length; the eyes small, in a slight cavity; the skin clear yellow, touched with points of red, and washed with bright red next the sun, in which points of green surrounded with yellow, are interspersed; flesh white, fine, melting; juice very abundant, saccharine, high flavored and excellent. This very superior pear ripens the beginning of September.

Imperatrice de France. Originated by Van Mons in 1809. The fruit is nearly conical, a little swoln; height two inches and a

half; stalk fifteen lines, obliquely inserted; the eye in a narrow cavity; skin a beautiful yellow, very finely marked with red, and touched with spots of the same color; flesh white, melting; juice abundant, sugary, high flavored, delicious. This excellent pear ripens the beginning of September. This pear is considered to be a synonyme of *La Belle de Flanders* or *Flemish Beauty* of the English, or *Le Brilliant.*

Louise de Prusse (550, V. M.) Originated in 1826. Size and form of the St Germain: little swoln and not so thick near the stalk, which is obliquely inserted; eye equally large, in a slight and regular cavity; skin green, a little rough, slightly pointed with red and yellow at maturity; juice abundant, saccharine, agreeable. Ripe the commencement of September.

Frederic de Wurtemberg. Originated by Van Mons in 1812 or 1813. Fruit swoln towards the middle of its height, which is three inches and a fourth, and nearly three inches in its transverse diameter; conical towards the stalk, which is thick towards the base, and an inch long; eye large; skin smooth, somewhat marbled or pointed with red, becoming of a beautiful bright red next the sun, and changing to yellow at maturity in the shade; flesh very white, fine, beurre; juice abundant, sugary, delicious. Ripe the end of September and beginning of October.

This fine fruit, which Dr Van Mons has lately sent to America, is evidently the same fruit which was formerly sent to Mr Lowell by Mr Knight, as the *Capiaumont.* Judging by the habits of the tree, and the peculiarity of its leaf and wood and growth, all circumstances combined, we are perfectly satisfied that the fruit described in the Pomological Magazine as the *Capiaumont*, which is evidently identical with that which was heretofore known by the same name with us, is no other than the Frederic de Wurtemberg. Lately we have also received from the London Hort. Soc. and from Dr Van Mons, another kind as the *true Capiaumont;* both specimens being in agreement. Both kinds we have also received from other sources. Mr De Wael fully confirms all I have now stated.

Grosse Calebasse, V. M. This is without a doubt the same fruit which Dr Van Mons has lately sent to America as the *Calebasse Monstreuse.* The fruit, which is wonderful for its length, is in form of a conical calabash; height five inches and an half, and three inches and an half in its transverse diameter, which is greatest near the base; stalk large, eight or ten lines in length; eye of middle size

for a fruit so large, round, its divisions large and diverging; skin smooth, rather shining, of a bright green, changing to yellow at maturity, and covered for the most part with grizly red next the sun, and marbled or spotted with the same color in the shade; flesh white and moderately fine grained, melting; juice very abundant, sugary, sufficiently high flavored. Although not highly perfumed, the quality is good; and the Horticultural Society of Paris have also decided that the quality of the fruit is very good, a recommendation, independent of its very extraordinary form and size.

(To be continued.)

ART. V. — *On Plants which are peculiarly adapted for planting in Beds in Masses; each kind being showy and profuse in Flowering.* By FLORA.

Eschscholtzia californica, yellow. — Grows two feet high; blooms from June to September. The seed should be sown in pots in spring, and placed in a hotbed; when the plants are large enough, they may be transplanted into a bed of rich deep soil, where they will begin to bloom about the first of July; they will endure the cold of winter very well, if planted in a bed that has a dry substratum, or if the bed be raised a few inches higher than the surrounding ground. It is essential to their endurance of winter, that the roots have a dry soil. The plants will bloom still more freely the second year. If required, they may be parted at the roots, and an increase of plants be easily obtained; and by this means they may be perpetuated from year to year. The time when I divide them is about the first week in April. Scarcely any plant produces a greater degree of splendor than this: when the full sun is upon it, it makes a complete blaze of color. It is a most suitable plant for producing a distant effect. When it is planted out in a bed, it requires a considerable number of sticks for support, or the weak branches will be liable to lie close to the ground, and then the bloom is not so fine. If planted in single patches, they should have several sticks placed round, and a string fastened, so as to keep the flower-stalks tolerably erect; by this attention a neat and handsome effect will be given. I adopt the use of cross strings, as well as a circular one, by which means I have the shoots *regularly* disposed.

Calandrinia grandiflora. — Grows two feet high; bloom from June to October. The seed should be sown in pots early in spring, and placed in a hotbed. When the plants are large enough to transplant, they should be planted off into small-sized pots, which should be well drained with potsherds, as this plant is very susceptible of injury from damp. The soil should be a rich loam, with a portion of sand; it should not be sifted fine, but be well broken with the spade. The plants should be placed in a frame, or other situation where they can be forwarded. About the first week in May, a bed of rich soil, mixed with sand, should be prepared. Care must be taken to have the bed elevated, so that the surface be four or six inches above the level of the adjoining ground; and the surface should be slightly rounded, so as to allow any excess of water, from heavy showers, to pass away. Unless this precaution be attended to, the plants will most probably perish, unless an awning of canvas covering be used to prevent it. The plants should be turned out of the pots with balls entire, and placed a foot or more apart. If it be wished that their flower-stems should rise to their highest extent, (viz. two feet,) they may be placed a foot apart; but when it is desired to keep them lower, they should be planted more distant, in proportion to their prostration. The plant is very well adapted for covering a bed only a few inches high, the branches naturally inclining to grow horizontally, or even pendulous. Considerable care is required to keep them well secured, by tying, &c., in consequence of the shoots being succulent, and very brittle. When watering is required, none should be given to the heart of the plant, but it should be poured over the surface of the bed. To provide against accidents that may arise, it is advisable to have a few plants kept in pots, in order to replace deficiencies. If a bed is required to bloom profusely at a late period of the summer, or even in autumn, seed should be sown at the end of May, or early in June, and the plants treated in every respect as above directed. The plant produces seeds in abundance, but it requires some attention to get it before the capsule bursts. The plants may be taken up and preserved during winter in a cool, dry frame. In spring, they may be increased by picking off the leading shoots, thereby causing the production of laterals, which being carefully taken off, may be struck; or the main stem, down to the root, may be divided, so as to have a shoot to each part. To get them to strike well, a hotbed frame, or stove heat, will be found useful. When the fine rosy lilac flowers of this very beautiful plant are fully expanded, being produced in vast profusion, and

continuing for so long a season, they make a very pleasing appearance, and never fail to give ample satisfaction.

Nierembergia phœnicea. Syn. Petunia violacea. — This plant is one of the most valuable additions to the flower garden, and with which all admirers of flowers must be pleased. It will bloom constantly in the open border from May to the end of October; and the fine rosy purple flowers being produced in vast profusion, render the plant a most pleasing object. When allowed to grow upright, and carefully trained, it will rise to six or eight feet high, or even more, and be liberally furnished with lengthened lateral branches. The plant is readily raised by seed, which should be sown in a pot early in spring, and placed in a hotbed frame. When strong enough, the plants should be transplanted into small pots, using a rich soil; and by the end of May, they may be planted out in the open border. Such plants will rarely rise higher than three feet the first season, but will produce a vast number of side shoots, and bloom abundantly. At the end of October, the old plants, if taken up with care, may be kept in a greenhouse through winter. About the end of September, slips should be taken off, and struck in heat, which they do very freely; ten or twenty may be inserted in a pot, and after having taken root, they may be kept in a cool greenhouse, frame, or any similar situation, during winter. If large plants are desired, some of the cuttings should be potted off at the end of February, using a rich loamy soil, and well draining the pots. Each plant should have a stick, to which it should be neatly tied, keeping a principal leading shoot. These plants, when properly attended to, in repotting as soon as required, and in training erect, will, if kept in a greenhouse, reach three or four feet high by the end of May; and if then planted out, will reach six feet, or more, by the end of summer. Old plants, that have survived the winter as above directed, if turned out, will be proportionably fine. A bed of this plant looks well, when the plants are so ranged as to form a cone; or, indeed, in any shape in which the middle of the bed is the highest, gradually lowering to the edges. The plant is admirably well adapted for pegging down to the ground, the lateral shoots rising from six inches to a foot high. The leading shoots being prostrate, checks luxuriance, and causes abundance of bloom. Cuttings taken off in autumn are very suitable for this purpose: they readily bend to the direction desired. Care is required to have a number of shorts sticks pricked in the bed, to which the shoots, in the early part of the season, must be tied, being very brittle;

subsequently, however, when there is an abundance of shoots, no tying will be required, but the sticks are necessary, in order to prevent strong winds from blowing the plants out of proper form. This plant is also admirably well adapted for training against a wall, or for covering a fence during summer: of course proportionably sized plants must be used to suit the purposes. The flower of the original species has a dark-colored tube, but a variety has been raised with a lilac tube: the former is now commonly called *N. phœnicea*, and the latter *N. phœnicea var. pallida.*

Malope grandiflorum. Monadelphia, Polyandria. Malvaceæ. This very showy plant is of the Mallow tribe; grows two feet to two feet six inches high. The flowers are produced in great abundance, and being of a fine rosy crimson, make a very gay appearance, rendering it a desirable plant for giving a distant attracting effect. It blooms from June to the end of October, unless cut off by frost. Seed should be sown in pots, early in March, and be raised in a hotbed; or may be sown upon a hotbed, under a frame or hand-glass. The plants may be set out in the open border by the middle of May. I find it best to raise them in pots, as I can divide the plants without injury to the roots, and thus retain all the fibrous ones; this is essential for their striking again. Plants that are raised upon a hotbed, and have the privilege of extending their roots to any desirable length, run to a great extent. The fibrous roots being very distant from the stem of the plant, are, in taking up, generally broken off, and it is difficult to get the plants to grow again; if they survive at all, they are generally very weakly: so that, if raised on a hotbed, great care must be given to get all the fibrous roots. The plant blooms most profusely in a good loamy soil, mixed with a little manure or leaf-mould. If the soil be very rich, the plant will be liable to grow too vigorously, and produce a vast profusion of foliage, which will rather conceal the flowers; but if moderately enriched, it will produce one mass of bloom. I find it profitable to give all my flower-beds an addition of fresh soil every winter, generally adding about two or three inches deep. If the Malope grandiflora is not desired to come into bloom *before the beginning of August*, the seed may be sown in March, in the open border where it is desired the plants shall blossom. The plant produces seed in abundance, which ripens well from plants that bloom early in the summer.

Bouvardia triphylla. Tetrandria, Monogynia. Rubiaceæ. There are three varieties of this species, viz. Jacquini, glabra, and pubes-

cens, all of which kinds are very handsome flowering plants. The flowers are of a fine scarlet, and in shape like the Trumpet Honeysuckle, and the blossoms are produced in clusters of from six to twenty in each head; and some plants which I have a bed of, produced this season thirtyfive clusters or heads of flowers upon each. The plant is a native of Mexico, and is usually kept in the greenhouse in this country, but I am of opinion that it may be found as hardy as the old Fuchsia coccinea, and stand our winters in this part of the world. It will, however, be necessary to have it planted where it will have a very dry subsoil, and likewise to have protection, in winter over the roots, by means of leaves, tan, or something of this nature. I purpose trying my bed of plants the coming winter, and the result shall be forwarded you next summer. I have employed this plant for a bed for the last three years, and purchased in the first instance, two dozen plants at 1s. 8d. each. I had previously grown this plant, from which I propagated young ones with facility, but I found that it required two or three years' growth before they become bushy enough to make show fit for a bed. I therefore, resolved on getting fine plants calculated to answer the purpose at once; and these I obtained of a Nurseryman, at the above named reasonable charge. The same plants will successively answer for the length of an age, and in each season increase in size and beauty. The plan I adopt in the culture of this plant is the following: — The soil of the bed is composed of good rich loam, well manured with rotten leaves, a portion of old hotbed dung, and charcoal dust, with an addition of river sand. Previous to laying in the compost, I had the bottom of the bed covered to the depth of three inches with some small gravel stones, upon which I had the compost about eight inches deep, the surface being raised above the walk and grass verge, four inches. On or about the twentieth of May each year, I turned out the plants with balls entire, except a careful loosening of the outer fibres. I placed them in the bed, a round one, the tallest in the centre, and lowest at the outer row, and so close that the plants furnish a covering to the bed, and when in bloom appear a mass of flowers. I place the plant so low in the soil that the top of the ball is about an inch below the surface of the bed. After planting and before watering, I placed from four to six sticks round each, and to them secured the branches — then water them freely. The watering was repeated frequently during the summer season, more particularly the present one, and the plants have most amply repaid for the attention, nothing exceeding the delicate

splendid appearance of the flowers, and which continue from June to October. The plant in the greenhouse attains the height of two feet or upwards, but in the open bed it does not exceed more than eighteen inches (generally twelve); the plant being allowed to root or spread without obstruction, becomes bushy instead of being drawn up weakly. About the middle of October, I usually take up the plants from the bed, and repot them into the same kind of soil, well draining the pots, and being careful to have fine soil to shake in among the fibrous roots. I have also kept the plants through winter by having them planted in a Mignonette box, closely together. In both instances, I kept them in winter in a cool frame, sunk below the surface of the surrounding ground, in which for the last two winters they have kept well. Cuttings strike freely in loam and sand, placed in a hotbed frame. Suckers are readily obtained, many of them rooted, which grow readily.

Senecio elegans, Ragwort, or Double Groundsel. Syngenesia, Superflua. Jacobeæ. There are four kinds of this plant, viz. double red, double crimson, double white, and double flesh-colored. Each of these kinds will make a most handsome bed. The plant is very pretty in its foliage, grows freely, and most profusely; scarcely any thing surpassing it for a neat and handsome show. It will grow about 18 inches high, and continue in bloom from June to the end of the season. The soil I grow it in very successfully is fresh loam mixed with leaf mould, and about eight inches deep, upon a dry subsoil. I find that when the soil is much enriched, the plant has a tendency to produce too much foliage; but, grown in turf, loam, &c., as above stated, an amazing production of bloom is the result. The plant is readily increased by slips, scarcely one in a hundred failing to grow. I raise them in pots, or under hand glasses, in fine sifted loam. They require winter protection in a dry, cool frame, or green-house. I usually take off slips in September, and keep them in the cutting-pots till March, then separate them, and pot into small pots. I turn them out entire, about the middle of May, into the beds.

(To be continued.)

Art. VI. — *Culture of Strawberries.*

As the time is now approaching, when those who intend to form beds for raising this cheap and delicious fruit, should make the necessary preparations, a few brief instructions on the subject may not be unacceptable.

Varieties. — The following are a few of those which rank among the best and most desirable varieties. Austrian Scarlet, or Duke of Kent; Grove End Scarlet; Roseberry; Keen's Seedling; Methven; Old Pine; Red and White Alpine; Bush Alpine. The Austrian Scarlet is the earliest of known varieties, and is also of excellent flavor. The red and white Alpine possess the advantage of ripening, when properly managed, through autumn till winter; we have seen a dish of good fruit, picked on the first day of December. The bush Alpine possesses the same advantage, and the additional one of not spreading by runners; it is not, however, a first rate bearer, nor is the fruit of the very best quality.

Propagation. — With the exception of the bush Alpine, which is only increased by divisions of the root, all the varieties multiply spontaneously every season, by numerous runners from the parent plant, which, rooting and forming a plant at every joint, only require, for the production of fruit in abundance, removal to a bed where they may have room to flourish. Such plants will bear the summer succeeding the planting, and in the second year will be in full perfection. The best way is to supply a new plantation, with plants which have been taken from runners and set out in nursery beds the previous season. But where such cannot be had, those of the present season will answer.

Soil and situation. — Strawberries will grow and produce fruit on almost any soil of moderate fertility; but they are most productive on a deep rich loam. They should be in an open situation, exposed to the sun and air, and not under trees. The Alpine strawberries, however, admit of being placed in a more shady situation, as it is during the hot and dry season of the year that they are intended for bearing; which they will not do if allowed to suffer from drought; and few are willing to take the pains to water them as much as they would require.

Transplanting. — The best time for doing this is in the spring; but if performed with proper care, they succeed nearly if not quite as well when transplanted early in autumn, say in the early part of

September. The ground should be well manured and dug, a month before transplanting. The chief care required when the work is done in autumn, is to guard against the plants being thrown out by frost, which is best effected by treading the soil closely about the roots.

Culture. — The distance of the plants asunder, where the soil is rendered *sufficiently fertile*, should be, for the larger varieties (such as Methven and Keen's seedling,) twenty inches from row to row and fifteen inches in the row; the smaller varieties may be a little nearer together. This distance may seem too great, but it is much better than crowding the plants too closely, which is the more common error. It is only by affording sufficient room for the plants to receive the benefit of sun, air, and of culture, that the fruit will ripen early, and acquire a good size and agreeable flavor. Keen, of Isleworth in England, a most successful cultivator of this fruit, and who raised the celebrated Keen's seedling, says, in speaking of the large distances he adopted in planting, — "these distances I find necessary, for the *trusses of fruit* in my garden ground are frequently *a foot long*." The following is his method of culture, in his own words: "After the beds are planted, I always keep them as clear of weeds as possible, and on no account allow any crop to be planted between the rows. Upon the growing of the runners, I have them cut, when necessary; this is usually three times in each season.* In autumn I always have the rows dug between; for I find it refreshes the plants materially; and I recommend to those persons to whom it may be convenient, to scatter in the spring, very lightly, some loose straw or long dung between the rows. It serves to keep the ground moist, enriches the strawberry, and forms a clean bed for the trusses of fruit to lie on; and thus, by a little extra trouble and cost, a more abundant crop may be obtained. A short time before the fruit ripens, I always cut off the runners, to strengthen the root; and after the fruit is gathered, I have what fresh runners have been made taken off with

* Lindley says, in speaking of the Alpine strawberries, "If the runners are planted out in August or the beginning of September, the beds will be covered with runners by spring; these should not be removed as directed for the other classes, because the first and strongest of them will produce fruit during the autumn, and continue in succession to a late period of the season. But a succession of finer fruit than these is produced by cutting off all the flower stems as soon as they begin to blossom, from their commencement in spring till the end of June. By this means a most abundant supply of the very finest fruit is produced from the end of July till frost sets in."

a reaping-hook, together with the outside leaves around the main plant, after which I rake the beds, then hoe them, and rake them again. In the autumn, unless the plants appear very strong, I have some dung dug in between the rows, but if they are very luxuriant the dung is not required; for in some rich soils it would cause the plants to turn nearly all to leaf. I also have to remark, that the dung used for manure should not be too far spent; fresh dung from the stable door, is preferable to spit-dung, which many persons are so fond of."

In thus recommending a thorough method of culture, we would by no means wish to discourage those who have not yet attempted raising this excellent fruit, and who think they cannot afford to adopt such culture, from attempting it altogether; indeed, if proper varieties are obtained, good crops may be had with little or no care after transplanting; we have known beds almost untouched for years to yield plentifully. Nevertheless, we consider the *cheapest* method, ultimately, of raising this fruit, is by thorough culture; that the greatest amount of fruit is obtained in this way for the care and labor expended, and that the quality is so much superior to that obtained from slight culture, as to give the former practice very decided advantages.

When the beds have much diminished in their product, new plantations must be made to supply their place. This generally takes place in four or five years. — *Genesee Farmer.*

ART. VII. — *Notices of Heating by Hot Water.* By the CONDUCTOR.

THE American Gardener's Magazine for July, 1836, contains "*a Descriptive Notice of Mr Hogg's new Method of Heating by Hot Water.* By A. J. Downing, Botanic Garden and Nursery, Newark, N. Y." It consists of a strong, iron-bound wooden cask, air tight, except through the tubes in which the hot water is circulated. This cask contains the furnace, and serves as the boiler. Within the boiler is a conical cast-iron furnace for burning anthracite coal, with a grate and ash pit below as usual.

"The great improvement," it is stated in the article alluded to, "in the present apparatus consists in placing the furnace *in the midst*

of the body of water, which completely surrounds it," &c. It is stated also that the apparatus has been tried with success, and added, "We believe Mr Hogg, Junior, is about patenting his excellent invention, and we cannot refrain from expressing our conviction that it will (jointly with other systems for heating by hot water), in a measure, if not entirely, supersede the common brick flues, so drying to the atmosphere of plant-houses, and so deleterious in the escaping smoke to the plant themselves."

There is ingenuity and plausibility in Mr Hogg's invention, but with regard to its novelty and the utility of surrounding the furnace with water in contact with the metal, we have some doubts. Tredgold, an eminent English engineer, in "*A Treatise on Warming and Ventilating Rooms*," page 121,* has the following passages: "Some have imagined a great effect would be gained by having the fire within the boiler. It is a very old scheme (see Birch's History Royal Society, vol. 1, p. 173.) Smeaton adopted it in his experimental engine, Reports, vol. 1, p. 225, and Trevithwick for his high pressure engine. But the plan is not so good as might be supposed, because the generation of steam takes the heat too rapidly from the fuel for perfect combustion to take place."

In order to burn anthracite to advantage, it is necessary to give it a very hot fire bed, which cannot be obtained if the pot or vessel in which the coal is placed for combustion is surrounded by water; for hot water will not only put out fire, but cool red hot iron to many degrees below a red heat.

Art. VIII. — *Massachusetts Horticultural Soeiety.*

Saturday, July 30, 1836

The following Report was made by the President of the Society.

I have the pleasure to lay before the Society two communications from M. Emilien de Wael. This gentleman, it will be recollected, was the bearer of letters to the Society from Dr Van Mons and M. A. Poiteau, accompanying a donation of books, received a short time since. Mr de Wael is an amateur cultivator, and the Secretary of the Horticultural Society of Antwerp; he is now on a tour of the

* This work is in the Boston Atheneum.

United States for scientific purposes, connected with Entomology and the examination of the marine plants of our country, and I have to congratulate the Society on the addition to its list of corresponding members of the name of an individual who is not only qualified, but who is entirely disposed to subserve its purposes at Antwerp, located as he is, in a country to which Horticulture, so far as *pomology* is concerned, is indebted for more numerous and valuable acquisitions, than to any other.

Mr de Wael's remarks on the results of various experiments made in Belgium to protect the Morus Multicaulis from the effects of cold must be interesting to those who are endeavoring to protect that plant from the severity of our own winters; it is desirable to know what is now considered the best method of cultivating it in other countries; for it is by a careful collation of facts, connected with its culture abroad in aid of the actual experiments making here, that we may hope shortly to overcome every obstacle to the extensive cultivation of that invaluable plant.

Respectfully submitted by

ELIJAH VOSE, *Pres. Mass. Hort. Soc.*

BOSTON, JULY 25, 1836.

Since I have been in this country I have heard of several complaints, chiefly from the Hartford Mulberry tree planters, of the difficulty experienced the last two years in making the *Morus Multicaulis* stand your winters well.

This kind of mulberry is easily acclimated if a proper mode of culture be adopted in the places where it is planted.

In Belgium, the winters, notwithstanding they are not so severe as yours, often give us great trouble, and the influence of the cold was repeatedly experienced on these Mulberries, which were often killed down to the roots.

The late *J. Le Candele* of Humbeck, near Brussells, suggested the idea of having different modes of experiment adopted in distant places. And the one which proved most efficient, was to cut down yearly, the Morus Multicaulis, in the same manner as is done with willows in a *Salictum*, that is to say, at a few inches above the soil, and to cover the remaining trunk with dead leaves; in three or four years, the roots being stout enough, they did not require any more covering. From the buds preserved on the plants, fine and hardy shoots came forth, giving larger and more lively leaves to feed the silk worms upon.

It has been since stated to me in a letter from Batavia, (island of Java,) that this mode of culture is much in use near Manilla and in China, not on account of the cold, but in order to keep the Morus in a shrubby state, which affords greater facility for gathering the leaves in the season when desired. There the mulberry seems to be planted in fields as Indian corn is here, — in the fall of the year the plants are deprived of their branches, the number of which is continually increasing, and growing in one season from five to eight feet — which growth is fully equalled by our own. I would advise a similar experiment in this State; it might, perhaps, answer well.

Most respectfully, your ob't servant,

EMILIEN DE WAEL.

To Hon. Elijah Vose, *Pres. Mass. Hort. Society.*

A communication was also received from M. Soulange Bodin, of the garden at Fromont.

EXHIBITION OF FRUITS.

Pears, by Mr Downer — A branch loaded with Petit Muscat pears, an early but on other accounts not a very desirable variety.

Gooseberries, by Mr Walker — Roaring Lion, Hopley's Globe, Crown Bob, Viper, Lancaster Lad, Golden Lion, Whitesmith, Bank of England, and a Seedling of a dark green color — all fine specimens.

By John Hovey, Roxbury — Whitesmith, Princess Royal, Hopley's Globe and Red Lion — large and fine.

By Mr J. L. L. F. Warren, Brighton — Roaring Lion, very large.

Currants, by Mr Walker — A specimen of a Red Seedling of fine promise, the foliage very large and of a deep green color, with long clusters of fruit — the berries of good size.

Melons and Squashes — Two Musk Melons and one Squash, were exhibited by Mr Warren.

For the Committee,

E. M. RICHARDS.

Saturday, Aug. 13.

The contributors were Messrs Wilder, Breck, Mason, Winship, Sweetser and S. Walker.

Among the new things was a seedling Dahlia from Messrs Hovey, raised from seed of the Lord Liverpool, resembling a good specimen of Barrett's Susannah. Mr Breck, a very large and very double seed-

ling. Mr Breck has about two hundred seedlings which he expects will bloom this season.

By Mr Thomas Mason — a fine bouquet.

By Mr E. A. Story, from Messrs Winship — A large collection of herbaceous, and other flowers.

From Mr Dennis Murphy — Dahlia, var., anemoneflora rosea.

By Col. M. P. Wilder — Dahlias, var., (beautiful) Metropolitan, Calypso, Inwood's Ariel, Dennissi Coccinnea, Levick's Shannon, fine, Cedo Nulli, fine, Dennis' Queen of Whites, Wells' Paragon, Belladonna, British Queen, Erecta, superb color, Dutchess of Bedford, extra fine scarlet.

By Mr Samuel Sweetser—Dahlias, var., King of Yellows, (Brewer's) Dennissi, Coccinnea, Laura, Lady Sefton, Purple Globe, Lady Campbell, Foster's Premier, Othello, fine, Granta, Lass of Richmond Hill, Chancellor, Yellow Turban, King of Whites, Cassina, Crimson Globe, Queen Dahlias, Belladonna, Marchioness Lothain, Duchess of Bedford. Some of the above were extra fine flowers.

From Hovey & Co. — Andromeda, Amanda, Agrippina, Rubricunda formosa, Dutchess of Bedford, Emperor of the Yellows, Sulphurea perfecta, Beauty of Sheffield, Albion, Jaune Insurmountable, Barrett's Susannah, fine, Springfield Rival, splendid specimens, Paragon of Perfection, Lord Liverpool, Widnall's Rising Sun, do. Perfection, do. Enchanter, Brewer's Rival King, Lord Liverpool seedling, fine.

By Samuel Walker — Dahlias, var., Groombridge's Matchless, Fanny Kemble, Queen of Belgium, Atropurpurea, Globe flowering, with bouquets.

For the Committee,

S. WALKER.

SATURDAY, Aug. 20.

The display of Flowers was very fine to-day; our tables were crowded with Dahlias and other pretty things from Mr William E. Carter of the Botanic Garden, Cambridge, Messrs Hovey of Boston, Mr S. Sweetser of Cambridgeport, Mr O. Everett, Jr. of Boston, Mr Johnson and Mr Mason of Charlestown, and Samuel Walker of Roxbury.

Among the seedlings this day presented, we noticed two Dahlias by Mr Mason, one called "Bunker Hill" and the other the "British Crown"; we shall say nothing about either of these until we see further specimens.

The seedling Lobelia cardinalis var. alba, by Mr Carter, we would recommend to the attention of our friends and the lovers of new and pretty things. We understood Mr C. to say that a plant of the L. cardinalis var. alba, was brought to the Botanic garden, Cambridge, some few years ago, which was propagated and sent out to applicants as often as a duplicate plant could be obtained, and so great was Mr Carter's desire to accommodate and gratify the admirers of Flora with a plant of his "new comer" that he left himself with so small a plant, or rather with a piece of a plant, that it died, notwithstanding it was under his care.

Mr C. consoled himself for the loss of his favorite, as he had saved some seeds, which he had recourse to, and fully expected to be able to renew the variety in his own garden, but in this he has for years been doomed to disappointment. The plants from year to year have showed some of the original properties of the mother plant, viz. — the stems and leaves of the plants were of a much lighter color than the common var. of L. cardinalis. We mention these facts that others may hope with perseverance like that of Mr Carter to be successful.

Mr Carter also presented three new seedling varieties of Phlox, which with only one exception we consider are equal if not superior to anything in this country. Magnolia grandiflora, Hedychium gardenarium, Dahlias var., Teucer, Augusta, Miss Pelham, Daphne, Amanda, Le Brilliant, Queen of Dahlias, fine Paphilia, William IV., Atropurpurea, Queen of Wirtemburg, seedling of Wirtemburg.

From O. Everett, Jr. Boston — Dahlias var., Rose d'Amour, Daniel O'Connell, Levick's Commander in Chief, Agrippina, Shannon.

From Mr Johnson — Dahlias var., Granta, Angeline, Harris's fulginus.

From Mr S. Sweetser — Dahlias var., Lovely's Earl Grey, Lady Sefton, Granta, Foster's Premier, large and fine, Calypso, Lady Grey, King of Yellows, Dennis' Queen of the Whites, Jason, Negro Boy, Springfield rival, King of the Whites, Paragon of Perfection, Duke of Devonshire, Countess of Liverpool, Emperor of the Yellows, Widnall's flora, do. Phillis, do. Chancellor.

From Mr Mason — Dahlias var., Transcendant, King of the Yellows, Springfield Rival, Countess of Liverpool, King of the Whites, Bonny Dee, White tea-sented rose, Viola purpurea and alba, Carnations, &c. &c.

By Messrs Hovey & Co. — Dahlias, var. Hermione, very fine, Cedo

Nulli, Lord Liverpool, very fine, Rose d'Amour, Belladonna, Lady Sefton, Amanda, fine, Agrippina, good, Queen of Dahlias, Paragon of Perfection, Springfield rival, extra, Queen Bess, Coronet, Jupiter, Negro Boy, Countess of Liverpool, extra, Dennissi, very fine, Rosea Alba, La Inapproachable, Widnall's Clio, do. Queen of roses, do. Virginia, do. Perfection, do. Rising Sun, fine, do. Enchanter.

From Samuel Walker — Dahlias var., Lord Liverpool, Globe, flowering, Agrippina, Brown's Ophelia and Le Brilliant, Viola seedling.

For the Committee,

S. WALKER, *Chairman.*

SATURDAY, Aug. 13.

Pears, by Mr Manning — Madeliene of the Pom. Mag., also Beauty of Summer of Cox.

Plums, by John Warren of Weston — Warren's seedling Plums, an oblong dark blue or purple fruit, of medium size, valuable for its early maturity.

Raspberries, by Thomas Mason of the Charlestown vineyard — Mason's seedling, which has been more particularly described in the former exhibitions.

For the Committee,

WILLIAM KENRICK.

SATURDAY, Aug 20.

Pears, by Mr Manning—Rousselet Hatif of Coxe, an excellent early fruit, of a fine musky flavor, and very productive; Fine Gold of summer, two specimens, one from a very vigorous tree in cultivated ground; Green Chissel; also the Robine, or August Muscat as received by him; a small, pale, musky, breaking fruit, not recommended; another fruit, name unknown, handsome.

By Mr Downer — Fine Gold of Summer; another fruit name unknown, pleasant and astringent; also the Bloodgood Pear, a fruit of middle size, oblong, of a rusty color, not handsome, but a fine flavored early fruit.

Apples, by Mr Downer — Sopsavine, also Juneating, so called, a middle sized, green colored fruit, of a flattened form, much resembling the Early Harvest, but of evidently superior as a dessert fruit.

Plums, by Mr Bartlett — Italian Damask, very fine, large, handsome and productive.

By Mr Downer — A small early fruit, very sweet and good, a productive kind.

Apricots, handsome specimens, believed to be from the Messrs Hovey.

Grapes. Handsome ripe specimens, both of Black Hamburg and Chasselas, by Mr Mason of the Charlestown vineyard.

For the Committee, WILLIAM KENRICK.

SATURDAY, Aug. 27.

Pears, by Mr Manning — Skinless, or Sans Peau, a small, productive, fine old fruit; Summer Melting, a fruit so called, the original name being lost; a good sized fruit, but somewhat mealy; another fruit which was received from Burlington, N. J., as the Bellissime d'Eté, an old and very indifferent fruit, compared with many others of modern date.

Apples, by Mr Vose, President of the Society — Early Red Juneating, also Shropshirevine or Sops-of-wine and Early Harvest, all handsome.

By Mr Richards — Red Juneating, Curtis' Early Striped, Shropshirevine or Sops-of-wine, Early Harvest, and a kind without name, a small, pleasant, striped fruit; also Early Bow, a fine, large, well known, sweet fruit.

By James Eustis of South Reading — The Simonds Sweeting, a handsome, red, good fruit.

By Mr Manning — Red Astrachan, Calville Rouge D'Ete, Summer Rose, a handsome white fruit with a pale blush, of good flavor.

Plums, by Mr Pond — Corse's Nota Bena, Catalonian Plum, Pond's Seedling, large and handsome but not mature; Apricot Plum, ripe and very fine; Duanes Purple Plum, very large and fine.

By Mr Manning — Italian Damask, a fruit heretofore spoken of as always productive, large and excellent.

Green flesh Persian Melon, presented by Mr Haggerston, from Belmont, and the splendid conservatory of Mr Cushing. The fruit of delicious quality. The seeds of this superior melon were distributed.

For the Committee, WILLIAM KENRICK.

SATURDAY, Aug. 27.

The contributions of flowers were very large, and the specimens unusually fine. The praises bestowed by the visiters generally, on the rare specimens of plants from the conservatory of J. P. Cushing, Esq. of Watertown, are in themselves sufficient to show in what high estimation such fine flowers are held; and it is but due to Mr Haggerston, who presented the specimens, and who has the charge of Mr Cushing's garden, to state, that, the flowers spoke in a language

much more powerful and eloquent than we can do in words, that he is not only a master in his profession, but that he is a lover, an attentive lover of those beauties of nature which have been committed to his care. Several specimens presented by Mr Haggerston, were in the highest state of perfection, among which we noticed Combretum purpureum; Passiflora quadrangularis; Hibiscus rosa sinensis; Nerium oleander; do. pleno; Cerbera thereta; and a double flowering Althæa from China. Dahlia's var. Barrett's Susannah; Granta; Queen of the Dahlias (fine); Springfield rival (fine); Dennisii; Widnall's Adonis; Passiflora alba; Rose d'amour; and Harriet Martineau.

From S. Sweetser, of Cambridgeport, nineteen varieties of Dahlias.

From Col. M. P. Wilder, of Dorchester, twentyeight varieties of Dahlias.

From Hovey & Co. twentyeight varieties of Dahlias.

By Mr J. Locke, of Andover, a fine specimen of Alcea nigra.

From Mr Dennis Murphy, of Roxbury, a variety of choice flowers.

From Mr Thomas Mason, of Charlestown, a very splendid bouquet which was much admired. Dahlias, var. King of the Yellows; King of the Whites; Dennisii; Globe; Magnet; Picta formosissima; Countess of Liverpool; Bonny Dee, Transcendent; Rose Constantine, and Seedlings Bunker Hill and British Crown.

By Samuel Walker, of Roxbury. Bouquets, Violas, Dahlias, var. Lord Liverpool; Agrippina; Belladonna; Queen of the Yellows, and Globe flowering.

For the Committee.

S. WALKER, *Chairman.*

Art. IX.—*Gardener's Work for September.*

Earth up celery as it advances in growth, but be careful in all cases to avoid covering the hearts of the plants. Perform this work in a dry day, and be careful not to bruise the stalks, which would cause them to rot. Select the ripest and best seeds from such plants as are most forward and vigorous, and you will improve your *breed* of vegetables in a manner similar to that by which the breeds

of cattle are improved by the celebrated European breeders of cattle. New and improved sorts of wheat and Indian corn as well as of peas, beans, &c. &c. have been introduced, by observing among growing crops some individual stalks, pods, ears, &c. distinguishable from the rest by a greater degree of luxuriance, productiveness, earliness, or some other peculiarity, gathering and preserving them exclusively for seed till sufficiently multiplied for propagation on a large scale.

Turnip plants. The time for the first hoeing of turnips is when the leaves as they lie spread on the ground are about the size of the hand. But if the weeds are numerous and grow rapidly they should be cut or pulled out before the plants arrive to that size, lest they should be drawn up slender, and acquire a feeble and sickly habit. It is said in Loudon's Encyclopedia of Agriculture, that dusting rows of turnip plants, when they are in the seed leaf is effectual in preventing the depredations of the fly. "A bushel of quick lime," according to that work, "is sufficient to dust over an acre of drilled turnips, and a boy may be soon taught to lay it on almost as fast as he can walk along the drills. If the seminal leaves are powdered in the slightest degree it is sufficient, but should the rain wash the lime off, before the turnips are in the rough leaf it may be necessary to repeat the operation if the fly begins to make its appearance."

Pull and preserve your ripe onions. To preserve onions through the winter they may be tied together, forming what are called ropes or bunches of onions, and kept in a dry and cool cellor. Moisture rots and warmth causes them to vegetate. A considerable degree of cold will not injure them, for they resist frost in consequence of a spirituous substance of which they are in part composed. Searing their fibrous roots with a hot iron will prevent them from sprouting.

Fruit Trees. If, in looking over your orchard, you perceive any limbs overburthened with fruit, you will do well to pick off a part, or put props under the limbs, or perhaps do both. In most cases when time can be spared it will be advisable to pick off the supernumerary apples, peaches, &c. "No error," says Mr Coxe, "is more universal than an anxiety for early productiveness in an orchard. It is generally obtained at the expense of much eventual profit and of a great diminution of the size and vigor of the trees. Believing early fecundity to be injurious to the vigor and perfection of plants, I am always attentive to pluck from the trees these evidences of early maturity in the first stages of their existence."

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Art. I.—*On the Culture of the Tulip.* By W. J. P.

As I emerged from the dawn of my admiration of flowers, the Tulip formed a prominent feature, and each successive bloom strengthened and confirmed my devotion to the cultivation of that lovely flower, not forgetting or neglecting the Carnation, Pink, Ranunculus, Auricula, &c., which may justly rank among the "beauties of the creation."

Numerous inquires having been made upon the subject, I am induced to make the following detailed observations on its culture, conceiving that it may be instructive and acceptable to those who ardently admire the flower, — are doubtlessly wholly or nearly unacquainted with the general treatment and nature of the plant, and are desirous of obtaining information on the subject.

Soil.—The standard of soil for the Tulip should indisputably be a strong, rich yellow loam, laid open and exposed, previous to using, to the action of sun and air, for at least one winter and one summer, turned over every few weeks, by which means it becomes thoroughly decomposed and divested of all acrid and rank qualities, and in a state congenial to the natural order of the vegetation of the plant.

Manure.—There is upon this point some little difference of opinion, even amongst the oldest and most scientfic growers of the present day ; but it is, I believe, admitted by a very considerable majority of the most inveterate fanciers, that the intermixture of manure upon the undermentioned principle is decidedly beneficial, and is acted upon with the utmost success. It should be equal proportions of horse and cow dung, laid up in a heap for at least eighteen months,

turned about once a month, but in frosty weather more frequently, in order to allow the frost well to penetrate it, as it must not on any account be applied to the Tulip bed until it has become completely pulverised, and formed positively into a substance as fine as mould, when it is entirely freed from every pernicious or injurious property, and the existence of insects is nearly or wholly annihilated. Then the application of one-third part of such manure to two-third parts of loam as above described, will — I speak from the most certain results of experience and adoption — be found highly beneficial in producing a fine full green foliage, a strong upright stem, and a vigorous and perfect bloom.

The Bed — should be about 4 feet wide, of a length proportionate to the quantity required to be planted, varying from 12 to 15 feet in length, planting seven in a row, the outer root to be about 3 inches from the edge. The box, as it is termed, to be composed of strong wood, not less than one inch and a quarter thick, and raised 10 or 12 inches from the surface of the ground, below which the soil should be completely removed for at least one foot, filling up about one-half of the space so dug out with some rather large cinder ashes, or clinkers, or brick rubbish, or any substance which will not adhere closely, in order to admit of a good drainage under the bed; then over that fill up the remaining space upon a level with the regular surface, or bottom edge of the boarding or box of the bed, with a good dry mellow loam, which has been exposed some months to the air; and then proceed to fill the box with the composition above described, it being first well mixed and united together, to within about an inch of the edge on each side, and raised gradually from each side towards the centre, so that the middle row will be some inches higher in the ground than the outside rows, although planted the same depth, being careful to plant the largest and tallest growing roots in the centre, and the next size in proportion in each of the other three rows, the smallest or shortest being outside. Round my bed, when thus arranged, I put a neat, lightly constructed, open green fence, made of one foot single laths, not too close together, and painted green, so that it stands just one foot high above the upper edge of the box of the bed, gives a neat, finished and ornamental appearance to the bed, and forms a material protection to the growth and bloom of the plants. When the Tulip stage is then erected over, and properly covered in the blooming season, the bed assumes a regular and handsome appearance, and forms no inconsiderable scene of attraction.

Planting. — The time to be selected for this purpose is from the latter end of October to about the 12th of November, choosing during that period the most open, dry weather, as that description of soil which is used for the growth of the Tulip cannot be disturbed with facility except when at least moderately, if not nearly dry; independent of which, it must be found more inconvenient to plant (as very many persons do) a bed of several hundred roots in wet, heavy weather. I judge it, therefore, of much advantage to avail myself of the earliest time above stated, if the weather be fine.

Dibble, or Dibber, as it is termed. — The best that I have ever seen or heard of is one which several friends and myself make use of, which is made of block tin, about 6 inches in depth, 3 inches in diameter across the top, narrowing to the bottom to about 2 inches, with a mark or piece of solder outside 4 inches upwards from the bottom. This has a strong handle projecting over the top, sufficiently circular and large to be convenient to the hand, and each extremity soldered well on the outside, near the top or upper rim of the dibble. The material advantage derivable from this dibble is at once explained and easily and quickly comprehended, inasmuch as by this method the bed (being well settled and prepared for planting, and marked out for the number of rows intended) is not at all compressed and disturbed, because by gently pressing and turning this dibble round until the mark above described reaches the surface of the bed, every hole is made the precise and equal depth (4 inches) throughout the bed, sufficiently large at top to admit of the hand to place the root regularly at the bottom; the dibble, as described, being smaller at bottom than top, retains the earth, which is quickly turned out into large garden pots, or on a bed or border close at hand; and then afterwards the roots, when in, can be covered, and the holes filled with the same soil as was taken out, raking the bed over lightly and regularly with a fine rake or spade, to settle the earth firmly and properly. This is, by all who have seen and used it, admitted to be the most perfect and convenient system. It is also an additional advantage to dib the holes a week previous to planting, by which means the soil is well exposed and sweetened, and the bulbs are afterwards less liable to the attack of insects. Previous to putting in the roots, it is a great advantage, and universally adopted by those initiated in the treatment of Tulips, to put a table-spoonful of "sharp sand" in the hole. This is the surest preventive of the attack of the earthworm, or any insect whatever, and preserves many a sickly or damaged bulb from rotting.

From the time the Tulip is planted until the latter end of March or beginning of April, little or no attention is required, where the bed is constructed on the principle above described; but at that time, as the buds advance in growth, they are more or less susceptible of injury from frost and particularly a superabundance of wet. With a bed of choice Tulips, then, it is highly advisable, if not indispensable that a temporary awning or covering, by means of large hoops and canvas, should be thrown occasionally over the bed, to protect it, as much as practicable, from heavy rains, hail-storms, sharp cutting north-easterly, &c. winds, and the chance of sharp frosty nights, which not unfreqnently occur at this season. There are many beds, however, in which the choicest varieties are cultivated, that have no such temporary protection afforded them; but by being properly raised and drained as above described, the root is kept in a vigorous, healthy state, and the buds sustain in general but little injury from such mischances.

Bloom. — In the beginning of May, when the buds become sufficiently matured, and begin to display their various stripes and tints, it is time to prepare to place the upper or main awning over the bed, which on a regular stage is so constructed as to admit of being drawn up at pleasure by means of a roller with pulleys on each slope, so that sun and air can be admitted or excluded as occasion requires, without which convenience the bloom can never be retained so long or in so much perfection, observing always to give the advantage, if possible, of very early morning sun, until the flowers are all in full bloom, and by all means the refreshing air after sunset, if not too cold; but the flowers to be wholly protected from the weather, and particularly the operation of the sun and wind, with those exceptions. If the season has been dry, and the weather be hot, the plants when in full bloom, will probably exhibit symptoms of drooping; it will then be necessary to apply water moderately and cautiously between the rows, by means of a fine rose watering pot.

When the bloom is completely over, let the covering be wholly removed, be the weather what it may, and the plants fully exposed. When the foliage and stem have become sufficiently brown and withered, which will be about the 25th of June, by which time the root matures and becomes in a state of rest, take up the roots cautiously with a rounded trowel, strong, being careful not to touch or cut the bulbs; separate the largest offsets, and place them in a dry room or shed, where the air has free access constantly, but totally away from

the effects of sun or fire. When the bulbs are dry and hardened, (say in about a week or ten days,) place them carefully away until the time of replanting.

The method adopted by many famous Tulip bloomers, who have many hundred named roots to take care of, is to have shallow boxes or drawers, with divisions or partitions in each, only large enough to hold one root in each; they contain seven holes or divisions from front to back, and may be made any width that is fancied. These rows are numbered from one progressively, by which means the roots are placed in them in that order as they are taken from the Tulip bed. The Tulips are of course planted in the precise order in which they are arranged and written down by name in the Tulip book, and if any mistake or error is discovered in the course of the bloom, the book is then corrected. So the roots are taken np and disposed in these boxes, by which means the book and the boxes agree as to order, and any alteration or variation of roots for the subsequent planting can be made at pleasure.

But as this, though a most superior and convenient plan, may be found objectionable on the ground of expense and trouble at first (as these boxes or drawers should, to be complete, be fitted into a case or frame, after the manner of a chest of drawers, with open ribbed sides and back, and kept in an airy, dry room, away from sun, and where little or no fire is kept,) the best method that I am aware of, in the absence of some such convenience is to put the roots singly in what is termed technically "small hand" paper, one root only in a piece of paper, one root only in a piece of paper, with the name of the Tulip written on it. This is the best paper that can be procured for the purpose, being soft and pliable, and not liable to injure the shoots of the bulbs previous to planting.

Offsets — Should be planted about three weeks earlier than the parent bulbs, and tolerably close in proportion to their size, with a layer of sharp sand under them, and covered about two inches with fine sifted soil.

The whole body of soil for the main bed should be first passed through a screen or coarse sieve.

I have never known or heard of Tulips treated somewhat upon the above principle, with reasonable attention that ever suffered to any material extent from insects or weather.—*Floricultural Cabinet.*

Art. II.—*On the Propagation of Annuals, &c. by Cuttings.*

By the Author of the "Domestic Gardener's Manual," C. M. H. S.

An annual plant is supposed by most persons to produce its flowers and fruit (the seeds), and then to perish; and it is treated accordingly. The seeds are usually sown in the borders during the months of March or April, and nine-tenths of the young plants perish by grubs and worms, or by the acerbity of the ever-varying season. They who have the good fortune to possess some erection where a little extra heat can be furnished, frequently produce early plants; and these are placed in their allotted situations by transplanting, aud thus fulfil the original intentions of the gardener. Things must remain pretty much as they have always existed; and as long as underground enemies continue to live and propagate, we must be content to submit to losses and vexations. There is a way, however, of counterplotting the attacks of every common enemy, by striking, during the months of September and October, such choice annual plants as it is desirable to preserve throughout the winter, and to retain for the production of seed or of cuttings very early in the ensuing summer. I have proved that Balsams can be struck in the autumn, and be made to flower in a short time; the cuttings may be taken off any joint just below the leaves, and of any length; they strike almost immediately in common soil. Balsams, however, can scarcely be retained during the winter, owing to the absence of light. Schizanthus will strike by cuttings six inches long, and flower. I have one by me now, that I caused to take root in August, in loam and sandy peat, without the aid of a glass; it produced bloom in October and November, but *failing to bear seeds*, it remains a stout and healthy plant, with two branches. Clarkia can be struck and preserved, so can Calliopsis (late Coreopsis) of several species. I mention a few only of the many beautiful annuals that can thus be preserved, even in a well protected cold frame of turf, with a good glazed light. The object is not one perhaps of much importance; and the subjects themselves do not appear very ornamental during the dead months, but they *may* prove very useful even to the gardener; and to ladies, and to young people of taste, the practice of raising, or of trying to raise, plants by this process, a fund of rational entertainment and some instruction, may be procured. Of biennial and herbaceous subjects, such as Calceolaria integrifolia, angustifolia, rugosa, — Salvia of many kinds, Wallflowers, some Stocks, &c. &c., numbers may be struck, and kept in health for

early transplantation. A cold frame, a green-house, or even a sitting-room window, will afford to many plants ample protection, which would all be lost unless they were annually renewed by seeds.

The soil for such cuttings may, in general, be good border earth, or maiden loam and decayed vegetable matter blended in nearly equal proportions. If single plants be raised, a small pot should be filled thus, above a good stratum of drainage, and then a hole being made two inches deep in the centre of the mould, with a round stick, silver sand, to the depth of half an inch, is to be poured into the hole ; upon this, place the base of the cutting, keep it in the middle of the hole, and fill that up with the same sand ; shade the plants till they appear to have adapted themselves to their situation, and stand firm and erect, or cover them with small glasses. In raising a stock of plants, Mr Mearns' method may be tried. Put the soil into a broad and rather deep pot, so deep only that the cuttings, when planted, shall not quite reach its rim ; then make as many holes as there are cuttings — apply sand as above directed, and finally cover the top of the pot with a suitable piece of flat glass. A gentle sprinkling may at first be given over the surface of the soil, and this should be kept rather moist, but not wet; air ought to be freely given when the plants appear firm. As the roots emerge, they readily reach *the soil*, which circumstance I think is more conducive to their safety, than the removal would be from a bed of pure sand into separate pots of soil. If these few loose hints — for such only they are, — lead to any inquiry, I shall be happy to furnish every kind of information within my power.—*Floricultural Cabinet.*

ART. III.—*Notice of Vallota Purpurea. With some Remarks on the General Cultivation of the Amaryllideæ.* Communicated by XIOPE.

PERHAPS no genus of plants affords to the botanist and the florist, a more splendid group of favorite individuals, than the old Linnæan Amaryllis, which in later times has been so properly and remarkably subdivided into a great many distinct genera. Whether we glance at the antiquated *Narcissus pseudo narcissus plenus*, with its monstrous and distended yellow petals, which with a daring hardihood expands even from beneath the snow under some warm exposure, in

some old fashion garden, a fit companion to the venerated pæony; or stop to admire the poet's narcissus of purest white and with "crimson tipped" nectary, or pass hastily by these humble individuals to gaze with unfeigned admiration on the gorgeous display from tropical species, — now struck with the unique beauty of *Neria radiata*, the elegance of *Amaryllis belladonna*, the magnificence of the Brunovigiæ, the singularity of the Hæmanthi, the grandeur of Crinum in its species, *amabile;* or tired with these, recur to the few species of our own country, pleased with the pretty Zephyranthes *stamasco*, (the flower of the west wind) or with the purity of the fine Pancratium rotatum, both of the South: — from the early nodding snow drop (Galanthus) and its sister, the later summer snow flake (Leucopium) of the garden, to those more tender and costly varieties which floriculture has produced in almost endless profusion, there is the same feeling of delightful interest manifested in their singularly beautiful economy. The "lilies of the field" convey to our minds pleasing emotions. They are clothed with that magnificence and beauty which nothing can exceed. Generally inhabitants of the tropics, they serve a great end in adding to the floral luxuriance of nature, which is then especially displayed. Thriving according to their habits in almost every species of soil, they adorn the rich humid shades of almost impenetrable forests, or the dry arid waste.

Agreeable to a correct and praiseworthy taste for the riches of Flora, the introduction of some of the finest Amaryllideæ, into our private greenhouses and conservatories in this vicinity is becoming quite prevalent. Rare and noble species are now thriving with that success, which evinces a thorough knowledge of their worth and method of cultivation. Though we do not expect to create a thorough reform in the taste of our floricultural friends, nor were it even possible would we, at least to the extent of our own, yet we could wish to see more *real species* and less created *varieties*, and a still greater number of *genera*. Thus *Nerine sarniensis* is by no means so common as it should be, and as its real beauty recommends its adoption; the Hæmanthi are comparatively scarce plants; *Leucopium vernale* and *autumnale* are seldom seen; — while the gaudy and vivid varieties which Colville and other eminent cultivators have introduced into fashionable notice, are better known than the more solid and attractive original species from which they sprung.

A beautiful and very easily cultivated species is the rather common *Vallota purpurea*, herb. Its specific is a poor description of its real

color; not an unusual circumstance in descriptive botany. Instead of *purple* it is rather reddish scarlet. Surmounting a long scape, are usually five or six large upright flowers, which expand nearly at the same time, and are of long continuance. We know of no Amaryllis so easily grown and flowered as this, not excepting the incomporable A. formossissima. If kept perfectly dry during the winter, its season of rest, and watered profusely when in a state of growth, it will reward the cultivator with a rich display of flowers. The best soil is a light and good compost of rotten leaves and sand. From its ease of cultivation it recommends itself to indoor and parlor growth, where the greenhouse is not convenieut. Judging from the strength and vigor of the development of its leaves, it is not unlikely that in a stove and furnished with constant moisture, an uninterrupted display of flowers might be produced. This is the case with several of the Amaryllideæ, a mode of practice, however, not much admired, we suspect, by some of our best gardeners; and when applied to other less vigorous kinds of the plants, must, in the end, prove highly detrimental.

Art. IV.—*On Watering Plants.*

If you fear dry weather, do not defer too long before you water, but do it gently before the earth is too dry, consideration being had to the depth of your roots, and those that are deepest water most; and when you begin to water continue it as long as you find occasion.

Use not well water, for tender plants, for it is so strained through the earth or rather barren sands or rocks, and for want of the sun so chill and cold, that having no nourishment, rather the contrary, doth more hurt than good; Rivers that run quick and long on sharp gravel are little better, but if you are forced to use such, let it stand some time in tubs in the sun mixed with dung.

Let the quantity and quality of the dung mixed with the water, be according to the nature of your plants; if your plants be great growers and require heat, then put horse dung in your water; if your water be bad then put dung in to help it; let it stand in the sun and open air uncovered: if your plants be fine and tender, then put sheep or cow's dung, deer or asses' dung into the water; the worse the ground and more barren be sure to put in the more dung. Take

care you water no plants with standing stinking ditch water, nor no water that stinketh ; for sweet water, (not too clear) and fresh mould (not musty or tainted by stinking weeds) is as proper for tender plants as sweet and good food, warm and clean lodging for tender and fine bred persons.

Rain water is very good if not too long kept, but if your vessel be large, the oftener you stir it the longer it will keep sweet.

Large and navigable rivers, that receive much soil by washing streets and the many sinks that run into it, and which by its own motion doth cleanse itself from that which is noxious, both to man and plants, is an excellent water for all sorts of plants.

The larger the ponds be, the better the water is for plants, the opener to the sun the better, the more motion they have, by horses washing in them, or geese and ducks swimming, 'tis so much the better.

Water all seeds with the smallest or rain like drops you can, and not too much at a time or too fiercely, lest you uncover them.

For flowers and plants whose leaves lie on the ground, water them at some distance, by making a hollow circle about the plant and pouring water into it, by which means you avoid annoying the leaves by discoloring water, or chilling the roots by too sudden coldness.

Use not any liquors, for watering either naturally hot as spirits, or artificially made so by heating over the fire.

In summer time or all warm seasons, the evening is best for watering, because the water will have time to sink into the earth, and the plant attracts it, before the sun's heat exhales it; but in winter or cold weather the morning is the proper time, that the superfluous moisture may be evaporated ere the cold night overtake you, and chill perhaps kill a tender plant.

A plant that delights in moisture, or a drooping plant that you think water will preserve may be watered by filtration, *i. e.* set an earthen or wooden vessel on a brick full of water near your plant, that all water may be higher than the earth ; wet a thick woollen list, put one end with a stone or bit of lead to it into the water, that it may keep to the bottom ; lay the other end on the ground near the root of the plant, and the water will distil out of the bowl or pot through the list, because that part of it out of the pot of water, hangs lower than that within, &c.

All sorts of fibrous roots are assured in their growth by convenient watering ; but for bulbous and tuberous roots, the Gardener's hand ought to be more sparing.—*Gleanings from Old Authors.*

In the above extract no mention is made of watering over the foliage. To newly removed plants it certainly is most beneficial, and very much promotes their growth. In smoky neighborhoods, watering or syringing over the leaves, in dry weather, cleanses them from soot and dust, and enables them to perform their proper functions with vigor. It must, however, be carefully borne in mind, that the *top* watering can only be safely performed when the sun has left the plants in the shade. The only plants that I am aware of that form an exception to this rule are the Chinese Chrysanthemums, the foliage of which is very much benefited by being watered in the blazing sun. In dry weather I always remove plants in the evening, and water them well overhead, and which I continue to do, at the same period, so long as appears necessary.

ART. V.—*Directions for the Flowering of Dutch Bulbs in Pots or Glasses.* By Mr SAML. APPLEBY, Florist, &c. Doncaster.

HYACINTHS may be planted in pots from the latter end of October until December. The soil used should consist of about one-third of white or river sand, and the remaining two-thirds equal proportions of vegetable mould and loam. The pots should measure about six inches across the top. When the bulbs are planted, the pots are to be lightly filled with earth; then the bulb may be placed in the centre and pressed into the earth, so that it may be about half covered.—After this, the earth should be made solid all round the sides of the pot, to fasten the root. When the bulbs are thus potted, they should be removed into a cool place, in order that they may become well rooted before the tops shoot up. Much light is not necessary at this period; indeed, this deprivation of light causes them to root more quickly than they would otherwise do. For the first fortnight or three weeks after potting, they may be placed upon a shelf in a shed or a cellar, or in any other convenient place, providing it be cool.—Little water is also requisite; once watering, immediately after the roots are planted, being sufficient, if the situation is tolerably damp where the pots are placed.

If the stock of bulbous roots, such as Hyacinths, Narcissus, Early Tulips, &c., be large enough to occupy a small frame, the pots may be put within it after planting, and they may be covered a

few inches deep with rotten tan, or any other light material. The pots will soon become well filled with roots, and the shoots produced by bulbs previously well rooted will be stronger, and the flowers larger than if they had been put in a warm and light situation. When they are rooted, a few may be introduced occasionally into the room window or on the mantel-piece, if there be sufficient light. Light is quite essential when the tops begin to grow. By this means a succession of flowers may be had during the greater part of the spring.

If it is wished to bloom Hyacinths in water glasses, — the glasses should be filled up with water, but not so high as to come in contact with the bulb. Too much moisture before the roots protrude might cause the bulb to decay. The glasses may be put in a light, but cool situation, until the roots are grown half the length of the glass, at least. The longer the roots are before being forced into flower, the finer the flowers will be; and when rooted they may be kept warm or cool, as flowers are required in succession. The flowers will not put forth even when the glasses are filled with roots, if they are kept in a cold place. The water should be changed about twice every week, and rain or river water is better than spring water. Although the practice of growing bulbous roots in water is common, it is by no means preferable to growing them in earth. There are many failures when bulbs are grown in water, which are chiefly caused from their being more liable to rot before they begin to emit roots than when grown in soil. Keeping the bulbs quite clear of the water is a partial but only a partial preventive. Another cause is, that when the roots have attained some length they frequently decay, and the loss of the flowers is the consequence. Should success attend the growing and blooming of the greater part of those placed in water-glasses, the bulbs will be good for nothing afterwards, but those grown in pots might be planted the year following in the garden, and they would make pretty border flowers for several years.

Similar treatment to that now described is required for the large rooted Narcissus whether in pots or glasses.

To force early Tulips in pots, they should be placed about three or four in each pot, just within the earth, which may be of the same sort, and the management of the same as recommended for Hyacinths and Narcissus.

Crocuses will force well. They should be planted near together, say from ten to twenty in a pot, according to its size. Let them root naturally after planting, before they are forced into flower. They require similar treatment to the preceding.

In order that bulbous roots which have been forced shall not be quite exhausted, they may be planted in the garden with the ball of earth entire, as soon as the flowering is over, if the weather is favorable. They will thus mature their roots and leaves, and be strengthened sufficiently to bloom again the following season. If bulbs are neglected when their flowering season is over, they will not recover such neglect for a considerable time, but if carefully placed in the garden till their leaves became yellow, when the root will be matured, they may then be taken up and kept in a dry cool place until they are wanted the following season for planting. — *Cabinet.*

ART. VI.— *On Plants which are peculiarly adapted for planting in Beds in Masses; each kind being showy and profuse in Flowering.* By FLORA.

[Continued from our last.]

Commelina cœlestis, Sky-blue Commelina. Triandria, Monogynia. Commelineæ. The splendid blue flowers of this plant cannot be excelled, and its profusion of blossoms renders it deserving of cultivation in every flower-garden. With me the plant blooms from the middle of June to October. The roots are tuberous, and keep well through winter, if taken up after the blooming season, and preserved like Dahlia roots. Plants from the old roots grow, in good soil, from three to five feet high; those from seeds reach only from one to two feet. The following is the mode of management I have practised for the last two seasons:—I fixed upon a circular bed, eight feet in diameter; and in the first week in May I planted four feet of the centre with the old roots, placing the crowns just under the surface of the soil. The outer portion of the bed I planted with *spring-sown* plants, that had been raised in pots placed in a frame. Both the roots and plants were planted about six inches apart. Thus the centre of the bed being much higher than the outer part, the appearance was that of a splendid blue cone of flowers, scarcely to be excelled in beauty. Seeds are produced in abundance, and may be obtained of seedsmen at a small cost.

Salvia angustifolia, Narrow-leaved Sage. Diandria, Monogynia. Lahiatæ. This very fine blue flowered Salvia is a most charming plant. The fine azure blue flowers are produced in profusion, and the plant not growing higher than from a foot to half a yard, renders

it a great favorite. It merits a place in every flower-garden. The plant is a herbaceous perennial, and increases by division, or by cuttings of the young shoots, taken off close to the old wood, and struck in heat they root freely. It is a native of Mexico, also of New Spain, growing in dry elevated situations. It thrives abundantly with me in the open border during summer. I plant it out at the end of April, in a bed of rich leaf mould and loam. It begins blooming in June, and continues to the end of the season. I then take up the plants, and preserve them in pots or boxes in the greenhouse, or cool frame through winter. A bed of this lovely plant, growing near the following named species, makes a very pleasing contrast.

Salvia Cardinalis, syn. S. splendens rubra, S. fulgens. Diandria, Monogynia. Labiatæ. This very splendid flowering Salvia was first raised in this country, in the garden of the Earl of Egremont, Petworth House, Sussex, from seed received from Brazil; and in consequence of its extreme beauty, free flowering, ease of propagation, and its hardy habit, few plants have spread more rapidly and extensively through the country than this. It is a most valuable addition to the ornamental plants of a flower garden, or pleasure ground, and will keep in bloom from June to November, or even later. The plant is readily increased by cuttings, taking off the young shoots, when about six inches long, cutting them off close to the mother branch; they will root very easily at any period of the year, by placing them in moist heat. The cuttings should be inserted as soon after being taken from the old plant as possible, for if kept out of water or soil a short time, they wither and do not often recover. The plan I pursue with this plant is as follows. Strong plants will usually grow about five feet high; I therefore select a bed of tolerable size, that will correspond with the height of the plant. Having done this, I take the old plants for the centre of the bed, and young plants struck either in autumn or early in spring, for the outer portion of it. These latter plants feather down close to the edge of the bed, which gives the whole a very striking appearance. The soil is composed of one half fresh turfy loam, well enriched, and in order to give this addition to the bed I remove some of the old soil. Fresh soil is very essential, as there will be a much greater profusion of flowers with it than otherwise, it amply repays for the extra trouble. At the end of the season, I take off a lot of cuttings, and strike them in a frame. The young plants at the side of the bed, I take up and place them closely together in large garden pots, or a box, leaving the plants about half

a yard, or two feet high; these I preserve in a cool frame, or if room, in a cold part of the greenhouse. I planted out a bed of this plant, and pegged them down, at the time of planting out early in May.—The points of the shoots took an erect position, and formed flowering spikes about a foot high. The bending of the stems checked the growth of the plants, and caused them to flower in so dwarf a manner. I adopted this method, in order to have the plant low enough to correspond with contiguous beds of dwarf plants, and it fully answered my expectation. I turned out some three or four years' old plants into the shrubbery border, and they made bushes of six feet high, and the same in diameter. These have stood the two last winters, in the open air, and bloom profusely each summer; but the spikes of flowers are not so luxuriant as are produced on the younger plants, which I use for the centre of the bed in the flower garden.

Verbena chamædrifolia, Germander-leaved. Synonym, V. Melindres, Scarlet-flowered Vervain. Didynamia, Angiospermia. Verbenacea. This plant is a native of Buenos Ayres, growing through a very extensive tract of that country. The dazzling, brilliant, scarlet flowers cannot be exceeded by any other plant yet introduced into this country. And blooming from April to November, in the open air with us, makes it one of the most desirable plants in cultivation. It is found to survive the two last winters in this country, but I fear will not be sufficiently hardy for a severe winter. It has been found diffiult of keeping through the winter, even protected in a pit greenhouse; I find that old plants taken up and potted, generally suffer from the operation and die; and that if runners are potted off into small pots, as late as October, they rarely survive the winter.—By the following method I have, however, succeeded admirably, both in cultivating and keeping it through the winter, both in doors and the open air. The plant required a fresh soil, well enriched with vegetable manure, or rotted hotbed dung. In the centre of a small flower garden, I had a pyramid of turfy loam and dung, raised six feet high; and at the end of April I planted it with the Verbena, one small plant every six inches, and gave them a good watering at the time, in order to settle the soil at the roots. The plants flourished amazingly, and throughout the summer I had a splendid scarlet pyramid. Very little water was ever required, even in the drought of the present summer I had them in full flower. Where there is an unsightly wall, and it is wished to conceal it, nothing could do this more pleasingly and effectually than throwing up a sloping bank of

soil, and planting the Verbena. From the success of my pyramid I am confident it would be a pleasing and striking object. In a flat bed of this plant, I find it does not flower very freely during summer, unless the bed have a substratum of drainage made of broken pots, stones, &c.; and it is impossible to keep it through a mild winter in the open air, without a good drainage, the cold damp of the soil destroying the tender roots. I find that the plants survive the open air on the sunny side of my pyramid remarkably well; and some plants which had grown on a rockwork also endured the winter without any injury whatever. From these circumstances, I am persuaded, it requires a dry situation for the roots through winter, and if this be attended to it will answer. With a small flat bed I had, I placed a willow hurdle, (an old hamper lid,) about six inches below the surface at the time of planting, and at the end of October, I took up the plants and soil entire upon the hurdle, and placed it in a cool part of my greenhouse, and it continued to flourish through winter. Early in March, I took off a considerable quantity of side shoots and rooted runners, potted them into small pots (60's,) and put them into a hotbed for a fortnight; they struck into the soil immediately, and furnished me with an abundant supply for planting out of doors in April. I tried to keep young plants through winter in small pots, but could not succeed with any that were taken off the old plant later than the last week in August.

Art. VII.—*Collections and Recollections.*

Effects of Heat and Moisture on Plants. — In the economy of bulbs and tubers, nature teaches a state of repose, aud a preservation of vital energies as most conducive to future vigorous development, experienced in the cultivation of the tulip, the hyacinth, and many others. In the whole of vegetation, the important agencies of heat and moisture are well known; the former working chiefly by expanding, the latter floats the nutritious matter into the minutest ramifications. Thus, the end of a creeping rose-shoot introduced into a hot house, will grow several inches while not a bud moves on the plant outside. In its own more fervid climate, *Yucca gloriosa* displays its honors from the elevation of a stem: while in the open air in this country, the stem remains latent in a bulb. Thus, their conjoined

agencies may be traced in the revival of the fading blossoms of a nosegay, by the addition of a little hot water to that already in the glass. — *Rep. of Drummond's Ag. Museum*, 1834.

Anagallis Webbiana. — This plant never thrives if it be crowded amongst other plants. It is always better to strike young plants every year: the old ones seldom thrive more than a year. Cuttings taken off at three joints, and planted round the sides of a pot, and plunged in a gentle heat, will strike roots readily.

Plumiera Rubra. — This beautiful stove plant succeeds best in rich light loam, and requires but very little water at any time, but it must be kept very dry when not in a growing state, which will have a tendency to throw it into flower. It is propagated by cuttings, which should be laid to dry for a while, like those of Cacti, and afterwards either struck in tan, or planted in pots.

Effect of Iodine upon Germination. — A series of comparative experiments have been made by M. Canter upon the germination and vegetation of plants moistened with water, solution of chlorine, and solution of Idione, the latter of equal density. The following are his conclusions: 1st. Iodine is generally more effectual than chlorine in facilitating the germination of seeds; 2d. Iodine produces this effect by stimulating the germen of the seeds in the same manner as oxygen and chlorine; 3d. Iodine is absorbed by the growing plant, but its affinity for hydrogen and the power of vegetation is soon converted into hydriodic acid; 4th. The germination of seeds, which appear to have lost all vital powers, may frequently be excited by iodine. — *Rep. Pat. Invent.*

Planting Evergreens. — In planting evergreens in winter, a dull, calm day answers very well, but in autumn or spring, a moist rainy day is the best. Whether planting be done in a dull day, a wet day, or a dry day, it is very necessary to keep in view the expediency of keeping the plants for as short a time out of the ground as possible; if only a few minutes, so much the better: and in all cases when it can be done, where great numbers are to be planted, we should, if possible, have some men stationed to take up the plants, others to carry them, and a third set to put them into the ground. In all seasons, situations and soils the plants should be well soaked with water, as soon as the earth is put about the roots. — *M'Nab on Planting Evergreens.*

Spontaneous Movements of Plants. — In *Megaclinium falcatum*, the labellum, which is connected very slightly with the columna, is almost continually in motion; in a species of *Pterostylis*, there is a kind of convulsive action of the labellum; the filaments of *Oscillatorias* are continually writhing like worms in pain; several other confervas exhibit spontaneous movements; but the most singular case of the kind is that of *Hedysarum gyrans*. This plant has ternate leaves; the terminal leaflet, which is larger than those at the side, does not move, except to sleep; but the lateral ones, especially in warm weather, are in continual motion, both day and night, even when the terminal leaflet is asleep. External stimuli produce no effect; the motions are very irregular, the leaflets rise or fall more or less quickly, and retain their position for uncertain periods. Cold water poured upon it stops the motion, but it is immediately renewed by warm vapor. — *Lindl. Bot.*

Cephalotus. — The most striking peculiarity of *Cephalotus* consists in the conversion of a portion of its radical leaves into ascidia or pitchers. But as ascidia in all cases are manifestly formed from or belong to leaves, and as the various parts of the flower in phænogamous plants are now generally regarded as modifications of the same organs, the question is naturally suggested, how far the form and arrangement of the parts of fructification agree in those plants whose leaves are capable of producing ascidia or pitchers. The four principal, and indeed the only genera in which pitchers occur, are *Nepenthes*, *Cephalotus*, *Saracenia* and *Dischidia*, and the few other somewhat analogous cases, consisting of the conversion of bracteæ or floral leaves into open cuculli, are found in *Marcgraavia*, and two other genera of the same natural family. The only thing common to all these plants is, that they are *Dicotyledonous*. It may also be remarked that in those genera in which the ascidia have an operculum (lid), namely, *Nepenthes*, *Cephalotus* and *Saracenia*, they exist in every known species of each genus, and the structure of those genera is so peculiar that they form three distinct natural families; while in *Dischidia*, whose pitchers are formed without opercula, these organs are neither found in every species of the genus, nor in any other genus of the extensive natural order to which it belongs. — *Philosophical Journal.*

Floral Phenomenon. — At the green-house of Mr Wm. H. Gardner in this town, arranged among numerous members of the Cactus fam-

ily, is a fine specimen of the Grandiflora, or night-blooming Cereus This very curious plant, it is well known, is exceedingly economical in the production of its blossoms, and not less modest and coy in their exhibition. It rarely produces in the course of any one season, more than a single flower, never, we are told, more than two or three; and generally, after a season of unusual fecundity, it remains entirely barren during a period of three or four years. This infrequency of bloom has led some persons unacquainted with the respective plants, to confound it with the flowering Aloe or century plant, to which it has no manner of physical resemblance, and which is said to blossom but once in a hundred years. On the evening of the 21st inst. the only flower upon the specimen above mentioned began slowly to unfold; at midnight it was fully expanded; at five on the following morning it began to contract, and at seven had closed itself, never again to open. At the greatest dilation, it measured 21 inches in circumference, and 5 3-4 inches in depth; the calyx was a splendid gold color, and the petals perfectly white. It emitted a fragrance similar to the odor arising from the preparation called Turlington's balsam, with perhaps a somewhat sweeter scent. The appearance of so rich and beautiful a flower, springing without a leaf of any description, directly from a naked, thorny stalk, forbidding and almost hideous in its aspect and structure, is what constitutes a portion of the singularity of this unique vegetable; its property of blooming in the night is another peculiarity.

A reflective mind may gather sundry moral lessons, and profitable withal from the strange contrasts thus displayed, — how that objects both animate and animate, may sometimes exhibit the humblest, rudest, most unpromising exterior, and yet possess inherent qualities capable of ripening into glorious results: how that misfortune, infirmity, affliction, may eventuate in comparative prosperity and happiness — for

> "Sweet are the uses of Adversity,
> Which, like the toad, ugly and venomus,
> Bears yet a precious jewel in its head";—

how that those virtues which shun exposure to the broad glare of day, are most apt to command the world's admiration; and that the brightest deeds are often shrouded in voluntary obscurity — there being still on earth some glorious spirits, who

> "Do good by stealth, and blush to find it fame."

On the occasion just noticed, in common with many gratified visiters, we had an opportunity to observe the progress of the phenomenon, now occurring for the first time in this place; and would add that Mr G. is always happy to welcome his friends, to a view of his extensive collection of floral rarities, his garden and grounds being accessible at all times.—*Nantucket Inq.*

Art. VIII. — *Horticulture in Maine.*

We are always pleased with the progress of Horticulture, in whatever section of the country it may appear. It gives sure evidence of a correspondent improvement and refinement of taste in the individual or community who cherish and cultivate this interesting pursuit.—As we have recently visited the cities and some of the flourishing villages of Maine, we present to our readers a few hasty sketches of what fell under our observation, and more particularly struck our attention.

The approach to the city of Portland by water, is highly picturesque and beautiful. Nature has done everything for the place. Its situation on a promontory is well known. Its appearance as we pass the fort, is perhaps equal in beauty, to any other city in the Union.

Nor are our expectations disappointed as we perambulate its streets; many of them are profusely adorned with shade trees, which appear to be an object of some importance to the inhabitants if we may judge from the number that have been put out within a few years. — Attached to many of the residences, are neat gardens, though not extensive; some of them we had the pleasure of visiting.

The garden of M. P. Sawyer, Esq. contains the only green-house of any note in the city or vicinity. This we visited, and found Mr Milne, who has charge of it, a man well skilled in his profession, and an ardent admirer of flowers. There are two houses upon it.—The first a cold house for peaches and grapes, fiftythree feet long. The trees and vines were planted in it about the 20th June, 1835. The peach and some other trees are trained to the wall in a fine manner, and will probably produce fruit another season. The vines were in a highly healthy and luxuriant state, and though they were so recently planted, yet they were loaded with fruit, mostly the Sweetwater and Chasselas. Mr Milne states that he had made liberal use of liquid manure, applied to the roots.

The other building is a common green-house or conservatory, fifty feet long, devoted in part to grapes. We saw here in abundance, large rich clusters of the Black Hamburg, St Peters and other varieties; also a choice collection of green-house plants including a few measllias.

Very thrifty Isabella and Sweet-water grapes covered the garden, laden with fruit, but so unpropitious is the season that to all appearances very little of it will ripen.

In the garden are about fifty varieties of the finest pears, many of them in bearing state; also a good assortment of fine plums. We saw some fine gooseberries and bushes trained to a trellis. The climate is good for gooseberries and plums; but the peach is not successfully cultivated without protection, and is not often attempted.

The garden is finely laid out, with gravel walks and box edgings, and adorned with a profusion of flowers, among which were some good seedling dahlias in great perfection. Plants of *Lobelia cardinalis*, the most perfect specimens we have ever seen, enriched the collection of herbaceous plants. Mr Milne stated that he had raised a great abundance of melons in some decayed hotbeds we observed in a corner of the garden.

We visited another garden where preparations are making for the erection of a green-house of respectable dimension, to be completed this fall; at this place we saw some fine flowers, but not in great variety.

We were highly gratified with the opportunity we had to visit a lady's garden, which though a small one, was perfect in its kind, kept in fine order and displaying much taste in its enthusiastic proprietor. She has the greatest collection in a small space we have ever seen. Here were some fine dahlias; we recognised among them Dennisii, Widnall's Jason, Fulgida perfecta, and other fine varieties.

The Dahlia is as yet but little cultivated in this city; we occasionally see them of inferior sorts, decorating the courts and gardens of some of the houses, but there appears to be but few amateurs who possess the new and more popular varieties of this charming flower. From the eminences at the west and east ends of the city, there are some splendid views of the city, harbor and surrounding country. We noticed with pleasure, that most of the vicinity of Portland was highly decorated with numerous shade trees, in groves, groups, and single, which the good taste of the proprietors of the soil have spared

as yet. Near the city is an extensive, and one of the finest groves of oaks we have ever seen. There are some fine residences and well cultivated gardens about Portland, but as a general thing they are much below our expectations, and fall far short, in point of cultivation of the environs of our own city. With the exception of apples we saw but little fruit in Westbrook; horticulture appears to be rather in the back ground here, as well as in other towns about the city; but from small beginnings we witnessed in many places, we feel confident that it will assume that importance in the minds of the community that it deserves. The country from Portland to New Gloucester is not very interesting; there are, however, some fine orchards of apple. The premature frost which had taken place a few nights previous had cast a gloom upon everything, destroying upon low and level places corn, beans, vines, &c. The hills were in a great measure preserved from its destroying effects.

In New Gloucester there is a succession of fine orchards of thrifty apple trees, interspersed with a few plums and pears, and here and there an effort to raise a peach. Between this place and Danville we passed a large tract of land, where there had been a prodigious waste of timber and wood. For a number of miles, the land on either side of the road, was covered with huge logs, partly burned, lying in every direction, having the appearance of an attempt to cultivate a few years since, but abandoned and left to grow up to a thick brush-wood or second growth. In some places attempts were making to subdue, reclaim, and convert it into fruitful fields, and was undergoing the process of burning, piling logs, extracting stumps, &c.

To those who are accustomed to all the refinements and luxuries of modern horticulture the prospect is a cheerless one of converting nature's wilds into blooming gardens and luxuriant orchards. We saw in operation a stump extracter, an excellent instrument for raising and moving stumps. In a wild country they must be of great importance to the agriculturist. Where there is a scarcity of stones, stumps are much used for fences, and when properly laid, make not only a fence which man or beast cannot have much inclination to pass, but durable, and in our estimation not unpleasant to the sight.

Danville is situated on the Androscoggin river, opposite to Lewiston. Here is an immense water power, sufficient it is said for sixty large cotton mills, of Lowell dimensions. What a few years ago was a lonely wild, is now growing up into a lively flourishing village; the sound of the hammer is heard in every direction, giving evidence of its increasing prosperity, and importance. Amid all the bustle at-

tendant upon the rapid rise of a new village, it gave us pleasure that it does not engross the whole mind of some men, who are most deeply interested in the plan; but that some attention has been paid to the introduction of fine fruits. We were shown a fine collection of pears, cherry and plum trees from the Messrs Winship's nurseries, planted the present season, most of which were in a flourishing condition; also fifty rods or more of hawthorn hedge, planted at the same time. The pear when properly attended to in this country produces abundantly. We were told by a gentleman in this place that he had purchased in a neighboring town, St Michael pears at the low price of seventyfive cents per bushel. He further stated that this old and highly esteemed variety had not deteriorated as it has done in the vicinity of Boston — but was showing some symptoms of decay. We would recommend to the lovers of fine scenery the inspection of Lewiston falls, which when the river is not too low, forms an imposing and grand sight.

On the route from Lewiston to Augusta we passed many fine orchards, the trees bending with fruit. In no part of Massachusetts do we see a greater quantity of apples, than are to be found in this region, especially in the towns of Monmouth and Winthrop: the quality of them is not so good, a greater proportion being natural fruit. Very little attention appears to have been paid to the more delicious fruits. We saw a few fine looking pear trees, some plums, but no cherries. The only fruit in Augusta market of any consequence, was apples, and these not of the best quality. The country, for twenty miles west of the Kennebec river, is very fine. We passed numerous excellent farms, whose proprietors we should infer from outward appearance, are men of independence. The Ruta Baga is cultivated by many of the more thriving looking farmers, and better crops we never saw. The town of Winthrop is adorned with a number of large and beautiful ponds. We noticed that these ponds had protected the corn from the ravages of the frost. In one place in particular we observed that on the west side of a large pond, corn, potatoes, &c. were as green as ever, while on the opposite side, everything was seared. At first, this appeared unaccountable, until we learned that the wind on the night of the frost blew from the east.

Augusta, Hallowell and Gardiner are villages of importance, pleasantly situated on the Kennebec, and places of considerable business. Augusta, the seat of government, appears to be the most flourishing. Some taste is exhibited in many of the courts and gardens, and in

some we saw the Dahlia in perfection. There are no gardens of any great extent in the place.

The vegetable garden of Mr J. C. Steward, attracted our attention. He informed us his leisure hours only had been devoted to it, and while it has been a relaxation and source of pleasure, it has also afforded him considerable profit from the sale of early cucumbers and other productions, for which a ready market was found at the neighboring hotels. We were shown a few Isabella and Sweetwater grape vines, with fruit in good condition, and tomatoes trained to the garden fence; cabbages, and other vegetables very fine. We were pleased with the taste and industry of the proprietor, as exhibited in the perfect order and neatness of the garden — and we could wish that his example was more generally followed by our mechanics and tradesmen; we think it would conduce much to their health and comfort, should a few of the spare moments under the control of every one, be directed to the cultivation of the useful and ornamental in the few rods of ground they may have in possession. The hours spent in the garden seemed not to have interfered with his profession in his shop. We do not recollect of ever having seen a barber's shop neater or in better style; instead of the usual uncouth and vulgar prints which too often disfigure the walls, we found here a well selected assortment of maps, which to the traveller are much more interesting and profitable; and as to other accommodations we can only recommend the passing stranger to call and see for himself. Our stay was so short at Hallowell and Gardiner, that we had but little time for observation, and were somewhat disappointed in not being able to visit the garden and green-house of Robert H. Gardiner, Esq. of the latter place, who, we understand, takes the lead in horticulture in this vicinity.

We spent an hour at the dam now building across the Kennebec, half a mile above Augusta bridge, as the greatest curiosity of the place. On account of the severe drought, the present time is very favorable for its construction. It is said of the rivers generally in Maine, that they were never known to be so low as they are now. It was an interesting sight to look down from the high banks of the river upon the numerous workmen, to the number of six or seven hundred, on the dam and the bed of the river below. The banks of the river are faced up with solid masonry. The water is to be taken out on either side of the river in canals and carried down into the banks which will supply water power for a great number of mills.

Leaving Augusta on the east side of the river, the same fine country extends through Vassalborough and China as on the west side. — The crops of wheat, oats and barley have been abundant; in many places the wheat was still green.

Through the whole country, the substantials of life seem to be more attended to than ornament or the luxuries of horticulture. — There is not that attention paid to the appearance of fences about the dwellings, door yards, &c. as with us. A great destitution of shade and ornamental trees in villages, and about farm houses is too common. There seems to have been a war of extermination carried on among the trees in many sections of the country. In China, there is a beautiful pond seven or eight miles in length, which ought to be dignified with the title of lake. Its shores are mostly lined with well cultivated farms: it is enriched with islands and capes, and affords some fine scenery.

We noticed many fields of hops which are cultivated to much advantage in this town: the crop is middling, not so good as it has been for some years. From this place to Bangor agriculture is in its infancy, and horticulture for the most part in the germ. In Dixmont, there are some exceptions; we noticed in this pleasant village, excellent gardens, extensive young orchards, and other signs, indicating that horticulture was germinating at least.

Bangor has gone ahead at a rapid rate: the improvements made in the city within a few years have been very great. The impulse given to the place has not been entirely confined to business and speculation. We rejoice to see a few who are acting the part of benefactors to their country by encouraging horticulture, and showing the community that two spears of grass can be made to grow, where only one has heretofore. But manure at one dollar per cord, does not speak much in favor of great progress in the art, when so much land in the vicinity of the city needs it, and a ready market is found for all the products of the garden and field. Yet so it is; the best stable manure can be bought for that low price, and hay at twenty dollars per ton.

We were informed that a horticultural society was about to be formed in this city. Not only do we wish them success, but feel confident they will succeed, only let those who are interested, put hand to hand, and shoulder to shoulder and they will soon see that a combination of forces will be an effectual means of creating a taste for fine fruits and flowers, and of introducing a different state of feeling in relation to

the subject, from that which too generally exists, not only there, but in our whole country.

The most extensive and best garden we saw in this place, was that of Dr Barstow, two or three miles from the city, containing about six acres. Two acres of this was devoted to the cultivation of Ruta Baga, and a finer field we never saw. This gentleman informed us that he raised the last year at the rate of 900 bushels to the acre. The crop will probably exceed that the present season. His cabbages and many other vegetables were in great perfection. He had a brilliant display of annual flowers, some of rare sorts. His Dahlias have done rather poorly this year. Last season they flowered abundantly.

The erection of a green-house is contemplated this fall upon his grounds, which, in connexion with his garden and the Mount Hope cemetery contiguous, will form a point of attraction and place of resort for those who are fond of retiring from "the busy haunts of care." Mount Hope cemetery is in imitation of Mount Auburn, and was consecrated the present season. It contains thirteen acres mostly on a steep, conical hill, ornamented by nature with evergreen and other trees. The avenues and walks have been laid out under the direction of Dr Barstow and are either completed or in a state of forwardness. At the foot of the hill is a small run or brook, across which a dam has been built and a pond raised. Passing this by a neat bridge, we enter another lot of ten acres, which has been purchased by the city for a public burial ground, and the whole is about to be inclosed by a substantial fence in one piece. A sale of lots took place not long since, and if we remember right, from sixty to seventy lots were sold, the minimum price being twenty dollars per lot, and the amount of choice money arising from the sales exceed seventeen hundred dollars. Another sale is soon to take place, and it was anticipated the results would be equally successful. From the top of the hill, there is a fine view of Penobscot river near by, the surrounding country, and part of the city of Bangor.

There are many other small gardens, with an abundance of vegetables, ornamented with flowers; but no great attention appears as yet to have been paid to fruit. The only kind we saw exposed for sale in the mrrket was apples of an inferior sort.

We saw fine Dahlias in some of the gardens; they appear to succeed well in this climate. J. B.

Art. IX. — *Massachusetts Horticultural Society.*

Saturday, Sept. 3, 1836.

EXHIBITION OF FRUITS.

The exhibition of fruits was very attractive and it was greatly indebted to the liberal contribution of Messrs C. & A. J. Downing of the Botanic Garden and Nurseries, Newburgh, N. Y.

By Hon. E. Vose, President of the Society — Early Red Juneating, Lady Haley's Nonsuch and Shropshirevine Apples — Corse's Nota Bena, Green Gage and Imperial or White Gage Plums.

By Judge Jackson, Brookline, several beautiful clusters of Black Prince, French Purple and Blanquette Grapes.

By Messrs C. & A. J. Downing, Newburgh, N. Y. — a seedling (from the Washington Plum) two inches in length and two and a half inches in diameter, of a pretty regular and oval form ; skin greenish yellow, speckled with minute light yellow dots. Flesh yellowish green, remarkably firm, juicy, high flavored and separate from the stone, which is long and much compressed. Ripe from the middle to the last of August. The committee have named this variety "Downing Seedling" Plum — also presented by the same, Red Gage, Purple Gage (supposed to be the Reine Claude Violet of the Pom. Mag.) Cruger's Seedling Scarlet Gage, Violet Perdrigon, Kirke's, and Flushing Gage (which appear to be the same as our Imperial Gage) Plums.

By Edward Cruft, Esq. Boston, a beautiful specimen of Bolmer's Washington Plum.

By Samuel Downer, Esq. — Williams' Favorite, River, Yellow or Amber Siberian Crab, large Siberian do., small Siberian do., Apples, all very fine, also an unnamed variety of Pears.

By R. Manning, Esq. — Orleans, Drap d'Or, (and a variety received as the) "Precoce d'Tours" Plums — also Bloodgood Pears, a good bearer, and is considered by one of the first Pomologists "to be the best of the season ;" it is said to be new and a native of Long Island, N. Y.

By Mr C. Cowing, Roxbury — Williams' Favorite Apples.

By Capt. William Clapp, Dorchester — Clapp Pears, grown on the original tree, this kind greatly resembles the "old Catharine pear."

By Mr Samuel Phipps, a plum, the name of which is not ascertained.

By Mr James Leonard, Tauntou — English Red Cheek — the tree is healthy, vigorous and a great and constant bearer, but the fruit, except for baking, is hardly second rate.

By Mr Samuel Pond — Pond's Seedling, White Gage, Duane's Purple & Corse's Nota Bena, Plums, also Skinless Pears.

By E. M. Richards — "old Catharine" Pears, very large specimens — this old variety is probably of European origin, the name of which was lost — known in the market for many years as the "latten" or "Katren" pear.

For the Committee, E. M. RICHARDS.

EXHIBITION OF FLOWERS.

Messrs Johnson, Sweetser, Hovey, Mason and S. Walker, were the contributors of Dahlias; we shall not give a list of all the varieties which were exhibited, but name such only as we think were in the highest state of perfection.

Mr Johnson's specimens of Cedo Nulli, were the best we have seen of this variety, this season.

Mr Sweetser's Granta was an extra fine flower.

The specimens, by Messrs Hovey, of the King of the Dahlias, Widnall's Venus, Douglass's Criterion, Hermione, Albion and the Beauty of Sheffield, were splendid; Metropolitan Calypso, and Widnall's Apollo, are great beauties; we never saw better specimens or more superb flowers.

Mr Mason's Village Maid, and Dennissi were good specimens.

Two Seedlings, raised by Mr John Richardson of Dorchester, presented by Samuel Walker, possess many of the properties which constituted a good flower; we would not, however, until we have seen further specimens class them with the best, yet we shall hazard little by saying that three fourths of the varieties of Dahlias imported yearly, with long and high sounding names, are not so good. Desdemona, Lady Milton, and Satropa were fine.

Mr S. Sweetser and Messrs Hovey exhibited some choice specimens of the China Aster.

For the Committee,

S. WALKER, *Chairman.*

Saturday, Sept. 10, 1836.

EXHIBITION OF FLOWERS.

Pears, by Mr Manning — An unknown variety, medium size, and bright russet color, the flavor somewhat resembling that of a Melon —

may be the "Poire du Meion" of European Cat. Also, Dearborn's Seedling, a good pear and will probably become a favorite.

By Mr E. M. Richards — Pears, without a name.

Apples, by Mr Vose, President of the Society — Lady Haley's Nonsuch, a fine looking fruit.

By Mr Richards — Lady Haley's Nonsuch, Summer Gilliflower, Early Sweeting, Curtis' Early Striped, Porter, (prematurely ripe), Wait's Early, Benoni, Shropshirevine, Red and Green Sweeting (a baking fruit) Early Harvest, Red Juneating, Early Bough, and the American Summer Pearmain, a fine apple, also, two varieties without names.

From S. E. Coues, Esq. Portsmouth — Specimens of a native variety, much in appearance and taste to the favorite Porter apple, but more seeds.

Plums, from Edward Cruft, Esq. — A basket of Bolmer's Washington Plums, from his garden in Pearl street; the unrivalled beauty of this specimen excited great admiration; they far excelled all others which have been shown on the Society's tables.

By Mr Johnson — Bolmer's Washington, very large and fine, Golden Gage and White, or Prince's Imperial Gage.

By Mr Vose — Bolmer's Washington, very fine.

By Mr Manning — Bolmer's Washington, fine; Brevoort's Purple Washington, handsome, and a great bearer, Grosse Reine Claude, Prince's Imperial Gage and the Byfield Plum, (a native) small, but a beautiful looking fruit, a great bearer and is reproduced from the stone.

By Mr Pond — Magnum Bonum, Prince's Imperial Gage, Pond's Seedling, Bolmer's Washington, Green Gage, Smith's Orleans, and Duane's Purple.

For the Committee,

P. B. HOVEY, Jr.

EXHIBITION OF FLOWERS.

The display of Dahlias today was very brilliant; we have, at times had a greater number of flowers on our table, but on no occasion do we recollect to have seen so many fine specimens. Messrs Hovey and Mr S. Sweetser exhibited some new varieties of great excellence; we noticed ten fine varieties by Mr Sam'l R. Johnson, of Charlestown; and about thirty varieties by Mr W. E. Carter, of Cambridge. The Maid of the Mill and Lady Campbell, in the stand of Mr Sweetser; and Messrs Hoveys' specimens of Hermione, Zurah, Venus and Black Prince were very superior. S. Walker exhibited fifteen varie-

ties; among them the Beauty of Cambridge, also, two specimens of Mr Jno. Richardson's seedling. This flower bids fair to rival all the seedlings produced in this country. The color is not equal to the parent (Widnall's Perfection) but the form and size we think are improved. Another season, and after Mr Richardson has given it a name, we shall be able to put in its proper place, thus far we put it with and call it one of the *number ones*.

For the Committee, S. WALKER, *Chairman*.

Saturday, Sept. 17.

EXHIBITION OF FRUITS.

Pears. From Mr Manning — Surpasse St Germain (Buel and Wilson's Cat.) an excellent pear about the size of the Old St Germain and rich and beautiful in appearance. Julienne, Valee Franche, Summer Rose and Summer Franc Real, — the latter rich and delicious and will rank among the very best summer pears.

From Mr Richards — Grisse Bonne (Cox), Great Mogul and Harvard.

Apples. From Mr French — Dutch Codlin, Garden Royal, Gideon (a native sweet apple) and Porter's, very fine.

From Mr Richards — Orange Seedling (good) and Benoni.

By Mr W. Kenrick, from Dr Ford, of Alna, Me. — the following varieties of apples, — Pomme de Roi, Early Harvest, Lewis' Early, Roxbury Russet, Hinkley Sweeting, Haley Apples.

Several varieties from a source unknown to us, were presented for names, among them was the Porter and Pumpkin Sweeting.

Plums. From Mr Manning — fine specimens of the German Prune, which has the valuable property of hanging on the tree till dry.

From Mr Van Dyne, of Cambridge — White Gage and Smith's Orleans.

From Hovey & Co.— Peaches, cultivated in pots. Also, a specimed of Walker's Long Green Cucumber, measuring twenty inches in length.

Mr Mason, of Charlestown — exhibited a basket of Brugnon Nectarines, the finest of that variety we have ever noticed.

For the Committee, P. B. HOVEY, Jr.

Saturday, Sept. 24, 1836.

The annual exhibition of the Massachusetts Horticultural Society took place on Saturday, 24th inst. and the place selected for the day and the occasion was the Artists' Gallery, a spacious Hall situated in Summer Street. The exhibition of Fruits and of Flowers, &c. con-

sidering the many new and rare varieties, and splendid specimens, which were this day shewn, fully sustained the character which it has continued to acquire, during the former years.

EXHIBITION OF FRUITS.

Fruits were sent for the exhibition by the following gentlemen :—

By Mr Cowan, from the conservatory of Col. Perkins in Brookline, beautiful specimens of Broomfield Nectarines, Murray's do.; Peaches, Noblesse and New-Royal George; Grapes, Black Hamburg, St. Peters, Frankendale, Black Frontignac, Grizly Frontignac, White Syrian or Hamburg, White Chasselas, White Muscat of Alexandria, all remarkably fine and beautiful.

By Jacob Tidd of Roxbury, Grizly Tokay, a bunch weighing 1 pound 5 ounces, and four clusters of Black Hamburg which respectively weighed 2 pounds 1 ounce, 1 pound 15 ounces, 1 pound 13 ounces and 1 pound 10 ounces. Also one very extraordinary bunch of Regner de Nice Grapes which weighed 6 pounds 5 ounces, and five others which respectfully weighed 4 pounds 13 ounces, 3 pounds 7 ounces, 2 pounds 8 ounces, 2 pounds.

By Mr Haggerston from Belmont and the splendid conservatory of J. P. Cushing, Esq., some very extraordinary specimens of Williams' Bon Chretien and a large basket of various fine kinds of Grapes, of very handsome appearance and finely decorated. Also a large pot containing a living vine coiled and loaded with fine ripe clusters of the Black Hamburg, the whole beautifully decorated with flowers.

By Mr Hathorne of Salem, Pears, name unknown, large, very sweet.

By Gen. Josiah Newhall of Lynnfield, Porter Apples, also fine specimens of the favorite and beautiful fruit described in the Pomological Magazine as the *Capiaumont*, and sent hither by Mr Knight, under the same name, but now satisfactorily ascertained to be the Roi de Wurtemburg. Another Pear large and very oblong, without name, but to appearance the Bourgmestre or the kind heretofore so called with us.

By B. V. French, from his estate in Braintree, Pears, name unknown, also varieties of apples, including Dutch Codlin, Monstrous Bell Flower, Gravenstein, and Ruggles. A native fruit, large red and handsome, austere in taste, but fine for cooking a great bearer. Also a fruit received by him as the Mela Carla.

By Jonathan Warren, of Weston, Warren's Seedling Apples, a fruit raised by him, small, red, of fine flavor and a great bearer. Another called the *American Nonpareil*, a new, large, red, beautiful Pear,

the size, shape and color of a large Baldwin, and now ripe, very tender, of a fine, pleasant, acid flavor. This fruit which is highly deserving and a great bearer, originated on the farm of the Rev. Dr Puffer of Berlin, Mass. and the tree first bore fruit in 1828. Also specimens of the Porter.

By Dennis Murphy, from his garden in Roxbury, Chelmsford Pears, otherwise called Mogul Sumner.

By E. Vose, President of the Society, Pears, the Bartlett or Williams' Bon Chretien, Roi de Wurtemberg [Capiaumont?] Napoleon, Lewis, Vert Longue or Mouille Bouche, Andrews, Urbaniste. Peaches, Gross Mignonne.

By Enoch Bartlett, Vice President of the Society, Pears, Capiaumont as heretofore so called, Andrews, Cushing, Sylvanche Verte, Culotte de Swiss, Seckel, Johonnot, Marie Louise, Napoleon; Apples, Hawthorndean, Porter, and a very large variety of a green color called the Mogul.

By George Newhall, Esq. of Dorchester, Porter Apples, two baskets.

By Mr Manning, about seventy varieties of Pears, as follows:— Autumn Superb, Belle Lucrative, Belle et Bonne, Beurre Diel and Colmar, Souverain, the last two kinds Mr M. is confident are identical, the last name we believe is not found on the lists of Flanders; Easter Beurre or Pentecote, Bezi Vaet, Black Pear of Worcester, or Iron Pear, Bleecker's Meadow, Williams' Bon Chretien, Buffum, Capiaumont of Pom. Mag. or Wurtemburg, Catillac, Bezi de Chaumontelle, Cushing, Delices D'Hardenpont, Doyenne Gris, Doyenne Blanc or St Michael, Echassery, Glout Morceau, Sucre Vert, Sylvanche Verte, Henry IV., Jalousie, Louise Bonne, Marie Louise, Napoleon, Verte Longue, Naumkeag, Newtown Virgalieu, Orange d'Hiver, Passe Colmar, Pope's Quaker, Princess D'Orange, Raymond, Rousselet de Rheims, St Ghislain, Verte Longue Panache, Summer Thorn, Styrian, Washington, Wilkinson, Bowdoin, Winter Nelsi, or LaBonne Malinoise, Beurre de Bollwiller, Beurre Bosc, Fulton, Colmar Sabine of the French, Figue de Naples, Remsens, Green Pear of Yair, Thomson's (American,) Beurre Von Marum, Holland Green, Gansel's Bergamotte, Capsheaf, Coffin's Virgalieu, Saunders' Beurre. Also some unnamed kinds. The above kinds of fruit are of the different seasons, of course but few were now in eating, and are therefore for re-examination at some future day. The apples exhibited by Mr Manning were the King of the Pippins, Fall Harvey and Rambour Gros or Franc.

By Mr Richards, Pears, Seckel, Verte Longue; Apples, American Summer Pearmain very fine, Porter.

By William Oliver from his estate in Dorchester, Pears, Broca's Bergamotte, Swan's Egg, St Ghislain, Howard and Seckel.

By J. A. Kenrick; Pears, Seckel, Harvard, Andrews. Apples, Hubbardston Nonsuch, Hempstock and a large handsome fruit without a name.

By Mr Sweetser from his garden at Cambridgeport. Large specimens of the Chelmsford Pear called the Mogul Summer.

By Col. Wilder, Pears, Bartlett or Williams' Bon Chretien, and fair specimens of the Roxbury Russetting of the growth of 1835.

By Joshua Gardner of Dorchester, Seckel Pears, Gravenstein Apples, very fine, monstrous Pippin, and a native sweet apple.

By Gardner Brewer, Roi de Wurtemberg, tree transplanted from the Nursery last spring.

By William Kenrick, Beurre de Bolwiller Pears, &c.

By John Woodbury, Golden Chasselas Grapes.

By J. L. L. F. Warren of Brighton, Porter Apples, Sweetwater Grapes or Chasselas from out of door culture. A Winter Squash the growth of 1835.

By E. Breed of Charlestown, a very large Valparaiso Squash of the oval form, also another variety very large, flat and ribbed at its sides.

By Mr McLellan, a green fleshed Persian Muskmelon. Also a Minorca Muskmelon, both from Oak Wood, the Mansion of William Pratt, Esq. of Watertown.

By Thomas Mason of the Charlestown Vineyard, Sweetwater Grapes, Black Hamburg, and St Peters.

By S. R. Johnson of Charlestown, Sweetwater Grapes, the produce of out of door culture, Black Hamburg and White Frontignac or Muscat.

During the present unusually cold summer, the trees of the peach and the cherry have not borne their wonted and abundant supplies of fruit; the blossoms having been destroyed by the last uncommon winter, yet though thus cut off from our usual supplies, we have the less reason to complain, insomuch that but few of the trees which produced those fruits have been destroyed, and compared with many other sections of our country, even in more southern parallels of latitude, the climate of the country around Boston seems indeed highly favored. The climate of the extensive plains and valleys bordering on the great northern arteries or rivers of our country, seems in some

degree very unfavorable. The cold aqueous vapor which is so copiously exhaled from these rivers by day, descending by night on the hills, rolls downward by its superior density and gravity, resting and condensing on all the low plains and valleys, thus rendering them doubly exposed to the destructive frosts of winter and of summer.—Moreover, the winds, which unobstructed, follow almost invariably the longitudinal course of the valleys of those rivers bring down alternately from higher regions and from high northern latitudes, and from other climes, a degree of cold during winter the most intense and destructive. On the best authority we are assured, that the Pears and particularly the Peach, and the Cherry, have during the last winter suffered partial destruction in the valley of the Connecticut as far south as the country around the city of Hartford, and even still further downwards and towards the sea. Even far below the city of Albany on the Hudson or North River, the Cherry tree particularly, and many other trees which are equally as hardy, and especially during all the period of their younger years, are, we are credibly assured, extremely liable to suffer death during winter from the same destructive climate and causes. The fine exhibition of fruits and the splendid varieties of flowers and other productions which was witnessed this day affords new evidence that we have abundant cause of gratitude.

For the Committee,

WILLIAM KENRICK.

EXHIBITION OF FLOWERS.

This day the Massachusetts Horticultural Society held their Annual meeting, at the Artists' Gallery, Summer-street, and notwithstanding the season has been unusually cold and unprosperous for the cultivation of flowers, yet, by the generous contributions of our friends, and the aid and assistance given by many of our members, the committee were enabled to decorate their exhibition rooms with much that was choice and rare. The flowers generally, particularly the Dahlias, were in the highest state of perfection; and what was lacking in *quantity*, compared with former seasons, was in a great measure, made up in *quality*. The contribution of J. P. Cushing, Esq. of Watertown, by his gardener Mr David Haggerston, was magnificent. The pot of Black Hamburg Grapes richly decorated with Dahlias and other flowers, thus blending and uniting the handmaids of Flora and Pomona, was happily conceived and finely executed by Mr Haggerston. The specimens of Combretum purpureum, Crinum

amabella, Phaseolus corocolla, Nerium splendens, and Amaryllis Belladonna were very splendid.

Thomas Lee, Esq. presented three vases of cut flowers, some of which were fine specimens.

A fine bouquet from William Pratt, Esq. of Watertown.

Handsome bouquets of cut flowers from the garden of the President of the Society, and from the garden of the Orator of the day.

By Col. Marshal P. Wilder of Dorchester, twentysix specimens of seedling Pansies of great beauty. Also, Gloxinia maculata and other greenhouse plants, and eightysix specimens of the Dahlia, among which we noticed a plant of Angelina transferred into a pot with sixteen fine flowers growing thereon; this specimen made a very imposing appearance. We also noticed in Mr Wilder's collection, Widnall's Rising Sun, Bride of Abydos, Jupiter, Young's Black Ajax, Cross's yellow Hermione, Inwood's Ariel, Douglass's Glory, Erecta, Wells' Paragon, Young's fine Crimson and Dennissi.

By Mr Samuel R. Johnson of Charlestown, a fine collection of Dahlias, including extra fine flowers of Cedi Nulli, Guido, and Lady Fordwich.

From the garden of Mr S. Sweetser of Cambridgeport, bouquets and one hundred and three specimens of the Dahlias, containing most of the choice varieties. We were much pleased with his specimens of Granta, Springfield Rival, Queen of Dahlias, Duke of Devonshire and Exeter.

Messrs Hovey & Co. presented several splendid bouquets and sixtyeight fine specimens of Dahlias. In their collection we noticed Hermione, Zarah, Bride of Abydos, Urania, Widnall's Venus, do. Paris, and beauty of Camberwell.

By Mr William E. Carter, of the Botanic Garden, Cambridge, several bouquets and one hundred and five specimens of the Dahlia. Mr Carter shew his Dahlias on a new plan, they met the eye at once and with great force. We noticed fine specimens of Satropa, Granta, Miss Pelham, Ophelia, and the Dutchess of Bedford.

By Mr Mason of Charlestown, eightysix specimens of Dahlias and several fine bouquets. Mr Mason shew two seedling Dahlias together with some fine specimens of Granta, Village Maid, Dennissi and Transcendent.

Messrs John Richardson of Dorchester, William and John A. Kenrick of Newton, William Wales of Dorchester, and S. Walker of Roxbury, each presented cut flowers, bouquets, &c.

For the Committee, S. WALKER, *Chairman.*

NOTE.—A box containing some fine Seedling Dahlias, among which the Beauty of Portland and Miss Neil appeared most beautiful, China Asters, double, from single ones last year, and Pansies were received from Robert Milne, Gardener to M. P. Sawyer, Esq. of Portland, Me. but too late for exhibition. We regret that our Portland friend could not have forwarded his flowers in season to have taken a stand with some of Boston cultivation; they might not have suffered in comparison.

ART. X.—*Gardeners' Work for October.*

Do not suspend your weeding operations too early in the season, but give a general hoeing and weeding to all your crops and carry the weeds out of the garden. Towards the end of this month, if the stalks of asparagus turn yellow cut them close to the earth; clear the beds and alleys from weeds, and carry them together with the stalks off the ground. It will then be well to cover the beds of asparagus with manure, and nothing is better and more suitable for them than the dung of old hotbeds; but if that is not to be had, well rotted stable manure will answer; let it be laid equally over the beds one or two inches deep.

The seedling asparagus sown last spring should now, likewise, have a slight dressing. The bed should be cleared from weeds and then spread an inch or two in depth of dry rotten dung over it to defend the crown of the plants from frost.

Secure potatoes and other roots. It was remarked by the editor of the Albany Cultivator, and the opinion has been confirmed by others acquainted with the subject, that it were better that the sun never should shine on potatoes, and that they should be housed with all the dirt that adheres to them—that it is beneficial to add more dirt in the bin or cask to exclude external air as much as possible. And that their surface should be kept moist, and the atmosphere which surrounds them as little above the freezing point as possible.

Potatoes may be kept during winter in a cellar free from frost, or in pits or caves in the field. In the latter case they must be so situated on a dry knoll, or the sides of a hill, as to be secured from the possibility of the pits being pervaded by water; and they must be so covered, first with straw, and then with loam as to prevent the

intrusion of frost. They may likewise be placed in barrels, casks or boxes, and if packed in sand or the loam of the field in which they grew, they will be preserved better than in any other situation. If they are exposed to the sun and air till the upper side acquires a green color, they become poisonous.

With regard to preserving Beets and other roots, Mr M'Mahon gives the following directions:

Previous to the commencement of severe frost, you should take up with as little injury as possible, the roots of your turnips, carrots, parsnips, beets, salsify, scorzonera, Hamburg or large rooted parsley, Jerusalem artichokes, turnip rooted celery, and a sufficiency of horse radish for winter consumption; cut off all their tops and expose the roots for a few hours till sufficiently dry. On the surface of a very dry spot of ground, in a well sheltered situation, lay a stratum of sand two inches thick, and on this a layer of roots of either sort covering them with another layer of sand (the drier the better,) and so continue layer about of sand and roots till all are laid in, giving the whole on every side, a roof-like slope; then cover the heap or ridge all over with about two inches of sand, over which lay a coat of drawn straw, up and down as if thatching a house, in order to carry off wet, and prevent its entering the roots; then dig a wide trench round the heap, and cover the straw with the earth so dug up, to a depth sufficient to preserve the roots effectually from frost. An opening may be made on the south side of this heap, and completely covered with bundles of straw, so as to have access to the roots at all times when wanted for sale or use.

Some people place straw or hay, between the layers of roots and immediately on the top of them; but this is not approved of because the straw or hay will become damp and mouldy, and occasion the roots to rot, while the sand would preserve them sweet and sound.—Roots preserved as above are less apt to become stringy, tough, and to vegetate early in the spring than those kept in cellars.

Art. XI.—*Miscellaneous Articles.*

Gathering and Preserving Fruit.—Great quantities of winter fruits are raised in the vicinity of Boston, and put up for winter use, for the market and for exportation. The following is the mode almost

universally adopted by the most experienced. And by this mode the apples under favorable circumstances are frequently preserved in a sound state, or not one in fifty defective, for a period of seven or eight months. The fruit is suffered to hang on the tree to as late a period as possible in October, or till hard frosts have loosened the stalks, and they are in danger of being blown down by high winds; such as have already fallen and carefully gathered and inspected, and the best are put up for winter use. They are carefully gathered from the tree by hand, and as carefully put into baskets. New, light, well seasoned flour barrels from the bakeries are usually preferred; the barrels being quite filled are gently shaken, and the head is pressed down to its place and secured. It is observed that this pressure never causes them to rot next the head, and is necessary, as they are never allowed to rattle in moving. No soft straw or shavings are admitted at the ends, it causes mustiness and decay. They are next carefully placed in wagons and removed on the bilge, and laid in courses in a cool airy situation, on the north side of a building, near the cellar, protected by a covering on the top of boards, so placed as to defend them from the sun and rain, while the air is not excluded at the sides. A chill does not injure them; it is of no disservice, but when extreme cold weather comes on, and they are in imminent danger of being frozen, whether by night or by day, they are carefully rolled into a cool airy dry cellar, with an opening on the north side that the cold air may have free access — they are laid in tiers, and the cellar is in due time closed and rendered secure from frost. The barrels are never tumbled or placed on the head. Apples keep best when grown in dry seasons, and on dry soils. If fruit is gathered late, and according to the above directions, repacking is unnecessary; it is even ruinous, and should on no account be practised till the barrel is opened for use. It has been fully tried.

Pitting Turnips.—As the turnip harvest is approaching, we take the liberty of suggesting to those who cultivate the Swedes, our method for pitting them for winter. The pits are limited to two feet in width, and of an indefinite length, and are dug in a dry situation, seldom more than two feet deep. When the pit or hole is filled with roots as high as the surface of the ground, the turnips are laid by hand, the tops cut and sloping to the centre, until they terminate in a ridge which is generally about two feet above the ground. The whole are then covered with straw and then with earth. The important

point follows: the crown of the ridge is then pierced with an iron bar, at intervals of a yard, and the earth pressed out so as to leave an entire aperture into the turnips, and into each of these apertures a wisp of straw is loosely inserted. The roots will peel unless the rarified air is permitted to escape, the turnips are apt to rot. The openings permit its escape without danger of the frost's doing injury.—With this precaution we have not lost one bushel in a thousand. The same course would no doubt be beneficial in preserving *mangel wurtzel.—Goodell's Farmer.*

Horticultural Institution in Halifax.—In the Novascotian of Thursday last, an able report of the sub-committee upon the expediency of founding a public garden in Halifax, has made its appearance, but we fear it is too elaborate to meet the present views of the horticulturist in this young country; we therefore only notice such part of it as appears to us to come within the compass of the means and intelligence we at present possess, to put so praiseworthy an object into immediate and effectual operation. Alluding to the site most suitable for a public garden and a comparative outlay that would be necessary, the Report states —

"That an opinion, nearly universal, prevails, that the best site which could be selected, is some portion of the vacant space now forming part of the common and government grounds in the rear of Fort Masse, situate between the Spring Gardens and the northern wall of the Hon. Enos Collins. It is of large extent. The soil is fit for cultivation. It is finely varied in its surface. It has the benefit of a flowing stream and affords opportunity for cultivating the aquatic plants and grasses. As the title of part of it is vested in the town already, to appropriate it for this new purpose an act of the legislature only is required. The consent of the Crown may be expected as a matter of course. The site is referred to only by way of suggestion and the subject, of course, before any definite plan is arranged, will be fully discussed and considered at a public meeting of the Society.

"The Committee are not prepared to recommend the cultivation of the whole of it; in the first instance their operations would be confined to the erection of a picket fence, the making of roads, the planting of trees and shrubs, the cultivation of two or three acres only, for the reception of plants, especially such as may be presented to the Society, and are valuable by reason of their novelty. The

improvement may be conducted on economical terms by the sale of the stones and the employment of cheap labor.

"An outlay of not more than £300 or £400 would be required in the first instance; for the Committee are not prepared to embark in the enterprise to any great extent, until the favorable disposition of the community has been tested by partial success. The botanical collection could easily be obtained, by conducting exchanges with the celebrated Horticultural Societies established in Europe and America; for as these are supported purely from a love of science, they are animated with the generous desire of extending the benefits of their researches to all who seek for them. The Committee would derive essential assistance in this branch of their exertions, from the practical knowledge of the Botany of the Province, in possession of Mr Titus Smith. They have been already aided by a plan of the public grounds alluded to, completed by Mr James Irons. They expect to receive the necessary funds from donations and perhaps by a moderate grant from the Legislature — for they wish to conduct it so that it may promote the prosperity of the Province, and be in fact an enterprise supported by the combined intelligence and public spirit of the country. The annual expence of supporting it would be contributed by subscriptions, as in the great cities of the Old World. — This sum would not be extravagant, as it would be limited to the support of a Garden, and the expence of cultivating a small extent of ground. No building would be required, except a toolhouse and rooms for the residence of the Gardener and his family, which could be erected, after those elegant and economical models of cottages so fully described in Loudon's Encyclopædias of Cottage Architecture and Gardening, both of which are now to be found in the Halifax Library.

"The society aided by such a Garden, would very soon be able, it is hoped, to improve the cultivation of fruits and vegetables. The same spirit which guides their labors in one branch, would exercise a happy and auspicious influence upon the Provincial agriculture; and while they thus endeavor to embellish the capital, and to add to its intellectual resources, they humbly hope to be instrumental in promoting those other objects which are the most affluent sources of national prosperity and happiness." — *Acadian Recorder of Sept.* 10.

THE

HORTICULTURAL REGISTER,

AND

GARDENER'S MAGAZINE.

NOVEMBER 1, 1836.

Art. I. — *Remarks on the Influence of Light, in Vegetation, with a late Observation in the Tuberose.* By J. L. R.

The importance and influence of light in the economy of vegetation, is as striking a phenomenon as it is a familiar one. Thus the most casual observer of plants must have noticed the strong tendency of leaves and stems to turn towards that quarter from whence the greatest amount of light may be obtained. The young shoots and branches of a trained tree grown on a wall, the leaves of a grape vine under a glass roof, and even the plants which are cultivated in parlors, all evince the same decided partiality for light. The laminæ or leaves contain two sets of vessels, purposely contrived for the health and vigor of these organs. Those of the upper surface elaborate the ascending sap or nutriment by means of light and air, while those of the under surface transmit the elaborated and changed substance through the petiole to the bark. This simple fact easily explains the manifest disquiet, which every plant exhibits when forcibly perverted from its accustomed position — that position most favorable to its health and growth.

Curious experiments may be made on this singular economy of leaves. Whoever has had occasion to turn their geraniums or roses in their windows to prevent their too great inclination towards the glass, and thus their tendency to grow crooked and unsightly, must have noticed with what rapidity the leaves accommodate themselves to the new exposure. The brighter the light, the sooner is the change effected. But if this operation be too often repeated, the plant suffers more or less, and this action is rendered less apparent.

Calendrini ascertained that vine leaves, when plucked from the stem and suspended by a thread, turned to the light. This experiment must be made with care and delicacy, to insure success. The attempts which branches and roots, which bear leaf buds, make to reach the light, when secluded from its presence in a dark cellar, by very unusual elongations, are familiar to all.

Nor do the leaves alone exhibit a decided partiality for a peculiar employment of light in their organic structures and necessities. The flower in almost every instance seeks its influence The nocturnal species are indeed striking exceptions; while very many of the diurnal, are as impatient of the absence of light, as are the former of its presence. The unsurpassed beauty of *Cereus grandiflorus*, and the lovely tints of the humbler and delicate *Anagallis*, serve in their expanded flowers as common illustrations of both these assertions.

The old and singular notion that the *Helianthus* was so particularly fond of the sun's rays as to court his presence by turning its stem to his diurnal course is not wholly abandoned to this day. The quaint language of Girard so long ago as 1597, informs us that "the flower of the Sunne is called in Latine *Flos Solis*, taking that name from those that have reported it to turne with the sunne, the which I could never observe, although I have endeavoured to finde out the truth of it, but I rather thinke it was so called bicause it doth resemble the radiant beames of the sunne, whereupon some have called it *Corona Solis*, and *Sol Indianus*, the Indian sunne flower — in English the flower of the sunne, or the sunne flower."

A very beautiful instance of this tendency for the sun's light is at this moment before me. A flower scape of *Polianthes tuberosa* describes in its diurnal movements a very considerable *arc* and actually travels in each twelve hours of daylight the distance of more than twelve inches. The window in which the plant stands is towards the south-east. It is evident that it gains its upright (vertical) position in the night, after having been inclined first towards the east in the morning and then towards the west as the sun declines. I have so often watched its movements, that there can be no deception in its apparent course.

ART. II. — *Cause of the Decay of Peach Trees.* By SOLOMON J. SCOTT, M. D.

DEAR SIR, — In pursuance of my promise, I now offer the discovery I have made, relative to the decay of peach trees.

The peach tree is caused to decay by the ravages of a worm, which originates from the egg of a large fly, that bears some resemblance to a wasp. This fly pierces the outer bark of the tree, above ground, and deposites an egg in the inner or green part of the bark; as soon as the worm is hatched, it makes its way downwards, between the bark and the wood of the tree.

These facts are shown by an examination of the tree, for where the worm began, the hole is small, and gradually enlarges, until you come to the worm, or the place where it made its exit; thus corresponding with what is observable in the progress of all wood worms.

If the worm begin a few inches above the ground, the frost sometimes comes on before it gets far enough below the ground, and destroys it; but if the ground about the roots of the tree be covered with snow during the severe frosts which prevents the ground from freezing deep, the worm in this case, will survive the coldest winter. In the spring the worm commences its ravages anew; and now is the time it does the most mischief — for as soon as the sap begins to move, it oozes out in the form of gum and water from the fresh wounds made by the teeth of the worm, until it is grown, when it voluntarily leaves the tree, which it does about the last of June, or first of July. Half a dozen worms about the roots of a common sized tree, will destroy the whole tree; but if the worms are only on one side of the tree, then only one side or perhaps a few limbs of the tree will be found dying. The effects of the worms extend from one half to an inch on each side of its track, or hole in the bark, as I have always observed the bark to be dead for that distance; so that a worm for every inch and a half round a tree kills it all but the roots, and sometimes even these; but if the worms are scattered so as to leave spaces of two or more inches, the tree will be observed to revive after the first of July, or near that time; but if the succeeding winter is favorable to the life of the worms or the egg, the next spring the ravages are commenced anew by another generation, and the life of the tree is destroyed.

About three years ago my attention was drawn to this subject from

the almost universal decay of peach trees, in my neighborhood. You will recollect that the winter was severely cold, yet in the coldest weather then, the ground was covered with snow. All my neighbors attributed the decay of the peach trees, the following spring, to the severe frosts — but I felt doubtful, as I knew that peach trees thrive well in all parts of Canada, where it is much colder than here.

On examining some trees that were decaying, I found a quantity of gum on the ground, by the roots, and on scraping the earth from them, I found that the gum had oozed out (part of it,) under the surface of the earth. I then began to scrape away the outside bark, and soon came to the worm, and was at once convinced, from the effects I saw, that these were the cause of the tree's decay; and from that time I have carefully observed its progress.

The worm is white, similar in size, shape and color, to the common white, flat headed wood worm. Its mouth is black, or perhaps, nearer to a mahogany color, and its progress is uniformly downwards; it sometimes begins from three to six inches above ground, but generally near the surface, and is seldom found deeper than six inches below the ground.

I have been thus particular to induce farmers to examine their trees. Wherever gum is found at the root, there the worm, or traces of its ravages will be found. And having observed that where a few trees have been standing in a yard, and the ashes of the fireplace have been thrown about their roots, or where they were overflowed with water in the winter, the trees are not affected and are alive. On observing these facts, I advised several farmers of my acquaintance, to have ashes thrown about the roots of the peach trees, every spring at least; and in all cases, the experiment succeeded — not a single instance of a worm, or death of a tree, except from external violence, has occurred among those that have been so treated.

I will now offer a few remarks as to the proper methed of cultivating the peach tree, with success for bearing fruit to perfection.

1. The young trees or sets, should never be trimmed or pruned near the ground; and if the seedling sends forth many branches from the root, they should be carefully kept to the root, and set out again (when transplanted,) in a cluster, as they come up; or branched out from seeds, and suffered to grow as they will.

2. The peach, of all others, requires an open place, clear of shade and in a warm soil, and a soil that is tolerably dry. I have always remarked that trees bear earliest when the ground about them is tol-

erably compact; and a fair situation to the sun is indispensable, to give the fruit an early ripening and fine flavor; hence the custom of setting out peach trees in fence corners, and shady grounds, will always prove a source of disappointment to those who thus plant their trees, in a soil so cold as the soil of most parts of this state is found to be; and care should be taken that cattle do not bite off the limbs of the trees, nor break the bark so as to suffer the gum to escape in the beginning of warm weather, when the gum is essential to the blossoming and bearing of the tree. I do not suppose that the loss of gum, to a certain extent, is very injurious to the tree after the fruit is nearly ripe, but I have seldom seen trees bear their fruit well when the bark is broken, or pierced, so as to suffer the gum to escape during the blossoming and bearing season. Even the young peach is apt to fall off, if pierced while very young by insects, so as to suffer the gum to run out.

These are facts which point out plainly, the disposition (if I may use the term,) of the peach tree; and if our farmers become convinced that they must suit their cultivation and care to the habits and nature of the tree, we shall have plenty of peaches. Our climate, and much of our soil, is well adapted to the prosperity of this, or any other fruit tree. We have had some very unfavorable seasons for the peach, and almost all other fruits; but economy and diligence, and proper care, until our trees can acquire a proper size for bearing, is all that is wanting on our part; and we will trust to a kind Providence to bring the seasons round, with their former blessings.

I have purposely avoided technical terms, that this communication may be intelligible to all who feel interested in the prosperity of the peach.—*Plough Boy.*

Art. III. — *Remarks on the Culture of Hardy Deciduous and Evergreen Shrubs.*

The culture of hardy shrubs is in general simple and easy, the chief things to be noticed are — the proper season for planting — the situation in which the plants will thrive — the kind of soil best suited to their growth — and the encouragement given to enable them to thrive afterwards.

The proper season for planting. — As soon as the leaves begin to fall in October, deciduous trees may be planted with safety, and although this planting continues until the trees begin to swell their buds again in the spring, yet those plants have invariably succeeded best with us which were shifted in October, November, February and March, and those the worst that were planted in December, January and April.

Evergreens in general, if taken up carefully, may be planted with success in any season of the year, provided dull and dripping weather be taken advantage of for that purpose. There are particular seasons, however, when they will thrive with much greater freedom than at others. If the situation be dry and the soil light and sandy they should be planted (with the exception of hollies) in November and December, if the weather be mild; on the other hand, if the situation be low and the soil retentive of moisture, they should be planted in May. In both cases it is indispensable that all large trees and shrubs be removed with good balls, and that the roots be uninjured. Hollies should be removed from the end of May to the end of June.

In planting evergreens, I perfectly agree with Mr M'Nab, that whether it be done in a dull day, a wet day, or a dry day, it is very necessary to keep in view the expediency of keeping the plants for as short a time out of the ground as possible — if only a few minutes, so much the better; and in all cases where it can be done, when great numbers are to be planted, we should, if possible, have some men stationed to take up the plants, others to carry them, and a third to set them into the ground.

"In all seasons, situations, and soils the plants should be well soaked with water as soon as the earth is put about the roots. Where the water is not at hand, so that it may not be easily carried or wheeled by men, a horse with a water barrel on wheels should be used. — As soon as the plant has been put into its place the earth should be filled in, leaving a sufficient hollow round the stem, and as far as the roots extend, to hold water, which should then be poured on in sufficient quantity to soak the ground down to the lowest part of the roots; in short, the whole should be made like a kind of puddle."

"By this practice which is particularly necessary in spring and autumn planting, the earth is carried down by the water, and every crevice among the roots is filled. Care must always be taken to have as much earth above the roots of the plants as will prevent their being exposed when the water has subsided. The best plan is to take

an old birch broom, or anything similar, and laying it down near the root, pour the water upon it; this breaks the fall of the water, and prevents the roots from being washed bare of such earth as may adhere to them; in this way time is saved, for the water may be poured out in a full stream from the pail, a watering pot, or even from a spout or pipe in the water cart or barrel, when the situation is such that this can be brought up to the plant."

"After the first watering has dried up, the earth should be levelled round the stem of the plant, and as far out as the water has been put on, but not trod; if the plants are large a second watering is sometimes necessary, but in ordinary sized plants one watering is quite sufficient; and after remaining twentyfour hours more or less, according to the nature of the soil, the earth about the stem and over the roots, should be trod as firm as possible, and, after treading should be dressed with a rake."

2. "*The situations in which the plants will thrive.* — With regard to the situation in which each shrub should be planted, little can be said here; to form a correct judgment of this, a knowledge of the natural habits of each is required; this knowledge may be easily obtained by referring to a botanical catalogue, and other works treating on the subject. Some shrubs love a dry and elevated situation, and will not thrive crowded with others, — some are rather tender and must have warm and sheltered places, — others are very hardy and will thrive planted any where, others again will not grow freely unless they are placed in low, damp ground, — and others do not flourish if much exposed to the rays of the sun.

3. "*The kind of soil best suited for them.* — With respect to soil, hardy shrubs may be divided into two kinds, viz: first, shrubs requiring common soil; and second, those shrubs constituting the American garden. A rich, light, hazel loam undoubtedly suits the greater part of the first class of plants, although many of the stronger growing kinds will make fine bushes on almost any kind of soil. The American plants, *Kalmias*, *Rhododendrons*, *Andromedas*, &c. &c. make the finest plants and the best show if they are planted in a soil composed for the most part of sandy peat; but in the absence of this, a very good compost may be made for them of light hazelly loam, river sand, and vegetable or leaf mould, equal parts, or a little peat earth mixed with it. After having taken out the original soil from the proposed border to about a foot and a half deep, substitute the above mixture in its place.

4. " *To encourage the growth of the Shrubs after being planted.* — Whilst the plants are small, constantly keep down all rank growing weeds, and clear off all rubbish that would otherwise retard their growth; also they receive much benefit by the surface of the ground being often stirred with a Dutch hoe, as it prevents the surface baking hard in dry weather."

Watering shrubs, except in peculiar situations, during dry summers, appears to be of very little, if any benefit; on the other hand, it takes up much time, and is the means of the ground baking hard when dried by the sun again. When they have advanced to a large size all the care required is to cut off the overhanging branches, so as not to allow them to smother each other, or the stems of those overhung will become naked and unsightly. — *Mechanic and Farmer.*

Art. IV. — *Selections.*

Hybrids. — *Does the stock produce any influence upon the seed of the graft to alter its character?*

In other words, *will the seed of the graft partake of the character of the tree on which the graft grows?* Here is a pear grafted on a quince stock — we plant the seed of that pear, — will this seed produce a fruit which is neither a pear nor a quince, but a *hybrid,* partaking of the character of both? We propose the query, not because we have any doubts on this subject, but for the purpose of noticing the following statement, made in a communication of David S. Porter, in the Silk Culturist for August, in relation to grafting the Chinese mulberry on the other species, as the native and white: " Independent of their being no advantage as to hardiness, there will arise a disadvantage when the grafted trees come to bear seed. *The tree will be hybrided, and will not of course produce trees like itself from the seed;* and thus we shall get our mulberry trees mixed together, until like the peach, apple, &c., we shall not be able to tell what seed the tree will produce."

We know of no way in which *hybrids* are produced but by the communication of the pollen dust of the flower of one species to the flower of another. Perhaps we do not apprehend the meaning of the writer. If he means that by grafting the Chinese into the top of the native mulberry, among its branches, where its flowers come

in contact with the flowers of the native, its seed will become hybridized, the statement may be correct. But if, on the contrary, he means that a graft will produce a hybrid seed *from the influence of the stock on which it grows through the sap*, we must think the statement erroneous. The only influence we are aware the stock produces upon the graft, is the earlier or later ripening of the fruit, and maturing of the wood by the more scanty or more abundant supply of sap, and by the earlier or later suspension of the vegetative process in the stock. So far also as these causes operate in the *ungrafted* tree, to alter the flavor of the fruit, will they operate upon the fruit of the graft to alter its flavor. Those fruits which grow on trees whose growth is stinted, and whose supply of sap is but small, ripen earlier, and are *higher flavored*, than the same kinds of fruit growing on trees of more vigorous growth, and more abundant sap. The pear engrafted on the quince, on account of the more limited supply of sap it receives, is said to ripen its fruit earlier than when growing on its own root. The natural period in which the stock ripens its own fruit, produces an influence also, it is said, upon the ripening of the fruit of the graft. Thus if the stock be of an early kind, the fruit of the graft growing on it will ripen earlier than if the stock was of a late kind ; because, at the season of the maturing and ripening of the fruit, nature supplies each tree with the kind and quantity of juices necessary for this object. We may take advantage of these laws of the vegetable economy, in hastening or retarding the period of the ripening of the fruit, and of the wood. Thus, if we have a tree which ripens its fruit too late for our climate, we must engraft or bud it on a stock of dwarfish stinted growth, or which ripens its fruit early ; or if we have a tree which prolongs its growth too late in the fall to mature its wood, and thereby subject to be killed by the winter, we must graft or bud it on one which suspends its growth early in autumn, and thereby check the growth of the graft, force it to harden its wood, and prepare for winter. It is upon this principle we have contended that an advantage is to be gained by grafting or budding the Morus multicaulis on the native or white mulberry. If we were wrong in the views we have now advanced, we wish to be set right. — *Genesee Farmer.*

Peach Trees. — Mr William Phillips, of Pennsylvania, has derived great benefit from the application of air slacked, old effete lime to peach trees, the effects according to his account have been very

great. He puts about a peck of lime to each tree; he thinks it useful as a preservative against the insect so fatal to these trees. We have then two applications recommended, unleached ashes and lime, and from our own experience are enabled to recommend both. We are not sure which has the preference. The lime and the ashes should both be dug in, every spring. A friend suggests, that he killed his young peach trees by lime. Caution is needed in the application. — *Mass. Ag. Repos.*

A Cure for the Red Ants. — The evils of this little visitant, are well known to perhaps every house wife, and perhaps nothing would more exhilarate the domestic circle than the discovery of a remedy for the red ants. Such discovery I have made and wish you to communicate to the public through your useful paper. Common salt is a complete barrier to the approach of the red ant. Let the salt be so placed that they cannot approach the place from which you wish to exclude them without passing over it, and the remedy is complete. For instance, if you wish to exclude them from the cellar cupboard or any movable cupboard, if it has no legs make artificial legs to your cupboard, then provide something suitable to hold for each leg of the cupboard, a pint or a quart of salt, in which place the legs of the cupboard, and set it free from every thing else so that nothing can creep on to it without passing over the salt, and the remedy is complete. Having tested this remedy for two seasons I have no hesitation in recommending it as a complete cure. — *Worcester Ægis.*

Facts worth Knowing. — In New England, in the days of my grandmother they used to preserve their ripe Watermelons and Green Corn, so as to have them fresh in winter and spring, by placing them, till used, under their haystacks. This practice might perhaps be applied usefully to some other fruits and vegetables.

Farmers too, might easily save the flesh of horses and cows, and confer a kindness on their animals, in preventing the usual annoyance of flies by simply *oiling* the parts most exposed. Flies will not alight a moment on the spot, over which an oiled sponge or cloth has been pressed. Probably either fish or flaxseed oil would answer; but what I have known with success was the Tanner's oil. Every man who is compassionate to his beast, ought to know this simple remedy, and every livery stable and country inn ought to have a supply at hand for the use of travellers.

Fruit Trees. — When farmers raise their own fruit trees from the seed (as they will in time if they rightly comprehend their own interest) it is never worth while to graft them in the nursery. Let them grow till you can ascertain what sort of fruit they will naturally produce. The famous Baldwin, or Pecker apple was a come-by-chance. Had the original tree been cut off and grafted near the ground, according to the usual proceeding in nurseries, the public could never have been benefited by that valuable fruit. Mr Upham of Newton, gave us an apple which grew on a tree spontaneously produced on his premises, which has as fine a flavor as any apple we have tasted this season. An experienced nurseryman assures us that the best way to manage with apple seeds intended for sowing is to *keep them in the fruit* through the winter, and sow them in the spring.

Flower Pots for Rooms. — At a meeting of the Horticultural Society, a paper was read upon the manner of cultivating plants in pots filled with moss only and not mould. It appeared that the method to be pursued, was to fill a pot with coarse moss of any kind, in the same manner as it would be filled with earth, and to place a cutting or a seed in this moss. The secretary was understood to say, that he was well acquainted with the practice, and that it succeeded admirably, especially with plants destined to ornament a drawing room. In such a situation plants grown in moss, were stated to thrive better than if they were in garden mould, and to possess the very great advantage of not causing dirt, by the earth's washing out of them when watered. For transportation, plants rooted in moss were said to be better adapted, on account of their lightness. In short, the method was declared to be in all ways excellent. The explanation of the practice seems to be this: that moss rammed into a pot, and subjected to continual watering is soon brought into a state of decomposition, when it becomes a pure vegetable mould; and it is well known that *pure* vegetable mould is the most proper of all materials, for the growth of almost all kinds of plants. The moss would also not retain more moisture, than precisely the quantity best adapted to the absorbent powers of the root — a condition which can scarcely be obtained with any certainty by the use of the earth. — *London News of Literature.*

Preservation of Plums, Peaches, &c. — An English publication states that plums and peaches may be preserved sweet through the

year by the following process: "Beat well up together equal quantities of honey and spring water; pour into an earthen vessel, put in the fruits all freshly gathered and cover them quite close. When any of the fruit is taken out, wash it in cold water, and it is fit for immediate use."

Preservation of Seeds. — If seeds are intended to be sent a great distance, or it is wished to preserve them a long time they should be wrapped in absorbent paper, and surrounded by moist brown sugar.

Leaves of Trees Fodder for Cattle. — A remarkable feature in the Agriculture of France, and of most warm countries, is the use of leaves of trees as food for cattle. Not only are mulberry, olive, poplar, vine, and other leaves gathered in autumn, when they begin to change color, and acquire a sweetness of taste; but spray is cut green in July, dried in the sun or in the shade of trees in woods, fagoted, and stocked for winter use. During that season they are given to sheep and cattle like hay; and sometimes, boiled with grain or bran, to cows. The astringency of some sorts of leaves, as the oak, is esteemed medicinal, especially for sheep.

Fashions in Flowers.—There is a fashion in everything. There have been fashions in medicine, education, the fine arts, diet, nothing has escaped this irresistible invader. Art and nature both have been made to yield to its sway, and whenever fashion dictates, it is surprising how soon all the principles of beauty and of taste conform to its rules.

There has been among other fashions a fashion in flowers. Among the leaders in its circles of taste and refinement, some one flower has always been predominant for a time, its possession sought, and its cultivation promoted.

The tulip has had its day of glory. In the day of its ascendancy thousands of pounds were given for a single flower of a rare variety, and the mania of purchasing tulips was equal to the mania of purchasing lands which pervades our times. The Hyacinth had its day and has always been a quiet family favorite. The Rose, the charming, voluptuous fragrant rose, claimed the sceptre, and governed for a time, the idolized queen of every bosom. A monarch of so much grace and loveliness it was found difficult to depose, and thousands

despite the irresistibility of fashion still assert her claims to the ascendancy.

The Dahlia was announced — a new flower, tall and elegant in its bearing, with its slender and curving stalk, bearing its beautiful and regular crown of rich and ever-to-be-varied tint. The new candidate was seized upon and carried by acclamation. It became an object of unceasing assiduity with florists, and was adopted as the pride of the boudoir and the garden.

The Dahlia has held its ascendancy for some seasons; and every year seems to develope new varieties and give additional richness to its tints. Every skillful gardener has had the satisfaction of giving name to some new variety; and although the Dahlia is only to be seen in its full glory, in its natural and unshorn state, where it presides in such gardens as Prince's and Maynard's, yet those who would know its capabilities of improvement and variation, should attend such an exhibition as has just closed in New York — "The Annual Exhibition of Dahlias of the New York Horticultural Society."

Yes, the Dahlia has its annual exhibitions, and they are beautiful and "highly interesting." Not only fashion, but true taste declares them so to be. And why should not the rose, the tulip, and other of Nature's most wonderful and charming creations, have their "exhibition." Why should there not be a general exhibition of the infinite variety of flowers which might be brought together, to give a glow of pleasure to minds (and what *mind* is not) alive to the value of these gifts of the Creator. We should like a general fashion, and flowers and a pure unsophisticated love for their intimate beauties better than any particular inclination toward the lead of fashion; and while we give the beautiful and graceful, though adornless Dahlia, our full tribute of admiration, yet we are aware of many a simple beauty occupying the retired corners of the garden, which only requires a kind hand to bring it forward, introduce it, and fairly exhibit its features, to render it no contemptible rival.— *Long Island Star.*

Horticulture.—There are men among us, who look upon the cultivation of flowers with perfect contempt. They can see no utility in this occupation, and look upon the amateur florist as a lack-a-daisical, sentimental character, more fitted to write sonnets and to read novels, than to act efficiently in the business of life. To such, the fragrance of the rose, the tints of the lily, and the delicate formation of the violet, are forever lost: an avenue to pleasure open to others,

is to them completely closed; a sense, which to others is the source of much pleasure, is denied them; the light of beauty radiating from each blossom, is shut out from their minds — for, though the form and substance of creation be admitted, its soul — its expression, never reaches them.

Such claim to be our matter-of-fact men — utilitarians — the most useful members of society; they believe that they have great duties to discharge, and have no time to spare to examine matters of small moment. Flowers, they admit, are *pretty things*, fitted to please the idle — pretty things, indeed, but mere toys for the young and romantic — they, forsooth, have occupations of more importance than to multiply and increase such trifles; and from their eminence they look down with contempt upon the grown-up man who wastes his valuable time in the cultivation of these insignificant objects.

They forget that this world is not a mere matter-of-fact world; they overlook the truth that the Deity, in providing fruit and grain, has not been unmindful of the blossoms and the foliage. He stayed not his hand at mere utility as regards animal life; he bounded not his creative power to the production of food and raiment; he ministered not merely to the actual wants of life, but clad the fields in verdant green, tinged the fruit with its golden hue and added a surpassing beauty to foliage and flower. Shall we eat and drink and forget His ministration to our moral taste?

No one was ever intended for a mere business man — to travel, as in a bark-mill, in one dull, dreary round — day in and day out — month in and month out — year in and year out — to exert every faculty, in the business of life. Men are not created as machines, for the production of a required amount of useful commodity. They have more to do, than to earn their bread, and to eat it; more to accomplish, than to strive for a high station, and to fill it. Man has a moral nature to be strengthened and educated; he has a susceptibility of soul to be touched and excited: and all this is most quickly and easily accomplished, by an attention and constant reference to the works of Him who has left, wherever his hands have wrought, the marks and types of those attributes, which warm and purify and exalt the heart. Without this moral culture, man is an animal only, as unlike the being he should be, as the mere grain of wheat, fitted to sustain life, is unlike the waving corn, in all its richness and loveliness, as it covers the mountain side.

Why is it, that those who enter upon the examination of the works

of nature, in any of her various channels and departments, become so enthusiastic in the research? Why does their ardor constantly and regularly increase with the increase of their knowledge? Read the lives of eminent naturalists, look to the zeal manifested around you by all who have entered into such studies. It does not arise from mere increase of intellectual power, as affording valuable results to society; for duty here is often discharged from a sense of duty, without any ardor of feeling. It is not the mere force of habit; for habit is more like the chain which binds one to a given course, than wings to fly with to objects we love. It is because there is natural taste in every man, which, when gratified, is strengthened and quickened — a taste for the magnificent and beautiful objects in creation, which can never be satiated, but which carries us onward in our researches; an appetite which grows with that it feeds upon.

It matters not what department of nature we explore; it matters not whether we examine the earth, look to the monster of the deep, or seek the shells of the beach; whether we look to the animal life or the vegetative process. The heavy mammoth, the insect floating in the air, the rugged mountain, the bright crystal of its bosom, the lofty tree, and the simple flower at its foot, afford the same result; they each read to us the same lesson. The paths open before us are numerous, yet they all lead to the presence of a God, sustaining and beautifying the creation he has formed; and the florist in the path he has chosen, will find at each step of his progress, distinct traces of the goodness of God, in thus providing so bountifully for the taste he has imparted; for not a flower expands itself, not a blossom opens its leaves, but speak to him in language, which, if attended to, will make him a better and happier man.— *Portsmouth Paper.*

A New Manufacture. — In a late Paris Journal is found the following account of a new manufacture, which has already acquired a considerable success, and promises to be of great importance.

On the borders of the streams and in the valleys of New Zealand, there grows a plant which resembles at the same time the corn flag and the aloes. This plant, to which naturalists have given the name of *Phormium tenax*, is the hemp of the natives. They break it with large muscle shells, and then separate with their nails the hemp from the flax. They weave it afterward into a sort of net, like lace, which they bleach in the dew. The beauty of this fabric has astonished navigators. Cook, Foster, and Dumont d'Urville have spoken of it.

Messrs. Lisson and Richard described it in their botanical work on Australia. Since 1827, several English merchants have attempted to make use of this plant; capital, mechanical power, nothing was spared. But they did not succeed in ridding it of the resinous gum which it distils, and softening it enough for weaving. An ingenious countryman of our own, M. Lienard, has just regulated and brought to perfection the attempts which so far had remained stationary among the English. He has established at Pont Remy a manufactory of the *Phormium tenax*. The cloths that were shown at the public exposition appeared to us as beautiful, but more substantial, more pliable, and lighter than linen cloth. They seemed to be appropriate for sails and for the covering of carriages. Amateurs have made and renewed demands for it. One of the great properties of the Phormium is, that it can remain under water five, six or seven months without being injured. Numerous experiments on ropes and cables leave no doubt in this respect. The factory of M. Lienard, situated at Pont Remy, employs more than a thousand workmen. Before many months we are assured that the great increase of this fabric will cause the number to amount to three thousand. Before being brought to the weaving state this plant goes through seven operations, which are so little costly that all included, even to the combing, does not amount to six francs the quintal. We repeat that this fact is very important. At the moment when the cloth manufacture has fallen in France, when we cannot in any market maintain a rivalship with England, Holland and Belgium, here is a fabric, which can and ought to take the place of cotton. This is perhaps a great source of wealth to come into France. Marshal Clausel has introduced the culture of the *Phormium* into Algiers. The government will understand the economy of its use in the Navy. In England, where as yet they only make cables of the *Phormium*, it is preferred to any other kind of cable. But shall this manufacture be left to a caprice of rivalship? Cannot England shut up New Zealand from us? Will not the State protect a French establishment on this island?

A Plant possessing the properties of Spontaneous Combustion. — A very interesting paper was recently read by Mr Mornay, before the London Linnean Society, describing a shrub which grows on the rivers of Brazil, and which is called the Euphorbia Phosphorescens. Where this Euphorbia forms large entangled, impenetrable masses, covering perhaps, a quarter of an acre of ground, and

growing some twenty feet high, it will take fire spontaneously, emitting for some time, a vast column of dense black smoke, and at last bursting out in flames. Whenever the author had an opportunity of observing the combustion of the juice of this plant, on its coming into contact with atmospheric air, the temperature was very little raised; the combustion (with flame) went on at a low temperature, until stopped by the formation of a crust, which quickly takes place. The temperature always appeared to be too low to spread into a conflagration.

Cultivation of the Fig.— The lovers of this excellent fruit will be gratified to learn that it may be cultivated in our climate with little expense and labor. During a late visit to the garden of Eliphalet Averill, Esq. of this city, we were presented with a fig plucked directly from the tree, and of flavor the most delicious. Mr A. informed us that for ten years he had been experimenting on the cultivation of the fig, and that he had finally succeeded in preserving the tree, and bringing the fruit to perfection. He also kindly gave us a statement of his method, which we lay before our readers in the hope, that at least some of them will be induced to try the experiment, as we have no doubt of its complete success. The fig tree is propagated by means of layers and cuttings — if the latter are used they should be at least one foot long.

The method of Mr A. is as follows: He lays down the branches in June, which form roots and grow luxuriantly. Immediately after the leaves fall off in autumn, and before hard frosts destroy their vitality, he lays them down and covers them with earth to the depth of at least a foot. In order that a part of the roots may retain their original position in the earth and be ready to furnish nourishment early the ensuing spring, he loosens the root on one side of the tree and leaves those on the other undisturbed — taking care that those loosened are not mutilated or otherwise injured. He then bends the branches over those roots that are left in the ground, fastens them with pegs and covers both roots and branches with mellow earth to the depth above stated. In this condition he leaves them till the middle of May, or the first of June, according to the forwardness or backwardness of the season, and then uncovers them — sets them upright and supports them with props to keep them in a right position. By repeating this process every winter he has succeeded in preserving his trees till they have attained a good size, and produce fruit in perfection and abundance.

The fig tree in tropical climates has a constant succession of crops. In Georgia, it yields three crops, and in New England, in good seasons, it will produce two. When the figs are half, or two-thirds grown, they cease growing and present every appearance of not coming to maturity. To facilitate their ripening a drop of olive oil is put upon their blossom ends, which, in eight or ten days, produces an extraordinary effect. In this time they obtain their full size, assume a liver color, and in delicacy of flavor as much exceed preserved figs as fresh peaches do those that are dried in the common manner.— *Silk Culturist.*

Art V.—*Description, Properties and Uses of some Species of Plants in the Natural Order Fungi.*

This order includes Plants in the lowest station of vegetable existence, some of which are eatable, others, are a deadly poison, some are medicinal, and the species *Amanita muscaria* produces intoxication. "They grow with a degree of rapidity unknown in other plants, acquiring the volume of many inches in the space of a night, and are frequently meteoric, that is, spring up after storms, or only in particular states of the atmosphere.— The *Mushroom, Agaricus campestris,* is highly esteemed by many, and used in a variety of ways. The sauce known by the name of *Ketchup* is made from its juice, with the additions of salt and spices. They are also eaten fresh when fried, stewed or boiled; or as a pickle. As there have fatal accidents occurred, by using through mistake, those species possessing deleterious qualities, it is important that those who gather and use them, should be enabled to distinguish the true Mushroom from the spurious. It is thus described, "The *gills* are loose, of a pinky red, changing to liver color, in contact but not united with the stem; very thick set, some forked next to the stem, some next the edge of the cap, some at both ends, and generally in that case excluding the intermediate smaller gills. *Caps,* white changing to brown, when old, and becoming scurfy, fleshy, and regularly convex, but with age flat, and liquifying in decay; *flesh* white: diameter commonly from one inch to three or sometimes four or more. *Stem* solid, one to three inches high, and almost half an inch in diameter."

To depend upon those gathered in the field is rather uncertain, and it is said that their flavor is not so good as those cultivated in gardens.

As the spawn is easily obtained, and their cultivation not difficult, we would recommend to those who are particularly fond of the *Mushroom* to turn their attention to the subject.

"If the Mushroom be left for a time on a plate of glass, a powder will be found deposited of a whitish color, which is the spore or organic germs. That these are capable of germination, like the prolific spore of the Ferns, is evident to those cultivators who now form artificial Mushroom beds by strewing the decayed plants on prepared banks of manure."

"To ascertain whether what appears to be Mushrooms are so or not, a little salt should be sprinkled on the inner or sponge part — if in a short time afterwards they turn yellow, they are the poisonous kind of fungus; but if black, they may be considered genuine Mushrooms. They should never be eaten without this test, as the best judges may be occasionally deceived."

The following excellent communication on the Mushroom we find in the 8th vol. of the N. E. Farmer, page 254, which, as it seems appropriate, and may not have been read, or perhaps forgotten by most of our readers, we give it entire.

MUSHROOMS.

Mr Fessenden,— I am not aware that much attention has been devoted to the cultivation of the vegetable named at the head of this article, although some attempts have been made in one or more of the Southern States, but with what success I am not informed.

The mode of constructing beds, the collection of spawn, or originating it, and of propagating from it, are described with much particularity by Loudon, in his Encyclopedia of Gardening, and in Fessenden's New American Gardener, as well as by McMahon, in his treatise upon the same subject.

It was my intention to have transcribed from these works, some of the directions in relation to the culture of the Mushroom, for the benefit of those who might be disposed to attempt it.

But to do justice to the subject, and to place before your readers all the directions needful to a complete understanding of the manner of preparing the materials, to the formation and spawning of the beds, or of originating the spawn, I find would occupying much time and labor that may be dispensed with, and you can make such selections from these works as you may deem requisite, and thereby confer a particular favor upon the public at large, and the writer in particular.

My attention has recently been directed to this subject by a highly

respectable and accomplished amateur Horticulturist, whose cultivated taste induces, and whose affluent circumstances afford him the means of extending Horticulture. In a letter received by him he remarks, "There is one production of the Garden, which is much, I may say, wholly neglected here, (New York,) and I hope you have successfully attempted it to stimulate us. I mean the Mushroom. I made the attempt this fall, but I could procure no spawn that was good from the nursery men here, and the private gardens are destitute of it. The same disappointment I met with in Philadelphia. This luxury has become very common in Europe, and a recommendation in the New England Farmer, *as on all* occasions, would be well received here."

Mushrooms may be produced without planting the spawn, or, as it is termed, without spawning the beds.

The President of the Massachusetts Horticultural Society caused a bed to be prepared and planted with asparagus roots. It was composed of horse manure, that had lain two or three years in heaps, the bed was made as such usually are for such a purpose. One single shoot of asparagus only appeared to reward his labor, but in the autumn the whole surface of the bed was covered with mushrooms, and the supply was abundant for the whole season.

The method recommended by Loudon, for raising this vegetable without planting the spawn, is more simple than is the preparation of the bed for the raising of the asparagus. He observes, "after having laid a floor upon the surface of the ground, of ashes, stone chips, gravel or brick bats, so as to keep the ground quite dry and free from under damp, lay a course of horse droppings, new from the stable, six inches thick. They must not be broken, and the drier they are the better. They may be collected every day if your stable does not furnish enough at once to complete the first layer of the above thickness. But they must not be allowed to ferment or heat. The bed should be exposed to the air as much as possible while making up, but carefully defended from wet if out of doors, or it may be in a cellar or under a shed. When the first course is quite dry, and supposed to be past a state of fermentation, cover it with two inches of light dry earth. If sandy so much the better. It is immaterial whether it be rich or not, the only use of the earth being for the spawn to run *en masse* in. Then lay another course of droppings and earth over as before, when it has fermented. Then a third in like manner, and the bed is completed. It should be a little rounded

in order that it may not be more wet or moist in the centre than on the sides. This may be effected by the formation of the floor at first and the bed will be of equal strength in all parts. Beds are sometimes made with two courses instead of three, and when materials are scarce, three four inch courses with an inch of earth between each, and a two inch covering or two have been found to answer."

I may trouble you again upon the subject. My present purpose is to waken attention to it. The Horticultural Society will probably offer a premium as a stimulus to the cultivation of the Mushroom.

Dorchester, Feb. 20, 1830. ZEBEDEE COOK, JR.

We are not aware that much if any attention has been given in the neighborhood of Boston, to the culture of the Mushroom. If there be any successful cultivators of the article, we should be happy to have a communication from them for the benefit of our readers and the public in general. A production so delicious, as many consider it, ought to be more abundant in our market.

Besides the Mushroom, there are other eatable species in this natural order. In Europe is found the Truffle or Esculent Puff-ball (*Licoperdon tuber.)* This is a solid, externally rough fungus, filled with farinaceous sporæ, without root, and grows wholly under ground.

The common puff-ball belongs to the same genus. "The *Tuber-cibarium*, said to have been found in the United States, is collected for food in Europe and Asia. It grows above the earth, is globose, solid, destitute of root, and at length becomes black and warty. In this genus, among the most simple of all organized bodies, the substance of the fungus is merely variegated with sporiferous veins.

"The subterraneous Tuber, however, of the southern States, esteemed as an article of food, is probably the *Scleratium Cocos*, of Schwartz and Schwenitz. It is as large as a human head, exactly of the form of a Cocoa nut, and is covered with a ligneous, fibrously scaly, hard, brown bark; internally filled with a somewhat fleshy, cork-like matter, when in perfection approaching to flesh-color. It is scarcely acted upon by any re-agent and remains unaltered for months when macerated in water, having no fermentable substance. In this genus, the form varies somewhat, it is internally solid or filled up, and of a similar and smooth substance within: but in some species it becomes wrinkled externally.

Nothing, really organic can be of a more simple structure than the subject of this genus, and particularly of the present gigantic species.

Yet still, these almost amorphous masses are subject to life and death, experience growth and give origin, as parents to a renewed progeny." The esculent Morel in the genus Phallus, is also an article of food, said to be found in the shady forests of Pennsylvania, and on the banks of the Mississippi and Missouri.

In describing the properties of the natural order Fungi, Dr Lindley remarks, "It is necessary to exercise the utmost care in employing Fungi, the nature of which is not perfectly ascertained, in consequence of the resemblance of poisonous and wholesome species, and the dreadful effects that have followed their incautious use. It is true that many kinds are named by Pallas, as being commonly used by the Russians, which are plentiful in countries where they are not employed for food; but, in the first place, it is not perhaps quite certain that poisonous and wholesome species are not confounded under the same name: in the next place, climate may make a difference; and lastly, much depends upon the mode in which they are cooked. Upon this subject Delile observes, that it was ascertained by Paulet, in 1776, that salt and vinegar removed every deleterious principle from that most poisonous plant the *Agaricus bulbosus;* that it is the universal practice in Russia to salt the Fungi, and that this may be the cause of their harmlessness, just as the pickling and subsequent washing of the poisonous Agaric of the Olive renders it eatable in the Cevennes; but that nevertheless it is much wiser to run no risk with unknown Fungi, even taking such precautions; a remark to which he was led by the lamentable death of a French officer and his wife, in consequence of breakfasting off some poisonous Agarics, which were nevertheless eaten by other persons in the same house with impunity. It was probable that in that case a difference in the cooking was the cause of the difference in the effect of the Fungi; but it was a sufficient ground for distrusting all Fungi excepting the cultivated ones.

So strongly did the Professor L. C. Richard feel the prudence of this, that although no one was better acquainted with the distinctions of Fungi, he would never eat any except such as had been raised in gardens in mushroom-beds. One of the most poisonous of our Fungi is the *Amanita muscaria*, so called from the power of killing flies when steeped in milk. Even this is eaten in Kamschatka, with no other than intoxicating effects, according to the following account by Dr Langsdorff, as translated by Dr Greville, from whom I borrow it.

"This variety of *Amanita muscaria* is used by the inhabitants of

the northeastern parts of Asia in the same manner as wine, brandy, arrack, opium, &c. is by other nations. Those Fungi are found most plentifully about Wischna, Kamschatka and Wilkowa Derecona, and are very abundant in some seasons, and scarce in others. They are collected in the hottest months, and hung up by a string in the air to dry; some dry of themselves on the ground; and are said to be far more narcotic than those artificially preserved. Small deep colored specimens, thickly covered with warts, are also said to be more powerful than those of a larger size and paler color. The usual mode of taking the Fungus is, to roll it up like a bolus, and swallow it without chewing, which the Kamschatkadales say, would disorder the stomach. It is sometimes eaten fresh in soups and sauces, and then loses much of its intoxicating property; when steeped in the juice of the berries of *Vaccinium uliquinosum*, its effects are those of strong wine. One large or two small Fungi is a common dose to produce a pleasant intoxication for a whole day, particularly if water be drank after it, which augments the narcotic principle. The desired effect comes on from one to two hours after taking the Fungus. Giddiness and drunkenness result in the same manner as from wine or spirits; cheerful emotions of the mind are first produced; the countenance becomes flushed; involuntary words and actions follow, and sometimes at least an entire loss of consciousness.

"It renders some remarkably active, and proves highly stimulant to muscular exertion: by too large a dose, violent spasmodic effects are produced. So very exciting to many individuals, is this Fungus, that the effects are very ludicrous. If a person under its influence, wishes to step over a straw or small stick, he takes a stride or jumps sufficient to clear the trunk of a tree; a talkative person cannot keep silence or secrets; and one fond of music is perpetually singing.

"Of parasitical Fungi, the most important are those which are called dry rot, such as polyporus destructor. Merulius lacrymans and vastator, &c. which are the pest of wooden constructions; next to these come the blight in corn, occasioned by Puccinia graminis, the smut and ergot, if they are really anything more than the diseased and disorganized tissue of the plants effected; the result, which is owing to the ravages of Æcidiums; and finally in this class is to be included what we call mildew, minute, simple, articulated Mucors, Mucedos, and Byssi. The genus Rhizomorpha, which vegetates in dark mines far from the light of day is remarkable for its phosphorescent properties. In the coal mines near Dresden, the species are de-

scribed as giving these places the air of an enchanted castle; the roofs, walls, and pillars are entirely covered with them, their beautiful light almost dazzling the eye. The light is found to increase with the temperature of the mines. It is a most remarkable circumstance, and one which deserves particular inquiry, that the growth of minute Fungi, which constitute what is called mouldiness, is effectually prevented by any kind of perfume. It is known that books will not become mouldy in the neighborhood of Russia leather, nor any substance if placed within the influence of some essential oil."

It is supposed by some, that this natural order forms a connecting link with the mineral kingdom; but we see a distinct line of demarcation, " as the respective particles of the mineral or inanimate kingdom have no limited tie of existence, and remain unalterable and inert, being alone subject to the laws of chemical relation," whereas, the Fungi are produced from the spore or seed, and experience growth and are subject to decay and death like all other vegetables. In a future number we may give some further directions for the cultivation of Mushrooms, in the mean time we hope to hear from some of our correspondents and friends, what progress has been made in their culture in this vicinity. J. B.

ART. VI. — *On the Management of the Plants, belonging to the Genus Citrus, in the Garden of Edward Miller Mundy, Esq.* By MR RICHARD AYRES.

MY green-house is fortynine feet long, and seventeen feet wide, with a glazed sashed roof, sloping to the south; the back and sides are solid walls; the front is nine feet and a half high, and has six glazed folding doors, the intervals between which are filled with fixed glazed sashes. The floor is a stone pavement, and the house is warmed by a flue built on arches, and carried under the pavement near to the front glass, the heated air being admitted into the house through ventilators from a narrow air chamber adjoining to the flue. The back wall on the inside, is eighteen feet high, and that, as well as the sides of the house, are covered with a trellis, the openings of which are six inches square. Adjoining the back wall, at even distances from each other, are six holes in the pavement, each two feet square; in these are growing trees in the following order: — 1, a Lemon; 2, a China

Orange; 3, a Lemon; 4, a Citron; 5, a Seville Orange; 6, a Lemon. They were planted young, nine years since; the border of earth in which they grow extends under the pavement, and their branches are trained to the trellis. In the same manner, last year, a Citron tree was planted against the west side, and a Lime tree against the east side; and these are trained to the trellis at the two sides respectively. Besides the above eight trees, there are twentytwo in tubs, seventeen of which were brought from Malta by Captain George Mundy, of the Royal Navy, to his father, six years ago; they were then small, but have grown finely since, and the fruits they have recently produced have been excellent both for size and flavor. In addition to these trees in tubs, other greenhouse plants in pots are kept in the house in the winter season. The conservatory, of which a section and ground plan are annexed is thirtytwo feet six inches long; it is divided longitudinally into three borders; the back border is three feet eight inches wide, and its level is elevated three feet above the other part of the house by means of a wall which supports it. A paved walk, two feet eight inches wide, is carried over the border, so that only about one foot of it next the back wall is exposed to view: in this border, at even distances, are planted one Lime, and three Lemon trees; the Lemons are of my own working, they are nine years old from the bud, and are now in a fine bearing state; the lime was only turned out of a tub last March. The centre border is thirteen feet broad; in it are planted, in a double row, four in each row, at even distances, eight trees, viz: two standard China Oranges, one Dwarf China Orange, three Seville Oranges, and two Maltese Oranges; these last are young plants put in two years ago; the other six trees are all in a bearing state. In the front border, which is only four feet wide, three trees were planted in 1818; one is a China Orange, three years old from the bud, and the two others are Lemons. This house is also used for the growth of Grapes: Vines are planted in the front of it, on the outside, and trained up the rafters of the glass roof, being introduced through holes in the front wall. The trees in each of the three borders of the conservatory are trained in different ways. Those in the back border are fastened to a trellis against the back wall. The trees in the centre border have their branches in every part secured to a row of stakes set along the front and sides of the border, at even distances from each other; the stakes are each six feet in length above the ground, into which they are driven about a foot and a half; such of the branches as can be brought into contact with these stakes are

fastened to them, the others are tied to stakes placed irregularly in different parts of the border, but chiefly at the back; by these means the branches are spread evenly over the whole extent of the border, are well exposed to the sun and light, and also produce a beautiful effect, whether in blossom or in fruit, the stakes having more the appearance of supports than of being placed for the purpose of fastening the branches to them. The trees in the front border are trained flat on a horizontal trellis in the manner of peach trees in a house, the trellis being two feet from the ground. The borders both in the greenhouse and conservatory were filled, at the time the fruit trees were planted, with a compost made as follows: to twelve barrows full of strong turf loam, six of good rotten dung and three of vegetable mould were added; these were properly incorporated six months previous to being used, and then put into the borders. After I had planted both the house, having a few old trees in tubs and pots which were not in good health, I was induced to try on them the effect of a richer compost, and I also applied to them waterings of a compounded liquid manure. These sickly trees were restored to good health in twelve months, and as they made fine fruitful wood, I was so satisfied of the advantage of my new compost and of the composition water, that I determined in future to use them with all my other plants, whether in the borders or in tubs and pots. I have applied them in the manner hereafter detailed, and the beneficial effects resulting from their use have exceeded my expectations, not only in the vigor and richness of the wood and foliage, but in the abundance, size and flavor of the fruit.

The compost is formed of ten parts (a wheelbarrow full is my usual integral quantity) of strong turf loam, seven of pigeon's dung, seven of garbage either from the dog-kennel or butcher's yard, seven of sheep's dung, seven of good rotten horse dung, and ten of old vegetable mould; they must be mixed together twelve months previous to use, that time being necessary to bring the ingredients into a proper state of pulverization. The composition water is prepared as follows; three wheelbarrows full of cow dung fresh from a pasture field, two wheelbarrows full of fresh sheep's dung, and two pecks of quick lime are thrown into one hogshead of soft water; the mixture is frequently stirred for a week or ten days before it is used, and when applied to the plants, ought to be about the consistence of cream. Previous to describing my method of cultivating the plants, I cannot avoid observing that in the usual management of Oranges and other trees of the

same description in greenhouses, however fine the plants, they only serve the purpose of ornament, and are otherwise useless, never producing any fruit fit for the table. The failure arises from the common practice with most gardeners of taking these trees out of the greenhouse when they put out the common greenhouse plants for the summer months; whereas, the proper course which they ought to follow, is to keep them in the house through the whole season, and to avail themselves of the removal of the other plants to apply the peculiar treatment necessary to bring them into proper bearing. From the experience which my practice has given me, I do not think that Orange and other similar trees require much warmth in the winter months; I therefore never suffer my house to be heated above 50 degrees by fire heat until the end of February, or the beginning of March, when, the trees, if in good health, will begin to show blossom; the fire-heat should then be increased to 55 degrees; but the houses ought not to be warmed above 65 degrees at this time by sun-heat, the excess of which must be checked by the admission of air; and indeed the more air the trees have during the time of blossoming, the more certain will be the crop of fruit. My trees are washed with a hand syringe about twice a week in the winter months, advantage being taken of the middle of the day for that work in cold weather; in summer they are washed in the morning, and it is then done every day. During the time the trees are in blossom, they require more care in respect to watering, I therefore then use a syringe with a top, the holes of which are so small that they will not admit a fine needle to pass through them. Clean soft water from the cistern in the conservatory is used for all these purposes. As soon as the fruit is set I begin to water the trees at their roots with the composition-water above described, giving more or less according to discretion; the trees having no other sort of water during the summer months, except what little falls from their leaves when they are syringed each morning.

In the early part of June the greenhouse plants are taken out for the summer, and I then begin to force the trees, by keeping the heat in the house up as near as possible to 75°, for I do not consider that either Citrons, Oranges, Lemons, or Limes can be grown fine and good with less heat. Whilst the forcing is going on, particular attention is paid to the waterings above described. In June I also give the trees, whether in the borders or in tubs and pots, a top dressing of the rich compost before mentioned, this is of the greatest advan-

tage in swelling the fruit, and it is done in the following manner.—The earth above the roots is moved with a small hand fork, taking care not to disturb any part of the roots; all the loose earth is then removed clear to the roots, and replaced with the compost. This operation I have performed for the last six years, on the trees in the borders, and to it I principally attribute my success in producing such fine and abundant crops. With respect to pruning the trees, I do not know that regular directions can be given for the work, but I will state in what manner the trees at Shipley are treated. Early in February they are looked over; at that time it is apparent what wood is likely to be fruitful, and as a certain quantity of old branches are yearly cut away I take out those which seem least promising, and so make room for the younger and more productive wood. If the trees afterwards grow very strong, the shoots are shortened according to their strength, in the same way as Peach trees are shortened. Thus the branches pruned are not only fruitful, but they are restrained to any shape desired, for no sort of fruit trees bear the knife more patiently than those I am treating of. There is some nicety required in thinning and arranging the crop. When the fruits are about the size of Green Gages, it is proper to thin them. Two fruits should never be left together, for they would neither be fine nor well formed; the quantity left to ripen must also depend on the age and strength of the tree. The thinnings have no pulp when of the size above mentioned, and are much esteemed by the confectioner, making excellent preserves.

The fruit which I exhibited to the Society was part of the produce of 1818, which was particularly great in that year, nineteen of the older trees yielded two hundred and seventyeight dozen of ripe fruit, being nearly fifteen dozen on an average to each tree. This quantity was thus produced: the Citron tree in the greenhouse bore eight dozen, each Citron measuring from fourteen inches and a half to sixteen inches and a half in circumference; three China Orange trees, viz: one in a greenhouse, and two in the conservatory, had 60 dozen of fruit, some of which measured thirteen inches round; six Seville Orange trees viz., one in the greenhouse, three in the conservatory, and two in tubs, bore one hundred and forty dozen of fruit; seven Lemon trees, viz., three in the conservatory, three in the greenhouse, and one in a tub, had fifty dozen of fruit; and from two Lime trees, which were then in tubs, but which are now in the border, as above mentioned, twenty dozen of fruit were obtained. The crop was not

so large last year, I did not expect it would be so, but the Citron yielded seven dozen of fruit; one of them Mr Mundy sent to the Society in December last, it was seventeen inches and a half in circumference. The produce of the other different trees was fine, not only as respected its appearance, but the excellence of its quality. The trees this year promise an abundant crop. — *Horticultural Transactions.*

Art. VII. — *A Few Remarks on the Dahlia.*

The Dahlia, although one of the most magnificent flowers cultivated, is as much, or more, subject to variableness and uncertainty than any other flower we have; and among the best varieties grown, there is not one upon which reliance can be placed.

In one garden, we observe some particular sort blooming in the greatest perfection, whilst in another we see the very same kind having nothing but imperfect, even single blossoms; and thus it is we hear the flower spoken of in the highest terms by some persons, whilst others discard it as being worthless. This has frequently occurred, and I would mention the names of some individuals who have done so, and who are experienced growers to a great extent, and well know the properties constituting a good flower; such as Messrs Brown, Widnall, Squibb, Brewer, Harrison, Levick, &c. &c. They have, even when grown the first season, discarded such flowers as Widnall's Granta, Douglas's Criterion, Aldam's Superb Yellow, Lady Fordwich, Harrison's Unique, Metropolitan Perfection, and many others of equal merit; but when subsequently seen by them in the collections of other growers, their properties have been acknowledged to be of the very first rate quality.

With regard to the opinions advanced on the qualifications required to form a good flower, they are almost as endless in variety as the Dahlia itself, for every grower has his own opinion. However, it must be generally admitted that *form* must stand *first*, color next, and size last. In my opinion, the rules laid down in a former number of the *Cabinet* is a correct criterion, by which judges of the flowers ought to be governed. I have many times seen instances at the different Dahlia exhibitions I have attended, where the first prize was awarded to a stand of flowers, merely because it contained the sole merit of having larger flowers than its rivals, and far superior formed

flowers, but less, in size, come in for a second or a third prize. I have seen also, that, in the prizes of the different classes, the same sort of arrangement has been made, and Wilmot's Superb, has been placed first, whilst Springfield Rival comes in as a fourth, although the bloom was perfection itself in form and odor. In fact, I have sometimes concluded, that in the opinion of some, it mattered not how ugly the flower might be, even if disfigured with an eye, it was sure to gain a prize if it were but sufficiently large. I venture to mention for the guide of those growing large flowers, the societies at Lynn, Maidstone, Hertford and Wakefield. If one of the committee, or the secretary of a society would take the trouble to attend the next Dahlia exhibition of the Metropolitan Society of Florists and Amateurs on August 11, or September 8th, he might then have a good idea of deservedly awarding prizes. Or even take the rules I have before alluded to as a criterion. We should not then see such monstrous 'broomhead' flowers, utterly void of good form, taking the first, or any prize at all, in an exhibition! The stands would no longer be disgraced with the broomhead size, and more unique in form would be substituted in lieu thereof.

It is surprising to observe the different constitutions of the Dahlia, some kinds produce the most perfect blooms when almost impoverished, when on the other hand, if they are grown luxuriantly, all the blooms come with an eye, or otherwise imperfect. Whereas some kinds if not grown in fresh good soil, produce some half double blooms, and during the whole season, not a good bloom, from the plant so grown can be produced. The season and situation, likewise, have a great effect upon some of the kinds, as well as extensive propagation. This was the case with the Newick Rival last season, to the disappointment and vexation of many, which Messrs Young and Penny so extensively propagated, and scarcely a single plant produced a bloom that might be called good, only with the exception of the first few cuttings taken off before the parent root was too much exhausted; and it is to be feared some of our highly described flowers will disappoint several, merely because they have been so much propagated. Persons raising seedling Dahlias, should not dispose of them until they possess a sufficient quantity of roots of each, so that only a few will be required from each individual root. I am persuaded if this method was adopted, our new flowers would answer more to the description given of them in the catalogues.

The greatest alteration generally takes place with seedlings. Some

kinds when grown in the seed-beds in poor soils appear very beautiful, but, when propagated the following season and bloomed, they prove everything but perfect and good, and disappoint the expectation previously formed of them. I have seen instances where the raiser of seedlings, plants them out with all the care he takes with his general collection, in fresh rich soil, &c. thinking, probably, that if they proved good with that treatment, he might rely upon their appearing so ever afterwards — but in this, disappointment generally occurs, for when the situation is changed, the numbers of plants are dispersed amongst "The Fancy," some may produce fine good flowers, whilst others are utterly worthless. The most sure way of judging of the merits of a seedling is, to grow it two years in situations as opposite to each other as possible. If this were practised more generally, disappointment, which leads people to think that they are imposed upon, would not be so prevalent, as is the case at present. — *Floricultural Cabinet.*

Art. VIII.—*Massachusetts Horticultural Society.*

At the Anniversary of the Massachusetts Horticultural Society on Saturday the 24th ult., the following gentlemen were elected officers for the ensuing year.

President.—Elijah Vose, Dorchester.

Vice Presidents.—E. Bartlett, Roxbury, Jonathan Winship, Brighton, Samuel A. Shurtleff, Boston, John Prince, Roxbury.

Treasurer.—William Worthington, Dorchester.

Corresponding Secretary.—Robert Treat Paine, Boston.

Recording Secretary.—Ezra Weston, Jr., Boston.

Counsellors.—Theodore Lyman, Jr., Boston, Augustus Aspinwall, Brookline, Thomas Brewer, Roxbury, Henry A Breed, Lynn, M. P. Sawyer, Portland, Maine, Nathaniel Davenport, Salem, Thomas Whitmarsh, Brookline, J. M. Gourgas, Weston, Oliver Fiske, Worcester, William Pratt, Jr., Boston, Samuel Jaques, Jr., Charlestown, Joseph G. Joy, Boston, William Kenrick, Newton, John Lemist, Roxbury, Benjamin Rodman, New Bedford, Thos. G. Fessenden, Boston, Jacob Tidd, Roxbury, Jonathan Winship, Brighton, Aaron D. Williams, Roxbury, J. W. Webster, Cambridge, Geo. W. Brimmer, Boston, David Haggerston, Watertown, Charles Lawrence, Salem.

Professor of Botany and Vegetable Physiology.—Rev. John L. Russell.

Professor of Entomology.—T. W. Harris, M. D.

Professor of Horticultural Chemistry.—J. W. Webster, M. D.

STANDING COMMITTEES.

Committee on Fruits.—Wm. Kenrick, Chairman, Robert Manning, Benj. V. French, Edward M. Richards, John A. Kenrick, John M. Ives, Salem, Samuel A. Shurtleff, Samuel Downer, Samuel Pond, P. B. Hovey, L. P. Grosvenor.

Committee on Products of Kitchen Garden.—D. Chandler, Chairman, Jacob Tidd, Nathaniel Davenport, Aaron D. Williams, Leonard Stone, Rufus Howe.

Committee on Flowers, Shrubs, &c.—Samuel Walker, Chairman, G. M. Hovey, Joseph Breck, S. Sweetser, D. Haggerston, Samuel R. Johnson, M. P. Wilder.

Committee on the Library.—Elijah Vose, Chairman, Jacob Bigelow, T. W. Harris, Robert T. Paine, J. E. Teschemacher, Ezra Weston, Jr., Chas. M. Hovey.

Committee on Synonyms of Fruit.—John Lowell, Chairman, Robert Manning, William Kenrick, Samuel Downer.

Executive Committee.—Elijah Vose, Chairman, Cheever Newhall, Benjamin V. French, Joseph T. Buckingham, L. P. Grosvenor.

Committee on Finance.—Elijah Vose, Chairman, Benjamin V. French, Cheever Newhall.

Voted, That the thanks of the Society be presented to Ezra Weston, Jr., Esq. for his highly interesting and instructive Address delivered before them on their Eighth Anniversary, and that he be respectfully requested to furnish a copy thereof for publication.

Voted, That Messrs Walker, Paine, and French be a Committee to present the above vote to Mr Weston, and to superintend the publication of the Address.

Voted, That the thanks of the Society be presented to Samuel Walker, Esq. the Chairman, and to the Committee of Arrangements, for their acceptable services in preparing for the Exhibition on Saturday last.

Saturday, Oct. 1, 1836.

EXHIBITION OF FRUITS.

Pears, by Samuel Philbrick, from his Estate in Brookline — Heathcot, and Duchesse D'Angouleme.

By Col. Wilder, from his Estate in Dorchester — Marie Louise.

By John Prince, from his Mansion at Jamaica Plains — Easter Beurre.

By L. P. Grosvenor — A fruit, name unknown.

Apples, by Mr Downer — Wine apple, so called; a pale red, striped, round fruit of middle size, very tender and sweet with an agreeable acid. This fruit is not the wine apple, properly so called.

Plums, by Samuel Pond — A good sized dark purple Plum, of an oval form and good flavor.

Grapes, by Edward P. Tileston — Unripe specimens of a new variety of native grape from the West, having the same foxy flavor of most of our common native varieties.

By Samuel R. Johnson, from his garden in Charlestown — Sweet Water, the produce of out of door cultivation, also fine specimens of Black Hamburg. For the Committee,

WILLIAM KENRICK, *Chairman.*

Saturday, Oct. 7, 1836.

EXHIBITION OF FRUITS.

From the President, Hon. E. Vose — Pears, Johonnot, Andrews, Long Green or Mouille Bouche, Eschasserrie and one other, name unknown.

From S. Pond — A Pear called the Julienne.

From Dr. Swan, of Medford — one of the new varieties of Pears, name unknown, size of the Bartlett, juicy, and very fine flavored.

A Pear was exhibited, but not tasted, from S. G. Perkins, Esq., called the Archangel St Michael, had much the appearance of the old St. Michael and probably the same.

Plums from S. Pond — The Semiana and also the fruit of the Japan Quince, Cydonia Japonicea, and a Pear name unknown.

Apples from E. Sharp, Esq., Dorchester — the Alexander. From Geo. Newhall, Dorchester — fine specimens of Apples, Talmon's Sweeting, and other kinds name unknown; also Broca's Bergamot Pears. For the Committee,

B. V. FRENCH.

Saturday, Oct. 14, 1836.

EXHIBITION OF FRUITS.

Andrews Pear, from Dr Swan, of Medford.

Dix Pear, from E. Bartlett, Roxbury.

Julienne, Johonnot, Fulton, and a specimen of Pears not in eating, from Samuel Pond, Cambridgeport.

Semiana Plums, from S. Pond.

Shurtleff's Seedling Grapes, from S. A. Shurtleff.

Fine Specimens (out door culture) of White Chasselas and Black Hamburg Grapes from S. R. Johnson, Charlestown.

For the Committee,

E. M. RICHARDS.

Saturday, Oct. 22, 1836.

EXHIBITION OF FRUITS.

From R. Manning — St Ghislain, Saunder's Beurre, Belle Lucrative and Capsheaf pears; fine specimens. Also, Italian Prunes, very fine.

From E. Vose — Belle Lucrative, Seckel, Lewis, Broca's Bergamot, Heathcot, and Urbaniste Pears.

From S. Downer — Urbaniste, Seckel, Duchess de Angouleme, Passe Colmar, Autumn Beurre, Beurre Diel, Fulton and Cumberland Pears, the latter a very beautiful looking fruit. Also, Snow Apples.

From S. Pond — Fulton, Julienne (Coxe,) Johonnot Pears and a kind the name unknown.

Porter Apples from G. Parsons, Esq.

From I. Clapp — Plate's Bergamot Pears and two kinds of Apples.

From J. Eustis, of South Reading, York Russet Apples, Burnet Pears, from Dr Joel Burnet of Southborough, a native, very fine, large, but not so large as former years, owing to the unfavorable season. For the Committee, S. POND.

ART. IX.—*Exhibition of Dahlias, at New York; by George C. Thorburn.*

A SPLENDID exhibition of Dahlias took place in the gallery of the seed store of Mr George C. Thorburn, New York, on the 7th and 8th of October, principally of his own growing, from roots, many of which were imported the past season, embracing some of the most choice new varieties, which could be obtained in England, raised by Widnall, Wells, and other celebrated Dahlia growers. We were highly gratified in witnessing this rare display of beauty, and present

to our readers a few notes taken at the time. Many fine varieties exhibited are already in some of our collections in the vicinity of Boston. Probably not less than 150 or 200 varieties were on the stand. We shall notice such as particularly struck our fancy, and such as we would recommend to the amateur cultivator.

Turrant's Invincible, a fine large variety; very much admired; color, shaded salmon; quite unique. Black Ajax: fine dark. A seedling from Widnall, without name; universally admired; white, with a fine cherry border. Inwood's Ariel; shaded lilac and white; beautiful. Douglass's Glory; extra fine, scarlet; cupped petals. Miss Wortley; sulphur tipped with lilac; a small flower but fine. Criterion; fine shape; white edged, light purple. Wells' Marpessa; variously tinted with pink, centre nearly white, exterior petals fine pink, very full, one of the finest. Village Maid; a different flower altogether from the one of that name with us, more delicate and good shape. Wells' Pindarus; extra fine, pale yellow, edged or tipped with rosy red. Mrs Gen. Grosvenor; white, edged with rose pink, centre petals cupped, superior. Julius Cæsar; fine crimson. Wilmot's superb; fine purple. Wells' Queen of Sheba; fine yellow, said to be good, but a bad specimen. Widnall's Venus; white edged with rose pink. Bride of Abydos; pure white, very good, but not equal to its recommendation. Cedo nulli; yellow, petals margined with bright yellow, good. Wells' Sylvestra; large white. Exemplar; one of the finest on the stand, white tinted with straw color, Countess of Liverpool shape. Mrs Wilkinson; fine white. Wells' Paragon; sulphur, with white edge, first rate. Newick Rival; the finest rose color exhibited, petal cupped. Widnall's Paris; rosy purple, cupped petals. Aurantia perfecta; the finest orange color on the stand, large flower. Hermione; white delicately edged with purple, fine. Widnall's Salmonia; salmon color, with a purplish shade; quite unique. Alba purpuriata; white with pale purple edge, petals delicately margined. Cicero; fine scarlet. Primeana; yellow, tipped with red. British Queen; good rose color. Coronet; fine large purple. Pratt's Clio; buff shaded or tipped with purple, singular. Duke of Braganza; white and lilac beautifully margined with red. Brown's Midas; fine yellow. Guido, white and rose, pink edge, small and fine. Angelina; white edged with lilac; very fine. Metropolitan Calypso; delicate rose: elegant. Jupiter, fine scarlet. Widnall's Agamemnon; scarlet cupped petals; fine. Wells' Cassandria; delicate rose color; highly spoken of, but the specimens exhibited not

good. Niobe; blush, margined with red; good. Wells' Medusa; white with pink edge; very fine. Wells' Dictator; orange scarlet; color fine, but shows a green centre. Wells' Cassalia; white shaded with lilac. Pothecary's Lord Nelson; white with purple edge; petals cupped; superior. Widnall's Clio; fine rosy or ruby color. Wells' Enchantress; white tipped with lilac; fine. Brown's Desdemona; white with rose pink edge; fine. Widnall's Emperor; purple striped with crimson. Camellia flore albo; fine white. Harding's Bride; pure white. Beauty of Cambridge; white with rosy purple edge.

There were many other beautiful flowers; some of which, perhaps, would be considered as fine as those named. The room was fancifully ornamented with Dahlias wrought in the shape of hearts, stars, &c.; a large globe suspended from the ceiling, was covered with the petals of Dahlias, of different colors, and had a pleasing effect. Mr Thorburn has a fine collection of pictures, that line the walls of the gallery, which, together with his large aviary containing numerous canary and other birds; globes of gold fish; vases of artificial flowers and many other curiosities, in connexion with the show of flowers, gave much interest to the scene and attracted crowds of admiring spectators. It is surprising to see the endless variations which have taken place in this beautiful flower since it was first introduced from its natural habitat, the table land of Mexico. It is but a few years since it was first known among us, and only a few varieties of what we should now call worthless flowers were cultivated; but these were considered magnificent. Every year numerous old varieties are thrown aside, to give place to a superior improved generation. We have now arrived at the "Acme of Perfection," or at least we should think so from the name of a new Dahlia, figured in one of the last English periodicals; but probably this and most of what we now consider so elegant, will soon be eclipsed by those still more elegant, and we cannot set any bounds to the improvements which can be made with this popular flower.

We have now all the shades of red, yellow, purple, and from pure white to almost black; but as yet we have seen none that approaches to a blue. We have seen the figure of a blue and violet colored Dahlia in an English work, but doubt its existence. M. Decandolle observes, "that it may be inferred with a degree of probability approaching to certainty, that no blue variety of Dahlia will ever be found, because blue and yellow being the primitive colors of flowers, and always exclusive of each other, no blue flowers can change to yellow, nor yellow to blue." J. B.

Art X. — *On the Culture of the Pansy or Heartsease.*

There is scarcely any plant now in cultivation, which is of greater interest to a flower-garden than the Pansy. The extreme neatness, beauty and variety of the kinds, their duration of blooming from April to November, and their peculiar adaptation for almost any part of a flower-garden — renders the Pansy peculiarly pre-eminent. Although the plant is of humble growth, yet it may be grown upon an elevated mound of soil, so as to exhibit its beauties as lofty as desirable. I have cultivated it in several situations after the following manner:

I had a raised octagonal shaped cone, constructed in the centre of a flower garden, which was two yards high, I formed it by having troughs made one foot broad and eight inches deep, the above tier to the height named. The interior of the troughs had not a boarded bottom, but a bar or two to keep the whole together. The substratum was of good garden soil, and the troughs in which I planted the Pansies was filled with a light rich loamy soil, a compost which I had made of turf soil and manure that had been mixed two years and turned over several times. In this situation the plants bloomed most beautifully, and produced a striking effect.

I had a raised bank made against a wall, in order to conceal it from view of my dwelling, and this was constructed after the same manner, tier above tier to the height of five feet, and was equally handsome. The troughs were formed of tiles eight inches deep, above the soil of the lower tier, and the lower edge was inserted six inches to keep the tile upright.

From the above statements it will be obvious to the readers of the Cabinet, that an elevated bed may be made of any shape or height, in which this charming little plant may be grown, and, having the flowers raised so near to view, is a desirable advantage.

Occasional watering is necessary, but not near so much as persons might judge would be required.

Having said this much of the appropriateness of the Pansy to suit almost any convenience, I shall now add a few observations on the culture, &c.

Choice of Sorts. — The properties of a superior flower consists in the brilliancy of each color, that is, of each color being decidedly strong; the form of the flower should be as near a circle as possible,

and the larger the better ; the edges of the petals not to be fringed or undulated at all, but even and regular. In a flower, shaped as above described, the small angles which are seen in many pansies where the petals intersect each other, are wholly done away with ; the eye should be rather small, and the stigma to fill the same.

Propagation. — New varieties are readily obtained from seeds. Some care is necessary in collecting the seeds, as the capsule (seed vessel) undergoes but little change after it is formed, very soon bursting. When the seeds are ripe, however, the capsule, which before was pendulous, now becomes erect, and in a few hours afterwards, if the day be sunny, the seeds will be dispersed.

If the seeds be gathered any time from May to September, it should be sown immediately after being collected, but if after September it is better to defer the sowing till Spring.

If the seed be sown in the open border, a shady situation is the best, the soil not being so liable to become droughty. If in boxes they can be placed in any situation desirable. Sow the seeds in rich light soil, let the surface be made fine and smooth, cover with fine sifted soil about one-eighth of an inch deep, and gently, with a flat board, press the soil to the seed. Never allow the soil to become dry till the plants are up. When the seedling plants are about an inch high, they may be transplanted about four inches apart, into a bed of light rich soil. If the situation be a little shady it will be the better for the plants ; if the season be dry, occasional watering will be necessary. The plants will bloom the same season if sown early in the year, and, if later, they will bloom the following spring the best will easily remove to another situation.

By Cuttings. — Cuttings will readily strike root at any time from the first of April to the end of September, if the cuttings be selected from young shoots, the old shoots at the end of summer being hollow, and such seldom push roots. The ends of the shoots, about two inches long, are suitable for the purpose, cutting through, close under a joint ; they should be inserted in a fine soil of sand and loam, be watered well, and shaded for a few days. At the end of summer it is best to insert cuttings in pots or boxes, so that they can be placed in a frame to be assisted in striking.

By Slips or Offsets. — The plants will often have a quantity of shoots that will have struck root, these slips may be taken off at any time by removing a portion of the soil, and cutting the slips or offsets off with a portion of roots to each.

By Layers. — There are a few kinds which I have found difficult to increase by cuttings, nor could I get the shoots to rest when earthed up, in order to encourage them to strike roots into the soil; such, I have layered the same as carnations, using a finely sifted soil, and covering the incised part with it; I did not need a hooked peg. This mode is very easily done, at any time from the end of March to the early part of October, and with certain success.

In order to have fine blooming plants, it is necessary to have a stock raised every year. Such as are raised early in the present year, bloom fine from April to July, and those raised later in the present year, bloom from July to the end of the season. One year old plants are the best blooming ones, make the neatest patches, and look the handsomest. When much older they make long and straggling shoots, producing small blossoms. Being so easy of propagation and culture, a continuance of bloom may be secured nine months in a year. I find that Pansies grown on the elevated beds, being drier than the ordinary borders of the garden, stand well through the severest winters. Those plants I cultivate in the usual beds and borders of my garden, I cover the soil close up to the plants with some rotten tanner's bark, or mulchy manure from an old mushroom bed, to the depth of two or three inches, which fully answers the purpose of preserving them from inconvenience. If there be convenience, young plants of a sort, may be potted off at the end of September, and be kept in a cool frame or cool greenhouse till March following. I have done both.— *Cabinet.*

Art. XI. — *Gardeners' Work for November.*

Preserve your Cabbages. — These vegetables will bear considerable frost, but cannot be taken up and preserved too soon after the 1st of November. Take them up in a dry day; turn their tops downwards, and suffer them to remain so for a few hours, to drain off any water, which may have lodged between the leaves, then make choice of a ridge of dry earth in a well sheltered warm exposure, and plant them down to their heads thereon, close to one another, having previously taken off some of the loose hanging leaves. Immediately erect over them a low temporary shed of any kind that will

keep them perfectly free from wet, which is to be open at both ends to admit a current of air in mild dry weather. These ends are to be closed with straw when the weather is very severe. In this situation your cabbages will keep in a high state of preservation till spring; for being kept perfectly free from wet, as well as from the action of the sun, the frost will have little or no effect upon them. In such a place the heads may be cut off as wanted, and if frozen soak them in spring, well or pump water, for a few hours previous to their being cooked, which will dissolve the frost and extract any disagreeable taste occasioned thereby.

The principal gardener in the Shaker establishment in New Lebanon, Columbia county, N. Y. gave the following directions for preserving cabbages in autumn. "Do not pull them up till there is danger of their freezing too fast to be started. If there happens an early snow it will not injure them. When they are removed from the garden they should be set out again in a trench dug in the bottom of a cellar. If the cellar is pretty cool it will be the better."

Mr Derby, of Salem, Mass. states his mode of preserving cabbages as follows: "I have selected one of the most airy situations on the farm, spread a few leaves on the ground to keep them clean, and placed them upside down, close to each other, and shook among them leaves sufficient to cover them, leaving part of the root perfectly out, then throw on just enough seaweed to prevent the leaves from blowing away."— *Mass. Agr. Rep. Vol. VII. p. 57.*

PRESERVE YOUR CELERY. — On the approach of frost, take up a part of the crop and lay it under sand for winter use. Those plants which are left in beds may be covered with litter to be removed in mild weather. In *Cobbett's American Gardener*, it is directed to preserve celery in beds as follows: "Two boards a foot wide each, their edges on one side laid upon the earth of the ridge, formed into a *roof* over the point of the ridge, the upper edge of one board going an inch over the upper edge of the other, and the boards fastened well with pegs, will do the business completely; for it is not the frosts but the occasional *thaws*, that you have to fear, and the *wet* and *rot* which they produce." Those cabbage and cauliflower plants which you mean shall stand through the winter in frames, should, during the continuance of mild weather, be allowed every advantage of free air, to inure them by degrees to bear cold. Take the glasses off entirely in the warm part of the day, but place them on again at night, and in wet or cold weather. If your beets, turnips, parsnips, &c. are not secured, take them up and proceed as directed.

THE

HORTICULTURAL REGISTER,

AND

GARDENER'S MAGAZINE.

DECEMBER 1, 1836.

ART. I. — *Remarks on the Use of Soils in Growth of Plants.* — *By* XIOPE.

A KNOWLEDGE of the substances necessary to the healthy growth of plants, and of the exact quality and quantity of these substances, constitutes the greatest acme of perfection in cultivation. To arrive at this, it were necessary that the operator should be more or less acquainted with the physiological characters of the individual plant, with its peculiar economy, with its facility of absorption and extent of appropriation of other and heterogeneous bodies to its nutriment. That plants are capable of receiving into their systems, not only nutritious, but highly deleterious substances, such as proper manures, or active and deadly poisons, is well known and familiarly illustrated by the ingenious experiments of Marcet, and by the ordinary operations of the garden and the farm. This experimentalist ascertained that the spongioles of the roots were capable of absorbing equally, finely comminuted particles of metallic poisons, in the form of solutions, and of more bland and harmless vegetable bodies: that plants could be slowly killed by the introduction of arsenic into their internal structures, as are animals when it is introduced into their stomachs.

On soils, and in situations which have become greatly injured by the action of powerful acids, or of metallic combinations, or which are too highly impregnated with certain substances, which in minute quantities might have even proved excellent, or at least, good manures and stimulants, it is not uncommon to meet with a crop of sickly, starved and stinted plants. The great effort of nature to ripen

the seed, and to produce that system of operations necessary to the future existence of the individual, is mainly observable in the undue proportion of these organs over the other and subservient. The crop, either of natural or artificial growth, bears all the evidences of the condition of the soil. It breathes and imbibes a poisonous atmosphere. The few and remaining essentials to its increase and existence, are tainted with the deadly and destructive preponderant qualities of the situation: nor will the soil bear a healthy and vigorous growth, until it is renewed and changed by the ordinary means of Nature, or by art.

Light and moisture seem essential to most vegetables. Without these, with only a few exceptions, no plants can survive. With these two simple provisions, many of the most important functions, are carried on and completed. A Hyacinth will produce strong, vigorous foliage, brilliant and fragrant flowers, large and healthy fibres, if supplied with simple water and bright light. It exhausts itself, however, by so unnatural a situation and manner of developement. Seeds will vegetate on animal, vegetable or mineral bodies, if supplied with moisture. Many plants thrive in situations scarcely differing in an apparent degree from the water cultivation of the hyacinth. Some of the finest orchideæ of our own country are thus found in sphagnous swamps, thriving as it were only on the water absorbed by *Sphagnum palustræ*, and other mosses.

It is evident, however, on further consideration, that this apparent condition is not the real. Minute and highly nutritive substances are continually flowing into these swamps, and such localities where these aquatic mosses grow, which contribute in a very great degree to the healthy condition of these plants.

Thus almost any plant not decidedly appropriate to arid and dessicated situations, as sandy plains and rocks, may be made to accommodate themselves to the simple imbibition of water, if the roots are provided with some spongy body into which to insinuate themselves. Hence the fact that "coarse moss of any kind" packed tight in a pot may be substituted for soil in parlor cultivation. Our experiments have proved it a miserably poor substitute. The slow tendency to decay in the moss, serves to preserve the roots, which otherwise would rot in so unnatural a situation. A few flowers may be produced, but they will not equal those in whose production good soil has been employed. This remark may not however apply altogether to such aquat-

ics as Calla Æthiopica, but we surmise that even this decidedly water plant, would amply repay the allowance of a stronger stimulus. — With us Mimulus rivularis var. *Smithii*, barely survived two months of such treatment. For the manner of such cultivation, we refer to the extract on page 411, of November No. of this Register. We recommend a few experiments of the theory to the lovers of new things, and to the promoters of floricultural science.

Art. II. — *On the Culture of Cape Bulbs.*

The Gladiolus — Ixia — Watsonia, — and many other bulbous plants included under the natural order Iridiæ, may be successfully cultivated in the open air, if planted in a light sandy soil, under the protection of a wall or fence, having a southern aspect. Mr Sweet recommends planting them from five to eight inches deep, in beds composed of equal proportions of rich loam, peat and sand, and in severe weather they may be covered with old tan or dry litter, or protected by a mat; by this treatment they will flower much stronger than if grown in pots, and may be readily increased by offsets from the bulbs, or by seeds.

Bulbs that are grown in glasses, should be placed during the month of November, the glasses filled with water, which will require to be changed every three or four days, and the bulbs should be placed in as light and as airy a situation as possible, that they may not be drawn up weakly.

The Amaryllideæ are a beautiful and interesting tribe of plants, and add greatly to the attractions of the stove and green-house during the winter and spring months. Mr William Nicol, of Newick Park, a very successful cultivator of bulbous plants, has kindly furnished us with the following details of his practice : —

Although the varieties of the Amaryllis are very numerous, the hybrids are in many instances to be preferred, as they often surpass the originals in beauty, and are found to flower more freely. I have succeeded in obtaining beautiful hybrids from the following varieties, by transferring the pollen from

Amaryllis	rutila	to	Amaryllis	Johnsoni.
"	crocata	"		miniata.

Amaryllis	equestris	Amaryllis	vittata.
"	reticulata	"	Johnsoni.
"	Johnsoni	"	reginæ.
"	solandræflora	"	Johnsoni.
"	miniata	"	reginæ.
"	splendens	"	Johnsoni.
"	fulgida	"	vittata.
"	miniata	"	Johnsoni.
"	vittata	"	equestris.
"	Johnsoni	"	reticulata.
"	reticulata	"	vittata.
"	vittata	"	Johnsoni.
"	Johnsoni	"	equestris.
"	fulgida	"	Johnsoni.
"	psittacina	"	reticulota.

The seed should be collected as soon as ripe, sown in pots, and placed in a hot-bed. When the plants have produced two leaves, they should be potted singly into the smallest sized pots, taking care not to pot them too deep, but to leave the young bulbs on a level with the surface of the mould. They should be watered, and kept shaded in the hot-bed frame for a few days, and as soon as the bulbs recede from the surface, they should be repotted into large sixties, and occasionally shifted during the summer, until the plants are well rooted in twentyfour sized pots. By this treatment many of the young plants will flower the following spring.

The established plants I treat in the following manner : — as soon as they begin to shew flower, I stir the surface of the mould, and give as much water as will penetrate to the bottom of the pots. I then place them in the stove, and water them occasionally, as the plants may require. In a few days the flower stems advance considerably in height, the leaves shortly after make their appearance, and in a few weeks the plants are in flower.

When the flowers begin to fade, the flower stems should not be cut off, but be allowed to die down, for if cut while in a green state, it will cause the coats of the bulbs to decay. After the leaves have attained their growth, which may be known by their dropping down to the sides of the pots, and by the tips of the leaves beginning to turn yellow, the plants should be repotted, taking care to disturb the roots

as little as possible. They should then be placed in a hot-bed frame, and supplied with water sufficient to settle the mould, shading them with a mat until another set of leaves begins to be developed. They will now form embryo buds for the following season. The plants being established, should be gradually exposed to the sun and air, and as soon as the leaves have attained their full growth, water should be more sparingly applied. When the leaves have died down to the bulbs, the plants should be removed to a cool vinery or green-house, and if the bulbs feel firm, which may easily be known by pressing them with the finger and thumb, the watering may be gradually discontinued, and the plants be suffered to remain till they begin to shew buds, when the surface of the mould must be stirred as before directed, and the same treatment pursued.

The A. curvifolia, A. corusca, A. sarniensis, or Guernsey Lily, require the same treatment as the other varieties, and will, if properly managed, flower every year. There are several other varieties of the Amaryllis that do not root so freely as others; but if these are allowed to remain in pots, and be carefully watered, and judiciously treated, they will invariably flower in perfection.

In the management of the Amaryllidæ, and bulbs in general, it is of great importance that they be not over-watered, that the offsets be carefully detached, and that, in planting, the pots be sufficiently drained. The following compost may be advantageously employed, both for seedling and established plants: — three parts light turfy loam, two parts white sharp sand, and one part turfy peat.— *Mantell's Floriculture.*

Art. III. — *Turnip Rooted Cabbage.*

We received, a few days since, some vegetables of beautiful appearance, from Mr Moses Mann of Needham, under the name of *Kopf* or *Kohl Kolraben*, produced from seed received from Germany.

The shape of it, globular; about six inches in diameter; the color of one variety green, the other purple. Leaves commencing at the base of the globe on long petioles and encompassing it, and terminating with a tuft on top of the bulb.

The flavor of it, when cooked, equalled the beauty of its appear-

ance. It was quartered, and stripped of its thick fibrous rind, and boiled an hour and a half and seasoned with butter and salt. Its taste is similar to a fine turnip, but much superior. Mr Mann thought it resembled the flavor of the heart of a Savoy cabbage. We can confidently recommend this vegetable for general use, which though uncommon here, is well known in some parts of Europe, and is synonymous with Turnip Cabbage, or Turnip rooted Cabbage. M'Mahon thus describes it.—

"The Turnip Cabbage produces its bulb or protuberance, which appproaches to roundness, on the stem above ground, immediately under the leaves. It is eatable when young, and about the size of a tolerably large garden turnip. The bulb or protuberance, must be first stripped of its thick fibrous rind, and then it may be treated and used as a turnip. Some of their bulbs grow to twentythree inches in circumference, and weigh upwards of twelve pounds. The seeds may be sown, and the plants afterwards treated as you do cabbage, only that in earthing up the plants, when grown to a good size, you must be cautious not to cover the globular part, which is to be eaten. They are much more hardy than turnips, and in Europe are cultivated for the feeding of cows and sheep, as well as for table use: in either case they treat them as they do cabbages, or sow them like turnips, and afterwards hoe them out to proper distances."

From vol. vii. of the N. E. Farmer, page 62, we transcribe the following account: — "Mr Cornelius Cowing of Roxbury, has left at the New England Farmer Office a root of the Arabian Kohl Rabi, or Turnip Rooted Cabbage, which has a bulb, 17 inches in circumference.

This curious variety of cabbage is a native of Germany, where it is much cultivated. They take it up before winter sets in, and protect it like potatoes or turnips, for winter use. The produce is nearly the same as Swedish turnips, and the soil that suits the one, is equally good for the other. It may be either sown in drills, or raised in beds, and transplanted like cabbages: in this case the beds require to be made and sown in the preceding autumn. Two pounds of seed will prove a sufficiency of plants for one acre of ground. The stem is swollen like a bulb, and when divested of the leaves, may easily be mistaken for one. Hares are so fond of it, that on farms where these animals abound, the culture of this plant is found impracticable. Sir Thomas Tyrwhitt first introduced Kohl rabi from Germany. —

Messrs Gibbs & Co., seedsmen to the board of Agriculture, raised in one year, one ton and a quarter of the seed, and continue to supply the demands of the public for it, and for all other agricultural seeds of the best quality. 64 dr. of the bulbs of Kohl rabi afford 105 grains of nutritive matter."

It is sometimes called Turnip cabbage above ground to distinguish it from another species which produces its bulb below the surface, or Turnip Rooted Cabbage below ground. The last species is thus described: "It has an oblong thick root pretty much of the form of the winter radish, but very large, and is a valuable article to cultivate for cattle; as it produces with proper care, from twentyfive to thirty tons per acre. It is extremely hardy, and very seldom injured by frost, and would be an excellent sheep food in April, when the frosts are not over desperate. It merits attention from the farmer, and is frequently used for culinary purposes, in the same manner as the Turnip Cabbage. The top and sprouts make delicious greens in the spring." J. B.

Art. IV. — *Improvements in Cultivation.*

The following passages are extracted from an excellent Address before the Middlesex Agricultural Society, by Albert H. Nelson of Concord, published in the N. E. Farmer of the 16th ult. Most of the remarks here quoted, apply as well to Horticulture as to Agriculture, and deserve a place in every publication which has improvement in tillage for its object. T. G. F.

We may learn the principles of Farming [or Gardening] then, by study, and why in the name of common sense may we not study books? Why should we be obliged to grope along, to stumble on in the thick darkness which our ancestors exerted themselves successfully to dissipate, when we may walk firmly and surely, would we but open our eyes. To illustrate my meaning. A young man comes into possession of a farm composed entirely of light sandy soil. His predecessors have year by year, raised by dint of much labor, a small crop of burnt up hay, a small crop of potatoes, and a smaller crop of stinted corn. Now shall he toil on all his days, ploughing, sowing, and cropping the same fields in the same way, and with the same re-

sults, as did his ancestors? Or, would it not be far better for him to farm a little by book? To study the nature of calcareous and silicious soils, to learn the different effects and qualities of manure, to introduce the turnip and clover culture, and a rotation of crops; and thus, by the aid of a little science, double his produce and the value of his land at the same time? Shall he continue to cultivate certain articles without any regard to their adaptation to his soil, or shall he study the nature of the soil somewhat? Can there be a doubt as to what should be done? Our farmers work with their eyes wide open, I allow. They adopt improvements as fast as they are made in their neighborhood, so that they can see them; but they adopt *only* when they can see them. New modes of cultivation, and new articles of culture, are in this way gradually introduced. But they are introduced too slowly. The work does not go on fast enough. They do not keep up with the improvements of the age. There is much hesitation and doubt, after the time for hesitation and doubt has passed. The good old way, with all its imperfections, is adhered to in preference to a newer and better, merely because the one is old, and the other new. Our farmers have a thorough contempt for new things, and especially if promulgated by a book farmer, and in this way lose great advantages. Illustrations of this fact are abundant. How much writing, and argument, and persuasion it has cost to obtain for the mulberry, and the making of silk, their present partial and limited confidence. How slowly has the cultivation of Ruta Baga been progressing: and how much more slowly the raising of lucerne. How hard it is for people to give up keeping a little mountain of soil round each hill of corn: how hard to use the roller and cultivator: how hard to give up cross ploughing! or to illustrate this same feeling in a different way, it was forty years after Spinach was introduced into the gardens of the opulent, before it could be bought in Boston market: and I doubt not but that there are those present who now hear the name for the first time. The Rhubarb was twenty years in coming into favor: the Tomato, the best of all summer vegetables, nearly as long: and the Salsify is now hardly a regular marketable vegetable. While the Sea Kale of Great Britain has not been able to tempt a single cultivator, Head Lettuce as well known as it is, is seldom raised in the country, and the cauliflower more seldom still. "But the disgrace of being slow to receive valuable novelties, is not confined to our farmers and gardeners alone. The Medical Faculty of

Paris proscribed as poisonous the potato, one hundred years after that plant had raised millions of vigorous troops who under Marlborough had again and again beaten the finest armies of France.

* * * * * * *

How few farmers there are that actually study the nature of soils and manures, and crops? How few make any improvements, save those they see instituted by their nearest circle of neighbors? All such they are willing to make. Now I ask, and the question contains the gist of the whole matter, why a man may not as well learn from the results of the neighbors' experiments and science when stated in a book, as when seen on a farm? Extend the same principle. Great men, practical men, in every part of the world, and for many years, have investigated the subject of agriculture, and have written on it: their plans and experiments, as well successful as otherwise, have been noted; experiments have been properly instituted. Now if a farmer may learn from a book written by his neighbor, may he not much more learn from this collected wisdom of the whole world? Is it not a fact, and may we not point to shining examples from the members of this society, that those who have studied books, and become book farmers, are the best farmers, and have the best and most productive farms? Being willing to learn from those men, as we all are, and thus from books second hand, and why are we not willing to go ourselves to the fountain head, and thus become pioneers in the cause?

* * * * * * *

I have thus, gentlemen, stated some reasons why you should prosecute agriculture as a science, and have thus briefly noticed some of the modern improvements in that science, in order to induce in your minds the question "Why may we not accomplish what others have accomplished?" And I ask the question — why may you not? Who shall say that an American cannot do as much as an English farmer? Who but the American himself when he says he cares not for the science or the study of Agriculture, and that he spurns such learned words? He who adheres to old customs while every body about him is adopting newer and better, will fall far behind the age. And that farmer who continues to farm as did his ancestors, who entertains a sovereign contempt for scientific cultivation, will find himself every day growing poorer and poorer, because his more enlightened neighbors are every day growing richer and richer. I know

that to treat farming as a science, to adopt the late improvements, or at least many of them, calls for a considerable outlay of money. But the investment is sure: the returns must be enormous for the amount expended: and they will themselves furnish the means of further improvement. There are multitudes of examples of what may be done in this way. Mr Coke of Norfolk, England, furnishes the most illustrious instance. Some forty years ago, he inherited a vast landed estate, the increase of which was then, $8000 per annum. Being an active and intelligent man, he introdnced the Tullian system, which consists in a frequent rotation of crops, and in sowing in drills, and in his life time, by the plough and a proper succession of plants alone, he increased the income of his estate to $200,000; or, in other words he increased its value 24 times. Of him it was said, that "he disdained to hide his head beneath a coronet." Something like this every man may do. If we have not thousands to double every few years, we have hundreds or tens; and the smaller the sum, the more the need of this result. The means are in every man's hands. There is no necromancy in the case; no peculiar skill is needed. Diligently use the faculties God has given us, and the advantages which our institutions secure, and the whole is accomplished.

We in New England have already done much. Our hills are rough and rocky and sterile; our winters are long and tempestuous; our climate is inclement and unfavorable; but our arms have been nervous and our hearts strong, and the rough sterile fields have become gardens. The lines fell in rough spots to our fathers, but they have been made very pleasant homes. The founders of New England had difficulties to contend against, but they have been overcome. Just two hundred years ago, in 1836, a gentleman writing to England of the soil of this country says, "after five or six years it grows barren beyond belief; and whereas after, the land in England proves fertile for grass, this yields none at all, but like the land about Dunstable, puts on the face of winter in the time of summer." * * * "For the present we make a shift to live — but hereafter, when our numbers do increase, and the fertility of the soil doth decrease, if God discovers not means to enrich the land, what shall become of us, I will not determine — but it is probable we must either disband ourselves, like beasts straitened in their pasture, and so be liable to destruction from the natives (I mean the Pequods,) or else continuing together be made the subject of some fearful famine and the misery

that accompanieth it." How great the change! Two hundred years ago, the 10,000 inhabitants of New England feared a famine! Now more than two and a half millions are supported in the same country, and the energies of the land are not developed to the hundredth part! We apprehend no famine now: we fear not the sterility of the soil: we war not with the Pequods: our midnight slumbers are not disturbed by the howlings of ravenous wild-beasts. Peace, prosperity, and plenty is in our land. The little handful has grown to a mighty host. Our efforts have been prospered, and the earth has smiled. — And now instead of fears for the issue, and prayers for succor, we confidently anticipate the time when in agriculture, as in everything else, we shall stand pre-eminent before the whole world. Truly may we say there has been a change! And shall it stop? or shall it go on? Shall we rest satisfied with what has been done, now that our energies are just beginning to be developed, and now that we have inducements greater than ever to press onward? By you, Gentlemen, and such as you, is the question to be solved. By directing to the science the same mental power, that you devote to anything else, and the same unwearied diligence, everything desirable will be attained. True, we have not the great staples, the sunny clime, the fertile soil of the south: but we have not slavery. True, we have not the luxuriant prairies and mighty rivers of the West: but we have what is wanting in those places, the good old fashioned New England habits of economy and industry. We have not the blessings of many other lands; but at the same time we have not the curses that are entailed upon them. We have everything that is needed to induce our surpassing all other lands in this science; and it rests with you, Gentlemen, and your fellow workers in this cause, to say whether or not these results shall be attained.

Art. V.—*The Rose Bush.*

"*Flora Domestica, or the Portable Flower Garden, with Directions for the Treatment of Plants in Pots; and Illustrations from the Works of the Poets,*" is the title of an English work in our possession well designed for the instruction and amusement of those who are confined to the cultivation of plants in pots, as well as cultivators at

large; not only for the information it gives relative to the history and cultivation of the different plants it treats upon, but also for the "interesting or poetical associations with their history."

The author says, "In the belief that lovers of nature are most frequently admirers of beauty in any form, such anecdotes or poetical passages are added, relating to the plants mentioned, as appeared likely to interest them."

ROSE BUSH. ROSA. ROSACÆ. (Icosandria Polygnia.)
French, *le rosier*, flowers, *la rose*: in bas Breton, *ros*.—Italian, *rosajo, rosa:* in Brescian, *larrosa*.

It is not intended to set down here a catalogue of the various kinds of Roses, but to speak of a few of the most eminent, and particularly such as are best adapted for the present purpose. Unfortunately it happens with many of them as with some other valuable plants of which the Laurustinus is one, that they will not thrive well in the vicinity of London.

The Single yellow Rose is a native of Germany, Italy and the South of France. The Austrian Rose is considered a variety of this: it is of a sulphur color outside, and a bright scarlet within. The Double yellow Rose is full and large, as the Provins Rose: it is a native of the Levant.

These kinds are principally mentioned for their variety; being some of those which will not grow near London.

The Cinnamon Rose — French, *rose canelle* — is one of the smallest and earliest of the double garden roses; it is supposed to be named from the scent of the leaves, some say of the flowers. Mr Martyn says he can discover nothing in the scent of either, at all resembling that spice.

The Dog-Rose is well known as the blossom of the Common Briars, growing wild in almost every part of Europe: here called the hip-tree, hep-tree, and in Devonshire, canker and canker-rose: the name of dog-rose probably arises from the heps or fruit being eaten by dogs, whence the Tartars call the heps by a name signifying dog-fruit. In French, these roses are called *rosier sauvage*, wild rose-bush; *rosier des haies*, hedge rose bush; *rose de chien*, dog rose; *rose cochoniere*, swine rose; *eglantier*, eglantine; in Italian, they are called *rosa salvatica; rosa canina*.

Montgomery, finding one of these roses late in the month of Octo-

ber, addressed some lines to it, in which it must be confessed, he treats it with singular harshness. He shows it none of that delicate consideration, poets usually feel for distressed flowers. Moore expresses the tenderest compassion for a rose that lived late in the *summer*, when all its companions were faded and gone; *this* unhappy rose was found suffering the keen blasts of approaching *winter*, yet the poet aggravates its misery by bitter reproaches:

"Last, and meanest of thy race,
Void of beauty, color, grace!"
* * * * *
* * * * *
"How thine ancestors would blush
To behold thee on their bush."

A little consideration might have shown the poet that the said ancestors, had they lived to see this their unfortunate offspring, would probably have been as little given to blushing as that pale flower itself.

The Scotch Rose is also common to most parts of Europe, the petals are white, or cream-colored; yellow at the base, and sometimes striped with red; the fruit is a dark purple, and the pericarp contains a fine purple juice, which, diluted with water, dyes silk and muslin peach color: the addition of alum will make it a deep violet dye. The fruit, when ripe, is eaten by children: the leaves are small and elegant: the whole plant seldom exceeds a foot in height; it likes the shade and a moist soil.

The Common Provins Rose — French, *rose de Provens* — is one of the most beautiful yet known in the English gardens: it is very large and full, folded close in the manner of a cabbage: some call it the Cabbage Rose on this account. It is the most fragrant as well as the handsomest kind we have: it will grow seven or eight feet high. The petals which are deep red and of a powerful scent, may be kept for a year or eighteen months by being penned close. It takes its name not from Provence, as is commonly supposed, but from Provins, a small town about fifty miles from Paris, where it is largely cultivated; and where it was first introduced from the east.

There are two small varieties of the Provins which are much esteemed, the *Rose de Maux* and the Pompone Rose: if the old wood of these kinds be cut down every year after they have done blowing, it will cause them to shoot more vigorously, and to flower more freely.

The Moss rose or Moss Provins rose, is well known as an elegant

plant: the flowers are deeply colored, and the rich mossiness which surrounds them gives them a luxuriant appearance not easily described; but it is familiar to every one. It is a fragrant flower: its country is not known to us, and we know it only as a double flower.

The origin of its mossy vest has been explained to us by a German writer:

"The angel of the flowers one day
Beneath a rose-tree sleeping lay:
That spirit, to whose charge is given
To bathe young buds in dews from heaven;
Awaking from his light repose,
The angel whispered to the rose:
'O fondest object of my care,
Still fairest found where all are fair,
For the sweet shade thou'st given to me,
Ask what thou wilt, 'tis granted thee.'
'Then,' said the rose, with deepened glow,
'On me another grace bestow:'
The spirit paused in silent thought.
What grace was there that flower had not!
'Twas but a moment; — o'er the rose
A veil of moss the angel throws,
And robed in nature's simplest weed,
Could there a flower, that rose exceed?"

The Red Provins rose is smaller than the Common Provins, and deeper colored; there is also a Blush and a White Provins.

The Damask rose is a pale red; it is not very double, but is sweet-scented and extremely handsome. It is a native of the south of France: there are many varieties, the Monthly, the striped Monthly, which is red and blush colored, and the York and Lancaster, so called because it is striped with both red and white. Miller believes this Rose to have been brought originally from Asia: a syrup is prepared from it.

The Frankfort rose is full and handsome, but scentless. This and the Damask rose grows about the same height as the Provins.

The Monthly Roses do not thrive well near London, but are not so peremptory in this point as the Yellow Roses, which it is said will not flower within ten miles of it. Of the other kinds which have been mentioned, the dead wood should be cut out every year, and the suckers taken off; this should be done in autumn.

The Red Rose is large, but not very double: it is of a rich crimson color, and particularly fragrant. Parkinson calls this the English

Rose, because the first known in this country, and more cultivated here than elsewhere; and because it was assumed by some of our kings as a symbol of royalty. There is a variety of this kind with white and red stripes. This rose is used for conserves, infusions, honeys, syrups, &c. and was much valued by the Arabian physicians.

Gerarde says, "that in Leylande fields, in Lancashire, the Garden rose doth grow wild in the ploughed fields among the corn in such abundance, that many bushels of them may be gathered there, equal with the best Garden roses in every respect; but what is yet more surprising," continues he, "is that in one of the fields called Glover's field, every year that it is ploughed for corn, it will be spread over with roses; but when not ploughed, then there shall be but few roses gathered:" and this he has "by the relation of a curious gentleman there dwelling."

"I give this improbable tale," says Mr Martyn, after quoting this passage, "as an instance of the dependence that is to be placed upon the information of curious gentlemen." Johnson has set it right by informing us, he has heard that the roses which grow in such plenty in Glover's field, are no other than the *Corn rose*, or Red poppy.

The Hundred-leaved Rose is a native of China: they are very double, deeply colored, with little scent. This is a most beautiful species; the varieties are numerous; it is often confounded with the Damask rose, from which it is quite distinct. This rose is used in medicine, and a fire distilled water of an exquisite perfume, is prepared from it; but the oil or rather butter, that swims on the water has no scent. The water which is prepared from the common Dog rose, is by many considered as more fragrant, than when distilled from any of the garden Roses. The leaves, too, of this wild kind are used as a substitute for tea; and the fruit when ripe and mellowed by the frost, is often eaten, and thought very agreeable; it is a great delicacy to some kinds of birds, to pheasants in particular; it is also mixed with sugar, and sold under the name of conserve of heps, and forms a good vehicle for many nauseous medicines.

The Evergreen rose is a native of the south of Europe: it is white, single, but very sweet; in appearance it much resembles our Eglantine. It is this rose that yields the fine scented oil called attar of roses, which is imported from the Barbary coast, Egypt and the East Indies: a few drops of this oil, dissolved in spirit of wine, forms the

esprit de rose of the perfumers; and the same dissolved in fine sweet oil, their *huile antique de rose.*

The Eglantine, or Sweet rose, called by the Italians *Rosa Perla,* (Pearl Rose,) is a native of all Europe, in woods, thickets, hedges, &c., chiefly in a gravelly soil. The varieties with double flowers are very elegant shrubs.

The Musk rose is common in every hedge in Tunis; it is white, smells strong of musk, and blows in August; there are single and double varieties. This Rose requires plenty of room.

The Red China Rose is semi-double: it is admired for its fine rich crimson color, and for its fragrance. It blows in succession all the year, but more sparingly in the winter months. There is also a Blush, and a Pale China Rose.

Lucan tells us that, when Cæsar was entertained by Ptolemy and Cleopatra —

> "With wreathes of naid the guests their temples bind,
> And blooming roses of immortal kind." — Rowe's Lucan.

The White Rose is a native of China and most parts of Europe: it grows to a height of nine feet, is very full of blossoms, and extremely beautiful, but has little or no smell.

Roses in general delight in an open free air, and will bear the cold well: but when in pots, it is better to place them in doors during the winter, particularly such as flower at that season. The earth should be always kept moderately moist.

The Rose is pre-eminently the flower of Love and Poetry, the very perfection of floral realities. Imagination may have flattered herself that her power could form a more perfect beauty; but it is said, she never yet discovered such to mortal eyes. This, however, she would persuade us to be a mere matter of delicacy, and that she had the authority of Apollo for her secret success:

> ——————"No mortal eye can reach the flowers,
> And 'tis right just, for well Apollo knows,
> 'Twould make the poet quarrel with the rose."

It is however determined, that until the claims of such veiled beauty, or beauties, shall rest upon the better foundation, the Rose shall still be considered as the unrivalled Queen of Flowers.

> 'I saw the sweetest flower wild Nature yields,
> A fresh blown Musk Rose."

It is said, however, that the angels possess a more beautiful kind of Rose than those we have on earth. David saw in a vision a number of angels pass by with gilded baskets in their hands:

"Some as they went, the blue-eyed violets strew,
Some spotless lilies in loose order threw;
Some did the way with full-blown roses spread,
Their smell divine, and color strangely red;
Not such as our dull gardens proudly wear,
Whom weathers taint, and winds rude kisses tear;
Such, I believe, was the first rose's hue,
Which at God's word in beauteous Eden grew;
Queen of the flowers that made that orchard gay,
The morning blushes of the new-born day."

The Rose, as well as the Myrtle, is considered as sacred to the Goddess of Beauty. Berkeley, in his Utopia, describes lover's as declaring their passion by presenting to the fair-beloved a rose-bud just beginning to open: if the lady accepted and wore the bud, she was supposed to favor his pretensions. As time increased the lover's affection, he followed up the first present by that of a half blown rose, which was again succeeded by one full blown: and if the lady wore this last, she was considered as engaged for life.

In our country, in some parts of Surrey in particular, it was the custom, in the time of Evelyn, to plant roses round the graves of lovers. The Greeks and Romans observed this practice so religiously, that it is often found annexed as a codicil to their wills, as appears by an old inscription at Ravenna, and another at Milan, by which roses are ordered to be yearly strewed and planted upon the graves.

It is the universal practice in South Wales, to strew roses and other flowers over the graves of departed friends.

Morestellus cites an epitaph, in which Publia Cornelia Anna declares that she has resolved not to survive her husband in desolate widowhood, but had voluntarily shut herself up in his sepulchre, still to remain with him with whom she had lived twenty years in peace and happiness: and then orders her freed women to sacrifice there to Pluto and Proserpine, to adorn the sepulchre with roses, and feast upon the remainder of the sacrifice.

We have seen, within these few years, the body of a child carried to a country church for burial, by young girls dressed in white, each carrying a rose in her hand.

Poetry is lavish of roses; it heaps them into beds, weaves them into crowns, twines them into arbours, forges them into chains, adorns with them the goblet used in the festivals of Bacchus, plants them in the bosom of beauty. — Nay, not only delights to bring the rose itself upon every occasion, but seizes each particular beauty it possesses as an object of comparison with the loveliest works of nature; it ts soft as a Rose leaf; as sweet as a Rose; Rosy clouds; Rosy cheeks; Rosy lips; Rosy Blushes; Rosy dawns, &c. &c.

Art. VI. — *On the Culture of the Tuberose.*

Poliânthes tuberósa, or common white Tuberose, is a native of Italy and the East Indies, first imported into Great Britain in the year 1829, and is now become a great traffic between Dutch and English nurserymen. The generic name was given it by Linnæus, taken from polys many, anthos a flower, owing to the abundance of blossoms it produces. The specific, by Wildenow, taken from the root consisting of fleshy bodies connected by slender fibres. It belongs to the 6th class and 1st order. Hexandria (hex 6, aner a man, or male organ.) Monogynia (monos 1 : gyni, a woman, or female organ) of the Linnæan classification, and to the order Hemerocallidea in the Jussieuean, or natural arrangement of plants. Its continental names are La Tubereuse, Fr.; Die Tuberose, Ger.; Tuberoos, Dutch; and Tuberos, Swedish. There are two species and one variety of this genus, viz. P. tuberosa, P. tuberosa flora plena (the subject of the present paper,) and P. gracilis, or slender-leaved Tuberose.

In the autumn provide a quantity of compost, composed of the following materials: — two wheelbarrows full of light maiden loam, one ditto of decomposed hot-bed dung, and a little white sand, well chopped and mixed together at different times during the following winter, for the frost to ameliorate and decompose it. In the month of February, prepare the bulbs by taking off all the loose rind, and superfluous offsets, or side bulbs, being careful not to injure the principal one. Then provide a sufficient quantity of pots (the size should be 7 1-2 in. by 6 1-4 in.,) well drained with broken potsherds; they

must be filled with the above compost, and well shaken down, but not pressed with the hands. A little white sand must be placed in the middle of the top of the compost, and the bulb must be pressed gently, though firmly, down the sand, to within a quarter of an inch of the top of the bulb. Some cultivators use finely-pounded stone, commonly called grit in this county (Cheshire,) instead of sand, which answers the purpose very well.

After the bulbs are potted, plunge them in a strong hot-bed, where they must remain till they have grown to the height of three or four inches; they must be kept quite close till they begin to vegetate, when a little air may be admitted; shaded when the sun is powerful, and covered up with mats at night; water must be supplied very sparingly while they are here, for the steam arising from the bed answers, in a great measure, the purpose of water. When they have grown to the height above stated, take them to the stove, allowing them a plentiful supply of air and water, setting them in a place where they will get plenty of light, or they will be apt to draw up weakly. As they advance in growth, tie them carefully up to green sticks 6 or 7 feet long well rounded at the bottom; care must be taken not to tie them too tight, or else their stems will become ill-shapen and crooked, and they will flower weakly. Here let them remain till they are in flower, when they must be moved to the conservatory; and when set among other exotics, they will, by their beauty, add to the gaiety and grandeur of the house, and shed around their fragrant odours, every even and morn when the house is closed, such that cannot be conceived but by those whose fortune it is to grow them well.

I have thus endeavored to pen down my process in as plain and brief a manner as possible, humbly hoping that these few remarks may prove of some utility to some of your numerous readers; assuring them them that they are not mere theoretical opinions, but the method detailed is the result of some years' experience, which induces me to communicate them.

Loudon, in his Encyclopædia of Plants, page 255, informs us that it is R. A. Salisbury's opinion, that we might grow our own bulbs by planting the offsets in such a situation as would obtain for them a sufficient degree of heat in summer, to bring their leaves out to their full magnitude, and their bulbs to their proper size. The theory, he adds, which I would recommend, is to keep the offsets growing as freely as possible, from May to October, but in a complete rest and drought for the remainder of the year.

Art. VII. — *On the History of the Polianthes Tuberose.*

The following is an extract from the Transactions of the London Horticultural Society. It is a part of a valuable paper communicated by R. A. Salisbury, Esq.

"The first account that I find of the Tuberose, is in L'Ecluse's *History of Plants*, where it appears that on the 1st of December, 1594, he received a specimen of it, in very bad condition, from Bernard Paludanus, a physician at Rome, to whom it was sent by the celebrated Simon de Tovar, of Seville. It certainly had not then been many years in Europe, and Linne, in his *Hortus Cliffortianus*, on this head refers us to Plumier's *Genera Plantarum*, p. 35, who says it was first brought by Father Minuti, from the East Indies, into the senator Peiresc's garden at Boisgencier, near Toulon. It is much more probable, however, that it was introduced at an earlier period, and from America, for no author describes it as wild in the East Indies; Loureiro only found it cultivated in the gardens of Cochin China; and Rumph says it was unknown in the island Amboina, till the Dutch carried it there from Batavia, in 1674. On the contrary, Kamel informs us, that it was brought to the Island of Luzone by the Spaniards, from Mexico; and Parkinson, in 1656, tells us, that the plants, which he describes as two species, 'both grow naturally in the West Indies, from whence being brought into Spain, have from thence been dispersed unto divers lovers of plants. The senator Peiresc, as may be learnt from Gassendi, was only fourteen years old in 1594, when Simon de Tovar had already cultivated it at Seville, and according to Redonte, it was not planted in his garden as Boisgencier, by Father Minuti, till 1652, whom that author makes to have brought it from Persia: I only infer, however, that he travelled from Hindostan over land. Redonte moreover asserts, that the authors of *Flora Peruviana* found it wild in America, but in the work itself, they say, cultivated in gardens. Hernandez' evidence, however, I think, takes away all doubt about the matter: he says, 'provenit in frigidis et temperatis regionibus, veteri incognita mundo,' and as the Agave to which the Tuberose is more immediately allied, is also a native of Mexico, I am fully of opinion that it is indigenous there.

"The description given by the venerable L'Ecluse of his specimen, half dried, and battered by the journey, with only the lowest flower of

the spine expanded, affords a memorable instance of his accuracy and discernment. The size, the stem, insertion and figure of the leaves, and their hempy texture, are particularly noticed; the shape of the corolla, with its general similarity to that of the Asiatic Hyacinths, but in consistence rather to that of the Orange, is next remarked; and having no knowledge of the root to guide this judgment, but what he derived from Simon de Tovar's appellation of Bulbus Indicus florem Album preferens Hyacinthi Orientalis æmulum, he guesses it may possibly belong to the same genus with the Bulbus oriophorus, or Peruvian Hyacinth, though not without some doubts raised by its stem being covered with leaves, and its corolla. Two years afterwards, these doubts were corroborated by his receiving roots both from Simon de Tovar and the Comte d'Aremberg, which by August were full of leaves; and I think it worth noticing, that his figure of the plant appears evidently to have been made up from the original specimen sent by Bernard Paludanus, and one of these growing roots, which he expressly mentions did not flower: he concludes with observing, that if it is still to remain in the genus, it may be called Hyacinthus Indicus tuberosa radice.

"From this Latin phrase, no doubt, our silly appellation of Tuberose, and the more accurate French name, Tubereuse, originated; but in the East Indies it is distinguished by the poetical title of Sandal Malam, or Intriguar of the night; in Spain, where, at the period of this plant's being discovered, it was the fashion to give both places and things religious names, it is called Vara de St. Josef.

"Soon after L'Ecluse's figure, an excellent one by Vallet, the embroiderer, came out at Paris in 1603, and both these were copied and published as different species, by Swertius, in his *Florilegium*. An original figure, which has great merit for that day, though not equal to Vallet's, next appeared in the *Theatrum Floræ*, in 1622: it shews many roots flowering in one pot. From Ferrarius's pompous book on the culture of flowers, we learn it was still regarded as a rarity in the Barberini gardens, at Rome, in 1633, but that it increased abundantly, and was taken out of the ground every year in March, to separate the offsets. Our countryman Parkinson, more than half a century after its being first described by L'Ecluse, is the next author who treats of this plant; but valuable as many of his quaint observations still are to the horticulturist, his account of the Tuberose does him little credit; he makes two species of it, saying, he thinks L'Ecluse

never saw the first, though he owns 'some do doubt that they are not two plants several as of greater and lesser, but that the greatness is caused by the fertility of the soil;' his figures are wretchedly copied from Swertius, and by his calling it the Indian knobbed Jacinth, it appears not to have been known here then by its modern name. Gasper Bauhin, with his usual carelessness, also takes it up as two species from Swertius, and even the learned Ray seems to have known as little about it in 1693, adding, however, to his second species, the title of Tuberose.

"I meet with nothing more of any consequence respecting it, till Philip Miller, the pride of every British gardener, published the first edition of his Dictionary in 1731. He makes it a distinct genus from the Hyacinthus, and describes the variety with double flowers, now so common, but then only to be seen in M. de la Court's garden, near Leyden, whose memory is most justly consigned to infamy by our author, for destroying many hundreds of the roots, rather than part with a single one to any person; an instance of narrowness of mind and ill-nature, he adds, too common among the lovers of gardening. I trust no one who belongs to this Society will ever deserve a similar reproach. At this period we find the roots were annually imported into England, along with Orange Trees and Myrtles from Genoa; and to the directions there given for blowing them so as to have a succession of flowers from June to October, nothing can be added."

ART. VIII. — *Notes on the Forest Scenery in North America.— Made by Mr James M'Nab of the Botanic Garden, Edinburgh, and Mr R. Brown, late of Perth, during a Journey taken for the express purpose of observing the Characters of Trees in their Natural Woods.*

EVERY individual who has been accustomed, during his home travels, to pay any attention to the Forest scenery in his native country, must be astonished at the great difference which a foreign land presents.

In tropical regions, the whole aspect of a country is changed by the total alteration in habit, and the luxuriancy of the forests, compared with those seen in temperate climates

In North America the forest scenery is sublime, and upon a very extensive scale. When looked upon by the inexperienced observer, it may not seem to afford forms different from what he has been accustomed to witness in other countries; but the practical eye must at once perceive the wonderful difference of form which the American trees present.

Before landing upon the shores at New York, the head lands appear to the stranger from the old country, of a very dark and dismal hue, from the quantity of pines and red cedars (*Juniperus Virginiana*) which seem to be the chief inhabitants of the soils around: but on landing, the whole city and neighborhood seems like a vast garden, from the number of beautiful trees, which either grow spontaneously, or have been introduced into the avenues of the city, from more southern climes.

It is here that the observing stranger is first impressed with the great diversity of form, and the variety of foliage furnished by American trees: but it is not to be expected that throughout the country, this diversity of form is everywhere to be seen. It is much the contrary. Near the large cities none of the natural forests remain, nor can they be expected, till we penetrate beyond the reach of internal communication of rivers and lakes: for the demand of wood, as fuel and otherwise, in the neighborhood of such places is very great.

About Hoboken, in New Jersey, many very ornamental forest trees of great size are seen, and frequently covered to the summit with wild vines. Of these the *Plantalis occidentalis* (button-wood or false sycamore.) *Liriodendron tulipifera*, (white wood or tulip tree,) *Liquidamber styraciflua*, (sweet gum,) with some splendid oaks, chestnuts, limes, and honey locusts, (*Gleditschia triacanthos*,) are pre-eminent. There are also many magnificent Catalpa trees (*Catalpa syringifolia*,) with a great number of fine old weeping willows and Lombardy poplars. These last appear to be universal favorites, for they are every where to be seen, and are indeed almost the only exotic forest trees which the Americans think of planting. The Lombardy poplars, from their great abundance, give to a place a very curious but by no means a picturesque appearance.

All over the northern parts of New Jersey, the soil is good, and the vegetation very various. In the Southern parts, however, the soils are poor, and covered chiefly with pines, red cedars, and scrub oaks. The swampy grounds abound with white cedars, (*Cupressus*

thyoides,) and around the borders of the swamps, the *Magnolia glauca, Kalmia latifolia, Rhododendron maximum*, with many other varieties of Azalea viscosa, Andromedas, &c., are seen in great abundance.

Proceeding from New York by steamboat up the Hudson River, towards Albany, the scenery is romantic and varied, both from the irregularity of surface, and from the ornamental nature of the trees, which in many parts grace its banks. Leaving the city upon our right, we dash along as if on the surface of a lake, no outlet being seen, from the innumerable twists and turns which the river takes. The banks, for many miles up, are covered with brushwood, the larger trees having been mostly cut down. On the left, which is the New Jersey side, the land for many miles is very bold, having shelving rocks, towering three hundred feet above the river, and clothed with red cedars.

At *Tappan Sea*, twentyfive miles up, the river attains considerable breadth. On the right, the land is laid out in fields for the cultivation of grain. Many apple and pear orchards are mingled with these fields, and produce a curious effect from the trees being placed at regular distances, and having large tufted round tops.

Passing *West Point*, fifty miles from New York, the scenery assumes quite a Highland appearance: the hills are seen elevated high above the waters, and their round summits densely studded with cedars; two miles further up, the scenery is changed from a highland to that of a lowland description; and many cultivated farms are again seen extending back into the country on both sides. On the most worthless spots by the river side, for the last forty miles, red cedars were predominent; and where soil existed in any quantity, oaks were interspersed.

About *Hampton*, sixtyseven miles up, we got into a great limestone country, and the change from the dark hue of the red cedar, to the fine lively green of the Arborvitæ, (*Thuja occidentalis*,) is at once the most striking. These trees are self-sown over the surface of the rocks and along the water edge; in general they are finely shaped pyramidal specimens, varying from one to twenty feet in height.

At Poughkeepsie, still further up on the right, a difference begins to shew itself, the ground, being now ornamented with a few exotic trees, or mixed with indigenous ones, are seen the Huntingdon and weeping willows, with Lombardy poplars; all much planted by the

proprietors, both by the water's edge, and interspersed amongst the native woods.

Passing *Hyde Park* to *Rhinbach*, the same spirit for planting a few ornamental trees, seems to have prevailed: and among them were catalpas, which at this season of the year (July,) presented an interesting appearance, from the quantity of flowers which they displayed.

Here for the first time, the Catskill Mountains are seen towering high upon the left at a great distance. They are evidently wooded to the summit. Continuing onwards, on both sides, many beautiful residences are passed; and the cultivated land extends, with well defined edges, to the river, till within a mile of Albany, where the river gets much broken with Islands, and the banks become low, but not destitute of that shade, which is so characteristic of American scenery.

Between Albany and Lake Champlain, the ground in general is in an excellent state of cultivation; and being well watered, is rendered, in consequence, an agreeable situation for the settler. There it was that we first caught a sight of the *Abies Canadensis*, (hemlock spruce,) and the lofty white-bark American elms, in native stations.

Entering another steamboat upon *Lake Champlain*, from the westward, the course is winding and narrowed. The woods on both sides, for the first sixteen miles, are various, the principal trees being the wild cherry (Prunus virginica,) elms, walnut, sugar maples, with the aspen poplar, (*Populus tremuloides.*) The rocky grounds again abound in aborvitæ. After having fairly entered upon the expanse of the lake, the appearance of the lofty white or Weymouth pine, (*Pinus strobus,*) towering above the deciduous trees, on rising grounds at the base of the hills, of a dark aspect, nearly destitute of branches was remarkable.

About *Essex*, half way along, the lake widens much, and all at once the wooded rocky land by the water's edge, is changed for a rich fertile country. The different farms having their fields laid off in squares, and a large orchard attached to each, render this tract, with its natural beauties very agreeable. The soil around seemed a light rosy-colored clay, and the wood on the lower grounds was not very plentiful, but the rising grounds behind were densely studded with scraggy pines.

On reaching St. Johns, the northern extremity of Lake Champlain,

the forests presented the same appearance as they did where we first entered upon the Lake, with the addition of the *Abies balsamea*, (or Balm of Gileadfir,) and the sugar maple, which is here in greater quantities and larger than we had hitherto seen. Notwithstanding the great mutilation which the trees are subjected to in early spring, for their juices in the manufacture of sugar, they appear all in the most perfect state of health.

Passing onwards to *Lapraire*, on the St. Lawrence river, the only tree observed of any interest, and deserving of notice, was the Canoe birch (*Betula papyracea.*)

Several dense masses of these trees occupied the lower ground: but from their closeness, none had attained a great size. Till reaching this point, birches were by no means plentiful.

Art. IX. — *List of New and Rare Plants.*

1. Acacia vestita, Cunningham's Acacia. (Pax. Mag. of Bot.) Linnæan Class, Polygamia; Order, Monœcia; Natural Order, Leguminosæ. This very profuse and handsome flowering species was introduced in 1820, from New Holland, by Mr Cunninghame. It is a highly ornamental plant; the flowers are produced in immense numbers upon pendant racemose spikes, half a foot long; they are of a fine bright yellow color, and the plant when in bloom resembles a yellow pyramid, being in rich masses, relieved by a sprinkling of dark green foliage. The plant grows to the height of six feet, and deserves a situation in every conservatory and greenhouse; it blooms from April to June. This species may be procured at most of the principal nurseries. The plant flourishes well in a mixture of rich loam and peat — and to have plenty of pot-room, as it grows rapidly it will require frequent repotting; this is requisite with all the Acacias. — *Acacia* from *akazo* to sharpen, some of the species being very thorny.

2. Aptosimum depressum, The depressed. (Bot. Reg. 1882.) Synonym, Ruellia depressa. Ohlendorfia procumbens. Didynamia Angiospermia. Scrophralarinæ. A very pretty flowering plant, a native of the Cape of Good Hope, from whence seeds were brought by Mr Eckton. The plant has bloomed with Dr Lechmann, at Hamburgh. It is a greenhouse undershrub, laying prostrate, and producing a pro-

fusion of flowers; they are funnel shaped, more than an inch long, of a pretty blue color, having each of the five divisions of the mouth of the corolla streaked with black, and the upper part of the throat being white. Mr Eckton found the plant growing on the shores of the great Fish River, and there blooming from October to December. Mr Bentham says, this plant assimilates very closely to Salpiglossis prostata. He also enumerates six other species with which he is acquainted, namely, A. abietinum, A. eriocephalum, A. depressum, A. indivisum, A. tragacanthoides, A. viscosum. Also he remarks upon five species of a new genus from the Cape, closely allied to Salpiglossis, namely, Peliostomum leucorrhizum, P. origanoides, P. scoparim, P. virgatum, and P. viscosum.

The Aptosimum is a very desirable plant, and we hope will soon be in the possession of the nurserymen in this country. *Aptosimum*, from *a*, privative; and *ptosimos*, deciduous.

3. Cratægus tanacetifolia, Tansy-leaved Hawthorn. (Bot. Reg. 1884.) Synonym, Mespilus orientalis. Another very ornamental species of this interesting tribe of plants, and which deserves a place in every pleasure ground. The entire family of Hawthorns are at once so highly ornamental and odoriferous, that wherever their introduction is practicable we strongly recommend it. The beauty of their blossoms, their fragrance, and the successive profusion of fruit of various hues and sizes, we think, give them more than ordinary charms. A list and description of considerable extent will be given in our next number. The present species is a native of the higher mountains of Greece; the flowers are large, white, powerfully fragrant; the berries are produced solitary, as large as a May Duke Cherry, yellow, and has the scent of an apple; it is also sweet. *Cratægus*, from *Kratos*, strength, in reference to the wood.

4. Cratœgus odoratissima, Sweetest-scented Hawthorn. (Bot. Reg. 1885.) Synonym, C. orientalis. It is a native of the hills near the Black Sea. In this country it produces its very deliciously perfumed flowers in profusion, succeeded by clusters of rich red fruit of considerable size and beauty.

5. Douglassia nivalis, Snow Douglassia. (Bot. Reg. 1886.) — Pentandria Monogynia. Primulaceæ. The late Mr Douglas collected seeds of this pretty plant in California, and it has bloomed in the garden of the London Horticultural Society. When Mr Douglas was travelling across the Rocky mountains, in April 1827, at an ele-

vation of twelve thousand feet above the level of the sea, he was struck with surprise with a large patch of brilliant purple, surrounded by snow, which, on a near approach, he found to be blossoms of this pretty flowering plant. It very much resembles the Saxifraga oppositifolia. The plant forms a thick turf, with branches rising a few inches high, clothed with small flowers of a vivid purple color. The two plants raised in the Society's Garden, have been cultivated in the greenhouse, but it is probable it will flourish better when treated as alpine plants usually are. Another species, D. arctica, found on the shores of the Arctic Sea by Dr Richardson, is in the possession of Dr Hooker. *Douglassia*, in compliment to Mr Douglas.

6. Epidendrum Skinnerii, Mr Skinner's Epidendrum. (Bot. Reg. 1881.) Gynandria Monandria. Orchidaceæ. This very interesting species was sent from Gautemala, in 1835, by G. U. Skinner, Esq. to James Bateman, Esq. Knypersley Hall, Congleton, Cheshire. In the rich collection at that place it has bloomed, under the very skilful management of Mr Don. The species is a most profuse bloomer, producing a spike of flowers upon every shoot. The flower stem grows erect, producing a spike of blossoms several inches long; flowers pale purple, an inch and a half across. The plant merits a place in every collection. Epidendrum, from *Epi*, upon; and *dendron*, a tree, native habitation.

7. Hibiscus splendens, Splendid-flowering. (Pax. Mag. Bot.) Monandelphia Polyandra. Malvaceæ. A very fine flowering species which we find to grow and bloom freely in the greenhouse. It was introduced from New Holland in 1830, by Mr Frazer, who, in writing about it, said, "I consider this plant the King of all the Australian plants, I have seen it twentytwo feet high." The flowers this season were nine inches across, literally covering the plant; they are of a bright rose color. The plant flourishes in a mixture of rich loam and peat, requiring plenty of pot room; most of the public nurserymen possess plants of it. It would make a fine show if planted in a conservatory. *Hibiscus* from *hibiscos*, the name which the Greeks give to Mallow.

8. Lasiopus sonchoides, Sonchus-like. (Brit. Flow. Garden.) Syngenesia. Polygamia æqualis. It is a native of Armenia, and is growing in the Chelsea Botanic Gardens. The flowers much resemble those of the wild Hawkweed, of a pale yellow color, *Lasiopus*, from *lasios*, hairy; and *pous*, a foot.

9. ONCIDIUM LANCEANUM, Mr Lance's Oncidium. (Bot. Reg. 1837.) Gynandria Monandria. Orchidaceæ. John Henry Lance, Esq., first discovered this plant in Surinam, growing upon a Tamarind tree near to the Government House. Mr Lance afterwards found many more plants in different parts of the Colony, growing upon the branches or stems of the Tamarind, Calabash, or Sapodilla trees. The plant, however, flourishes freely if tied to the Brugmansia arborea, or Orange tree. The flowers are produced upon a stiff branching panicle. Messrs Rollissons of Tooting, had a plant flowered this season (1836,) the panicle having thirty flowers, each flower being two inches and a quarter in diameter. The sepals are of a greenish yellow color at their edges, bright yellow in the middle, and regularly marked with broad blotches of crimson and chocolate brown; the lip is of a bright violet at the edge, and a deep violet towards the base. Not only are the flowers so strikingly handsome in color, but they possess the additional charm of the most spicy fragrance, which they retain, even stronger, after the flowers are gathered and dried; no other Oncidium has fragrant blossoms. The plant merits a place in every collection of this interesting tribe of plants. Most of the nurserymen who cultivate orchideous plants have this for sale. The London Horticultural Society presented Mr Lance with the large Silver Medal, for the introduction of this, and other fine plants. *Oncidium*, from *ogkidion*, a tubercle, referring to two prominences on the lip of the flower.

11. PÆONIA TENUIFOLIA, *var.* PLENA, Double-flowered fine leaved Pæony. (Brit. Flow. Gard.) This very interesting variety was presented by Dr Fischer, from the Imperial Botanic Garden at St. Petersburgh, to Mr Goldie, nurseryman, at Ayr, Scotland. It is a very desirable plant for the flower border, not rising higher than half a yard, and producing large double flowers of a deep crimson color. The present variety is cultivated in collections around London.

12. TRIFOLIUM FUCATUM, Farded Clover. (Bot. Reg. 1883. Diadelphia Decandria. Leguminoseæ. The late Mr Douglas sent seeds of this *annual* Clover from California, to the London Horticultural Society. In the garden at Farnham Green, it bloomed, but no seeds were produced, so that the plant is lost from this country. The heads of flowers have a pretty appearance, being of a cream color towards the centre, and of a rosy-red at the ray.

13. VERBENA ERINOIDES; VAR. SABINI, Dwarf Erinus-like Vervain.

(Brit. Flow. Gard.) Synonym, V. Sabinia. This pretty flowering variety differs from V. erinoides in being smaller, closer in its growth, and of more glabrous habit, and rich purple flowers. It was introduced in 1833, from Chili, and is now in most general collections. The plant is quite hardy, and blooms from May to November.

ART. X. — *An Address delivered before the Massachusetts Horticultural Society, at their Eighth Anniversary, Sept.* 17, 1836 By EZRA WESTON, Jr. Boston: Tuttle, Weeks & Dennett.

MR WESTON in his Address on this occasion has departed from the usual course; and instead of occupying the whole space with an enumeration of the benefits to himself and to commnnity of the labors of the horticulturist, has illustrated, in a plain and familiar manner, a topic of general interest. In this he has done wisely, and set a good example for his successors. The fact is, we have heard enough of the advantages of this pursuit to convince any one who is willing to be convinced. Every thinking man is already aware of its intimate connexion with the progress of refinement and intellectual cultivation among us, and our aim should be, now that we have become alive to its importance, to carry it forward to its greatest perfection — to effect, so far as is in our power, the aim of all improvements, the greatest good to the greatest number; and this is to be produced by the dissemination of a knowledge of such subjects as forms the main topic of this Address. We should be glad to transfer the whole of it to our pages,— but must content ourselves with extracts.

After noticing the fine weekly exhibitions of the past season, — accounts of which are on record in our preceding numbers, — Mr Weston continues:

"I feel tempted to say something of these exhibitions; of their effect, not alone upon those who contribute, but upon those who frequent as casual spectators. They have a good moral effect, and deserve on that account to be well supported and attended. There are few things more refreshing to the man of business, or to any man, that will so recruit the senses and charm the spirits as to step aside a moment from the confusion and anxiety of the street, and look upon

the beauty and bounty of nature, upon the splendid array of 'mingled blossoms.' It is like the breeze that meets the wave-tost sailor, upon the Indian Ocean, when

> 'Off at sea northeast winds blow
> Sabean odors from the spicy shore
> Of Araby the blest.'

To the man of leisure and taste, what more pure pleasure could catch his taste than a rare and choice exhibition of flowers — with their wonderful economy, texture and colors: perhaps in the course of his search for amusement he may find none that shall so rouse and cheer his languid attention. What more graceful and delicate sight can meet the eyes of the young — in what school of the philosophers, in what gallery of art can they learn more of that which ameliorates and refines? I should therefore wish that in all cities, but more especially in ours, a hall of good proportions and accommodation, not remote from the paths of business, might be open, where the public could weekly visit an exhibition of flowers and fruits. I believe it would have an elevating effect upon the public mind, and be as attractive and worthy of support as a gallery of statuary or paintings."

The remainder of the Address is principally occupied with an account of the "*Theory of Van Mons*," an able and interesting translation of which from the original French work has been presented to our readers by Hon. H. A. S. Dearborn, in a former number. We quote Mr Weston's introduction to the history of the theory, with which we must close our extracts. We trust some of our zealous horticulturists will put this theory to the test in this country, and thus advance not only their own interests, but that of their fellow-laborers in this good cause.

"During the past year, the Society has received an accession in the numbers of its members both subscription and honorary; but perhaps there is no name upon the catalogue that is more worthy of a place there, than that of the aged and eminent Dr Van Mons, of Belgium. I shall occupy the few moments I may call mine here, in presenting some remarks upon his services and theory, at the risk of stating some things already well known and of adding but little or nothing to the knowledge of some present.

"The causes of the decay of fruit trees has for a long time occupied the attention of horticulturists, and it has been allowed that dis-

ease, the consequence of old age, has caused and does cause this decay, and will gradually work the extinction of some of the best varieties.

"Some of the varieties of fruit that were formerly in high reputation, have now become so deteriorated as scarce to be worth propagation, and others are fast hastening to the same fate, though they stand upon the catalogues, and are oftener purchased; perhaps oftener purchased and cultivated by those who are ignorant of this characteristic, than a newer variety.

"The graft is but an extension of the parent stock, and therefore liable to all the diseases and defects of its original, and when we consider that most of our fruits have been propagated in this manner many years, we may well desire, that some certain method might be discovered by which new varieties, and those of a delicious and if possible improving stamp, might take the place of the old and failing.

"Practical and skilful horticulturists recommended that the seeds should be planted, and that then we would be supplied with a different variety of fruit, but with a healthy tree and *perhaps better fruit.*

"Those who thought that by sowing the seed they might obtain more healthy trees and more improved varieties were correct in their opinion, for in the seed is the germ of improvement; but it was necessary to observe other facts, and dive deeper into the laws of nature before it could be taken advantage of.

"It has been therefore a desirable thing to discover the law by which to obtain new good varieties. The celebrated Mr Knight, of very extensive experience in the propagation of fruit trees, attempted, though as we may believe on a very limited scale, to produce new varieties of the pear by introducing the pollen of one variety into the prepared blossom of another and raising trees from the seeds of the fruit thus obtained. But the method is complicated, and he never appears to have carried the experiment to much length, — and it is a method somewhat uncertain. It is still by means of the wonderful virtue that is contained in the seed by which a new variety is to be produced.

"The best fruits it was well known were those raised from the stone or the seed. At the village of Montreuil, near Paris, as it is stated by Sir J. Banks, where formerly the whole inhabitants were maintained by the raising of peaches, the best fruits were never budded or grafted, but always reared from the stone.

"There seems to be a very wonderful quality in the seed, and it is well known in the cultivation of annuals introduced from a warm climate, that if the season be of sufficient length for them to ripen their seeds, they (the seeds) become of such a virtue as to be able to resist the severest frosts with impunity. So speedily does nature strive to adapt herself to the new situations and exposures she may meet.

"It is also well known that plants and perennial shrubs do not grow harder by time, when placed in a new exposure, that the suckers or cuttings from them also do not, but take with them the same quality possessed by the stock from which they have been separated. But that the true method of inuring tender plants to colder climates, is by planting the seed perfected in such climate. In this way, many of the more beautiful plants of the South have been and more still may be made to perfect their seeds here, and others raised from their seed might be made to endure our winter and adorn our grounds.

"This method was pointed out by Sir Joseph Banks twenty years since, and he felt assured that though some plants of peculiar delicacy and tenderness might require many generations to inure them to colder climates, yet these wonderful though simple powers of the seed would produce finally the change. But the planting of seed is often of so prospective a benefit that few have the courage to plant.

"'Old as I am,' says Sir Joseph Banks, in his communication to the London Horticultural Society, 'I certainly intend this year to commence experiments on the Myrtle and Laurel,' and at the same time with great modesty but in a cheering tone, 'I trust, therefore, it will not be thought presumptuous in me to invite those of my brethren who are younger than I am, and who of course will see the effect of more generations than I shall do, to take measures for bringing to the test the theory I have ventured to bring forward. Possibly by these means the Magnolia glauca, at some later time may adorn our woods more generally, and ornament the grounds of every residence in our vicinity.

"It was known to the ancient cultivators, and perhaps it required no great experience to discover the fact that cuttings from the bearing branches did not afford durable trees.

"Mr Knight recommended as a method of perpetuating a variety with vigor, to obtain plants from some detached part of the extremity of the roots.

"By sowing a large number of seeds at hazard, doubtless some

good variety might be obtained, but the process might prove one of perplexity and disappointment instead of pleasure or profit."

These Addresses, by the way, form an excellant addition ot the library of the horticulturist, emanating as they do from men who are practically workingmen in this matter. Dearborn, Cook, Russell, &c. have given us their experience on various parts of the science, and from such minds it is impossible but that many valuable and practical hints should be produced. L' Ami.

ART. XI. — *On Propagating Plants by Grafting, Budding and Inarching.* By Mr CHARLES TAYLOR, Elam Hall, Dorsetshire.

MANY plants are propagated by one or the other of these means; I cannot, however, omit noticing a very ingenious mode of grafting, described by M. Oscar Leclerc, of the Jardin du Roi, Paris, in a communication to the editor of the Gardener's Magazine, and said to be the invention of Mr Blaike, an eminent British gardener, who long resided in France, and who may be considered as the founder of modern gardening in that country. "This mode of grafting," observes M. Leclerc, "which I shall henceforth call the *Graffe Blaikie*, succeeds in most places, both of the hot-house and open air; and it seems particularly well calculated for the propagation of inertropical plants and trees. The success which attends it on delicate hot-house plants, and particularly on those which are hard-wooded, is very difficult to be attained by any other means. During the time when the sap is in full activity, the scion must be procured, if possible, of exactly the same diameter as the stock on which it is to be grafted.

"First make two lateral oblique incisions, exactly similar, the one on the stock from above to below, the other on the scion from below to above, and both sloping from without towards the centre or interior of the wood. The tongues are then cut in the form of a long wedge by stripping them of their bark. The cut parts are then reunited, by taking care, as usual, to make them coincide as exactly as possible. The scion being bound by ligatures to the stock in the ordinary way. The inferior part of the scion, that is, the lower, is plunged in a vessel of water. It will, however, be necessary to remove the wa.

ter from time to time, and to renew the base of the submerged scion by cutting off its extremity.

"The stock is sometimes headed down immediately after the operation, in which case, particular care must be taken to leave a bud or a shoot above the incision, in order to attract the sap to the place where the operation was performed. Sometimes, however, the stock is not headed down till after its union with the scion is completed.

"When the plant operated on is small, and the scion of a delicate species, the plant should be covered with a bell-glass to prevent too great transpiration of the leaves. The air in the interior must be occasionally renewed, as, without this attention, it would, by the evaporation of the water, be rendered too humid. If the diameter of the scion be less than that of the stock, the operation must of course be different from the preceding. In such a case, the incisions must be limited simply to two longitudinal ones of equal dimensions, one on the scion, the other on the stock. This is the easiest and the most natural mode, and also the most favorable for giving solidity to the graft."

This mode of grafting is, we think, particularly applicable to oranges, lemons, &c., and these plants, engrafted by any of the ordinary methods, that will admit a portion of the scions being left long enough to be inserted into a phial or cup of water, will facilitate the operation. Some cultivators practise this mode of engrafting in this country: and a variety of it may be noticed as practised by that intelligent and indefatigable botanist, Mr Murray, of Glasgow, who substitutes for the water a potato or turnip, into which he inserts the bottom end of the scion. Some propagators have recommended inserting the lower end of the scion into the mould of a pot, kept at a proper degree of heat and moisture; and in some cases where it has been practised, the scion has rooted in the mould, and where such has occurred, the part below the union of the graft has been cut off, and has consequently produced a perfect plant, giving thus two plants instead of one. Instances have also occurred of the scion rooting into the water, and in like manner producing a plant. It may be mentioned as a necessary precaution in the above method of grafting, that to prevent too rapid evaporation, produced either by the sun or winds, a cap of stout paper or parchment has been recommended, which may be fixed a little below the part operated on, and so contrived as to enclose the whole of the upper part of the stock.

This precaution becomes particularly necessary when the operation is performed in the open air, and particularly in the case of resinous or gummy trees.

Of the plants which belong to those departments, which are propagated by these methods, may be enumerated the families of *Camellia* and *Citrus*, the varieties of which are generally propagated by the two latter methods, as are some species of *Daphne*, *Berberis fascicularis*, and various others. Sometimes grafting is performed on the roots of some rare plants, as is the case of *Pœnia papavericia* which is often grafted on pieces of the roots of *Pœnia moutan*.

Experienced operators propagate plants by these means with much success, and indeed the idea of increasing the size of a *Camellia*, for example, to an almost unlimited extent, by inarching very large branches, or, in some cases, entire plants upon others of greater size appears to be perfectly practicable. As the size of these plants adds to their value, and as they are several years before they acquire a large size, however well they may be cultivated, this mode of increasing them certainly deserves to be more generally adopted. I possess a plant which has above thirty different varieties growing upon it. Large specimens of Camellias, and of several other plants, are more likely to be quickly attained by a process of this kind than by any other. The precise season of performing the above operations on exotic plants, will always be governed by the state of the wood on the plants, and by no stated period of the season. When the wood or buds are in a fit state, then the operation should be proceeded with.

Art. XII. — *Miscellaneous Articles.*

Preservation of Peach Trees. — Different writers recommend a variety of methods of preserving peach trees against an insect, a fly, technically called *Ægeria exitivia*. This fly which is blue, and resembles a wasp, attacks peach trees the fore part of July, and continues its depredations till the middle of September. H. B. of Drayton, Ohio, in a communication for the American Farmer, in recommending a remedy against the ravages of this insect, states as follows:

" Early in the month of July, with a hoe, I clean away the earth from about my trees, in size and shape like a common wash bowl.

The excavation being about three inches deep next the tree, and six or eight inches in diamater. I then fill up the hollow with common wood ashes, and raise an embankment about the tree, also about the size of a common wash basin inverted; and have never yet known the insect to penetrate this embankment of ashes to the injury of my trees. I have never discovered any injury to result from the caustic nature of the ashes, and always take the precaution in the fall, say October, to remove the ashes, and mix them with the surrounding earth, drawing up fresh earth to the tree to supply the place of the ashes."

Apples and Peaches are valuable food for swine. The *Genesee Farmer* states that "within a few days past, we have seen hogs that have had nothing but swill and the fruit that fell from the trees so fat that we do not believe they could raise a trot except in the greatest extremity."

Garlick. — A writer in a Philadelphia paper stated that when the *fall fever* raged violently in the neighborhood of a canal, then in a state of progress, numbers of the workmen engaged on it eat plentifully of garlick, and wholly escaped, while those who abstained from the use of this article were severely afflicted with the disorder.

Strawberries. — I have been induced to make the present communication, from having been informed by a young man from near Salem, of the management of a bed in his father's garden, which he planted about twenty years ago, and which still continues very productive. It contains about two square perches, and the present season twenty quarts were gathered in a morning, and strawberries measuring three inches and three fourths round were frequently found. The manner in which this bed has been managed, and made so productive, is, as soon as the fruit is all gathered, mow the vines close off, and cover the bed four or five inches with rotten wood, drawn fresh from the land, where old logs have been left to decay. The strawberry vines will shoot through this covering and there will be no farther labor necessary but to keep the running vines cut off to prevent their taking root; twelve inches square was the distance at which the plants of the above described bed were planted. — *Village Record.*

Horse Chesnut. — The following method of propagating this beautiful tree was communicated for the *N. E. Farmer*, vol. vii. p. 102, by Hon. O. Fiske, of Worcester.

For some years I took various means to obtain the vegetation of this nut, but without success. The last parcel I planted without effect I emptied on the grass until I was ready to institute some other scientific process. In planting them I accidentally and very fortunately left one. It was in leaf when I first discovered it. By a careful removal to a favorable soil it has become a fine bearing tree. All the rest perished as heretofore. Since this discovery I have not found the least difficulty, I endeavor to imitate nature in her planting the seeds of the forest.

Soon after the nuts are gathered, not allowing them to become dry, I make a slight excavation by the side of some bank in my garden, and spread them in, leveling them nearly with the surface. Care should be taken to lay the side from whence the root issues next to the earth. This posture gives the root a more speedy access to nourishment, and facilitates the exit of the stem. I then cover them with leaves or some light rubbish, and replace as much earth as is necessary to keep the covering in place. By the time the ground is ready to receive them in the spring, I find them sprouted without the loss of one in a hundred. To disengage them from the earth, after removing the covering I pass a stable-fork under the mass, and gently pry them up, taking out the nuts singly and carefully, to prevent breaking the long tender root, and transplant them in trenches. In this process I make the holes with a trowel deeper than the extent of the root. After partially filling them with light earth, I draw up the nut to within about an inch of the surface, leaving it just buried beneath it. I generally take them up the second year and cut off the tap root, that they may be removed with more ease and safety when large enough to be transplanted from the nursery.

This tree is peculiar in its process, taxing the patience of the cultivator in its early stages. The annual growth is finished about the last of June, when other trees are in their most vigorous progress. In the fifth season the stature is doubled. At this period it grows with the vigor and rapidity of other trees.

Odoriferous Substances offensive to Insects. — It is said that the common mint strewed among grain as it is mowed away in the

barn will preserve it from being injured from vermin. Camphor when kept among bed clothes, will keep away bed bugs and fleas. From these circumstances, together with the fact that we do not recollect of having seen plants strongly odoriferous injured by insects we are led to conclude that farmers might be benefitted by turning their attention to the subject. — *N. Y. Farmer.*

Art. XIII. — *Gardener's Work for December.*

Should the season permit, you may perform any of the operations directed for last month, which are not completed. Carry out and spread manure, and trench the ground if not too hard frozen, which is intended for early crops, and if the soil be of a heavy and stiff nature, lay it up in ridges to receive the benefits of the winter frosts. Provide from the woods, &c. pea-sticks and bean-poles of suitable lengths and sizes; dress and point them that they may be in complete readiness when wanted; collect all your old sticks and pales, which are yet fit for use, and lay them with the new ones under the protection of some shed, to prevent their becoming rotten by wet weather. Be careful to shut frost out of the apartments in which you have stored your fruit for winter and spring use. Examine the fruit, which you have on shelves in cellars, once every ten days and take away such as are tainted. Repair decayed trellises, espaliers, &c. Early in this month, if not done before, place long dung, straw or long litter of some kind over such Chinese mulberry plants, and other trees and shrubs as might othorwise be injured or destroyed by the winter's frosts. "Some kinds of shrubs," says McMahon, "and young trees may require to have their tops matted round, or each to be completely enveloped in a coat of long straw, reaching from the ground to the top of the plant, and terminating there in a point, the whole assuming the form of a sugar loaf. The straw is to be supported by placing slender sticks in the earth round the shrub, the tops of which are to be tied together over it; a few willow twigs should be worked in between these sticks to prevent the straw from falling in, which, when laid on, is to be bound round by hay bands willows, or the like."

Art. XIV.—*Close of the Second Volume of the Horticultural Register.*

The second volume of the Horticultural Register terminating with the present number, the Conductors beg leave to state briefly their situation and prospects as regards this Periodical. Our expectations at the commencement of the work were not of a sanguine nature; we merely ventured to hope that the *Register*, in conjunction with other pursuits of a less pleasing, but more profitable description, might be worth the expense of time and money necessary to conduct and circulate a work of this description. In this hope, we have not been disappointed, and have derived from two years' experience, sufficient confidence in the eventual success of our undertaking to induce us to persevere with renewed exertions, to make our work useful as well as acceptable to the public in general, as well as that class in the community who are practically engaged in the occupation of Horticulture.

Our success, however, must in a great measure, if not altogether, depend on the aid which may be afforded us by correspondents, who are as well connoisseurs as amateurs in the science and art to which our publication is devoted. Our pages must be meeting places of many minds, or they will soon be destitute of that variety, which alone can give them either interest or utility. To those who have heretofore obliged us with communications for our *Horticultural Register*, we would now beg leave to tender our most grateful acknowledgments, and would earnestly solicit the continuance of their favors. Those who have not, but can communicate anything relating to Gardening, Husbandry, or Rural Economy, which may be of use to mankind in general, or cultivators in particular, are respectfully requested to forward their contributions for the *Horticultural Register*, to

Thomas G. Fessenden,
Joseph Breck.

An Index to the second volume of the *Horticultural Register*, will be printed and forwarded to subscribers, &c. with our next No.