# EASTON GAZETTE.

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## AGRICULTURAL.

*From the Silk Grower and Farmer's Manual.*

### THE MORUS MULTICAULIS.

Every one in the least acquainted with the means of producing silk well knows that the first matter requiring attention is to provide a plentiful supply of food for the silk-worm. The leaves of the Mulberry trees are not the only leaves which the will eat but for aught that is known they are the only food on which the worm will feed and afterwards spin silk. There are many varieties of Mulberry trees. Those most cultivated by the silk-growers of all countries are the Morus Alba or White Mulberry, the Brussa, and the Morus Multicaulis, commonly called the Chinese Mulberry. We have cultivated all these varieties, and have fully satisfied ourselves which of them is most valuable. No doubt a very handsome profit may be obtained by converting the leaves of the White Mulberry into silk. Experience has abundantly proven that this is the case. The leaf of the Brussa is larger than that of the White Mulberry. For this reason we prefer the former to the latter. We, however, give the Morus Multicaulis the decided and unequivocal preference over all the other known species of Mulberry trees. Among practical silk-growers, we believe, there is very little if any difference of opinion on this subject This tree has now been in our country several years, and the more it becomes known the more it is valued and sought after. We will give a few of the most obvious reasons why we prefer the Morus Multicaulis to the White Mulberry. It takes the latter five years at least to grow large enough to afford foliage sufficient to feed many worms. But from the Morus Multicaulis of the first year's growth we have fed worms in such numbers as to obtain from 50 to 100 lbs. of silk from the leaves growing on an acre of land worth from $250 to $500. It has another advantage of still greater magnitude. The leaf of the Morus Multicaulis is 8 times larger than that of the White Mulberry, therefore the labor of gathering it is reduced in the same ratio. This is a very weighty consideration, inasmuch as the picking of the leaves is the great item of expense in making raw silk. The weight of leaves which the Multicaulis will produce is a hundred per cent. more than the White Mulberry affords, where the trees are of equal age and on the same extent of ground. This is not all. The Multicaulis can be propagated more abundantly and cheaper than the Morus Alba or any other tree with which we are acquainted. Many persons have expressed fears that the Morus Multicaulis would not endure a northern winter. When the tree was first imported and planted in New England it suffered from the unprecedented cold of some of the late winters. But it has now become acclimated, and will live after being protected the first winter of its life. In the middle and southern states, we have not heard that it has been injured by the cold weather. We have now growing on our silk plantation, in Burlington, many of these trees, which have remained in the open field without the least protection since last summer, and they are now as thrifty and hardy as any of our native forest trees. That the Morus Multicaulis, with proper management, will endure the climate of New York and New England, we have abundant evidence. That it will flourish in Penasylvania, and the southern portion of the union, is not here deemed questionable. Experience has proven it. At the north the tree must be protected the first winter. At the south even this is not necessary.

We do not think it advisable to attempt to propagate the Morus Multicaulis from the seed, as it is extremely difficult to procure it, and hardly possible to distinguish the seed of the genuine Chinese Mulberry from that of the less valuable varieties. Nor, should these objections be obviated, is it by any means certain that a tree can be grown from the seed of the Morus Multicaulis which will resemble the tree from which that seed was taken. This has been demonstrated by many experiments. Nothing can be gained by attempting to grow the Multicaulis from seed, but much may be lost by it. The tree can be produced from layers or cuttings more quickly, cheaper, and certain, than by any other method.

Any land that is suitable for raising a crop of corn will do for cultivating the Chinese Mulberry. A dry, warm, sandy loam is quite congenial to its nature. A cold, damp, or heavy soil, will not answer. It will thrive tolerably well on poor land, but much better on that which is fertile. Prepare the ground as for a crop of corn, and at the same season furrow it into rows 3½ feet asunder. Then scatter well-rotted manure in the furrows two inches deep. Trim the trees of every limb, and lay them in the furrows so that they will just reach each other, cover them up about as deep as corn is usually planted, except the roots which should be buried deeper.

Carefully preserve all the limbs and plant them in the same way. Ten trees are often thus procured from one. In about three weeks, should the weather prove favorable, sprouts from the buried tree will break through the ground. After which, the earth about them must be stirred occasionally, and the weeds be kept down till August. Then let them entirely alone that they may ripen and the wood attain solidity before the coming of the autumn frosts. When the trees have done growing in the fall, pull or plough them up and cut them apart with a knife or pair of pruning shears. To preserve them through the winter, lay them down in the open field on dry ground—cover them with sand and they will be found fresh and in good order the next spring. Or they may be placed in a cellar, with the roots resting on the ground, with some dry earth placed about them.

If your object is to grow more trees, you will, the ensuing spring, again plant according to the directions already given. But if you propose to make a permanent plantation, you will, after ploughing the ground, set out the trees in rows 8 feet apart, and stand 2 feet from each other in the rows. When winter again draws near, cut off the trees near the ground and preserve the trunk and limbs for further increase. When spring returns the roots and stumps which were left in the ground will send up a great number of shoots, which will put forth a quantity of foliage that will be truly astonishing. By severing the tree near the earth several advantages are derived. The body and branches are thereby saved to be again planted. The tree is so valuable that this is an important consideration The quantity of leaves which will grow on the sprouts is greater than could have been obtained from the whole tree had it been left standing. Leaves cannot be gathered from trees of much height without reaching or climbing up to them; but they may be plucked from shoots of one year's growth without any such extra exertion, and by children. This practice also comforts the croaker about 'too cold a climate for the Morus Multicaulis,' and places the silk business beyond the possibility of harm from the severity of northern winters.

There are other methods of cultivating the Chinese Mulberry, approved by gentlemen of intelligence, which we have tried, but we have been so much more successful when we have adhered to the course we now recommend that we shall speak of no other.

Large sums of money have been made by the cultivation & sale of our favorite tree. It has proved an exceedingly lucrative employment to those who have engaged in it. But we would advise that more than this should be aimed at by those who intend to embark in this new, and, as we think, important enterprise, viz: To make money by growing silk. This can be done, and our country become one of the greatest silk-producing regions on the globe, should our people but will to have it so. No competition in the business need be feared for a number of years to come, if ever. The bounty offered on silk by the state of New Jersey will pay all the expense of making it, & leave the whole of the crop a clear profit. The bounty granted by Pennsylvania will do even more. Then why not advance in this great enterprise Why remain idle when such weighty considerations invite to action. It is one of the most pleasant employments that ever were conducted under the sun. The lame, the halt, the widow, and the orphan can perform the labor. Then why not permit them to do so, and pay them a part of twenty millions which is annually sent abroad in exchange for silks, and to feed foreign mouths, and enrich foreign aristocrats. This would afford thousands of the poor and feeble among us the means of comfort and independence, and make their hearts beat with pleasant emotion and their eyes sparkle with gladness and joy, and at the same time add to the wealth, the honor, and the prosperity of our great country.

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Mr. William Kenrick, of Newton, Mass., certainly deserves great credit for the interest that he has manifested in forwarding the silk business in the United States. He has labored with his hands in the field in rearing the most suitable tree for the purpose, and with his head in the library in compiling a treatise upon the subject which gives all the information necessary to carry on the business to a profit. Enthusiastic as he is in the cause, he never suffers his judgment or reason to be led astray by speculative notions, but, with him, all is a plain matter of fact, and his statements are made from his own observation. We would recommend to every one that feels any interest in the prosecution of what will eventually be one of the greatest branches of American Industry, to order a copy of his work, and the information that will be derived from a perusal of it will be invaluable. We take the liberty of making a few extracts from the work in question.

### OF THE MULBERRY TREE.

The Mulberry, or *Morus*, is the tree whose leaf constitutes the principal and essential food of the silk worm. Of this tree there are many species; most of them will answer, but all are not equally suitable.

The different *species* of the Mulberry are raised from seeds. The seeds are obtained by mashing & by washing in many waters the thoroughly ripened fruit; the seeds being dried, and sown in spring in a well prepared fresh soil, one third of an inch deep and the ground stamped hard. The *varieties* of the different species are multiplied by layers and by cuttings, by grafts, and by inoculations.

1. THE BLACK MULBERRY, *Morus nigra*. The leaves of this kind are much used in Persia, where good silk is produced. The European red Mulberry is a variety of the *Black*, and is used in Calabra and in some parts of Italy.

2. THE AMERICAN RED MULBERRY, *Morus rubra*, produces good silk, as do several of the other American varieties.

3. THE JAPAN PAPER MULBERRY, *Brousonetia papyrefera*, is used sometimes in France as food for the silkworm and produces good silk.

4. THE WHITE MULBERRY, *Morus alba*. This species is originally from China, but has been most extensively cultivated in Italy and France for ages. The silk which it produces is of the finest quality.

As the White Mulberry is usually raised from seeds, many of these wild varieties are bad, the trees thorny, the leaves small and few in number. For these reasons, the celebrated Count Dandolo of Italy has recommended to graft or inoculate them with the large-leaved varieties. He particularly names the kinds known in Lombardy as *Folia Doppia* and *Folia Giazzolia*. And M. Bourgeous and M. Thome, nanes of high authority in France for knowledge and practical science, both concur in stating that those grafted with the better kinds, such as the *Rose-leaved* and the *Spanish mulberry*, produces leaves not only more beautiful but of more nourishing quality. Other celebrated large leaved qualities are the *M. Lucide* and the *M. tartarica*, both producing silk of the first-rate quality. The *M. morettiana* is a new kind with a fine large leaf, having a plain surface, and producing silk of the first rate quality. A new variety from Canton has also a fine large leaf with a plain surface, and the silk is of the first quality. Both these last kinds are raised from seed. Of the Chinese mulberry, or *Morus multicaulis*, I proceed now to speak. All these last-named kinds are new, and were alike unknown to Count Dandolo at the time his celebrated work was written.

CHINESE MULBERRY, *Morus nigra sinensis.*

MORUS MULTICAULIS, *or Many-stalked Mulberry.*

PERROTTET MULBERRY.

For the first knowledge of the history of this plant, the American public are indebted to the laborious and unwearied researches of the Hon. H. A. S. Dearbon: and the first complete history and account of this plant, from the 'Annales d'Horticulture,' & the 'Annales Royal Horticule de Fromont,' was communicated to the public from his luminous pen during the years 1830 & 1831. From this history in a good measure, and from all other sources, as well as from much personal knowledge of the plant, I have embodied the following account.

Of all the varieties of mulberries for silk the Chinese mulberry or *Morus multicaulis* appears that which is most eminently adapted to our wants. It originated in the elevated regions of China, a country famous from antiquity for its silk and renowned for its industry; a parallel only to our own, in its climates and divers latitudes. It is to this tree, that the disciples of Confucious acknowledge their indebtedness for the prosperity and solidity of their empire; a tree which it is represented as possessing such decided superiority over all others, that it will speedily be substituted for them all in every region of the globe.

The trees grows vigorous, upright, and beautiful; the leaves large, soft and tender, are petiolote, cordate, acuminate, serrated towards the summit, marked with nerves, always entire; their upper surface is convex or curled, of a deep and beautiful shining green.—The form and dimensions of the leaf vary in different soils. In a dry and arid soil they are of diminished size, their form elliptical and without the heart-shaped indentation at the base, their breadth being six inches and their length eight; but in a light, rich, and friable soil, the produce of the foliage is most abundant, the leaves large and cordiform, extraordinary specimens having sometimes measured more than a foot in breadth and fifteen inches in length.

'Each male flower has a calyx of four concave, oval, membranous leaflets; four stamens, with filaments accompanied with a tridentate appendage: anthers sagittate, bilocular. Each female has an ovary, is terminated by two divergent styles; the ovary is unilocular containing a single pendant seed, which is frequently blasted or imperfect.'

It is sometimes called the *Perrottet mulberry*, in honor of *M. Perrottet*, Agricultural Botanist and traveller of the Marine Colonies of France, who has introduced this plant to Europe. M. Perrottet had been sent out by the government of France on a voyage of botanical research, a national ship having been provided especially for his use. It was first discovered by him at Manilla, the capital of the Philippine Islands, whither it had been brought by the Chinese from China, as a tree of ornament as well as of eminent usefulness. The Chinese are justly entitled to the credit of its introduction hither, as to all the islands of the Asiatic archipelago, where from motives of industry they have endeavored to increase & to multiply it, that it might be rendered useful to them in the new country of their adoption.

From Manilla the MORUS MULTICAULIS was first introduced by M. Perrottet to the Isle of Bourbon, and from thence into Cayenne, and finally it was brought by him to France in 1821, in that vast collection and variety of productions, which he had during thirty-four months procured in the seas of Asia, or gathered on the coast or in the lands of Guina. At first however its cultivation in France was confined almost exclusively to the Royal Gardens, that its trial and dissemination might be thus rendered the more effectual and complete throughout every department of the country. At a latter period it was sent from Cayenne to Martinique, and from France to Guadaloupe, also to Senegal. The numerous plants which are already disseminated in the divers climates of Africa, America and Europe have all been procured by the two individual plants which were brought by M. Perrottet from Manilla.

The *Morus multicaulis* differs from all others in the uncommon vigor of its growth, and the property which the roots possess of throwing up numerous flexible stalks; the great length which these stalks acquire in a short space of time, and the facility with which it is propagated from layers, or even from cuttings: also, from the remarkable size which the thin, soft, and tender leaves speedily acquire, and the promptitude with which they are renewed. The fruit, which was unknown even in France till 1830, is long, black, and of appearance sufficiently beautiful; its flavor good, being intermediate between that of the Red and that of the Black Mulberry. The silk which the worms from the food afforded by this plant is not only of the finest quality, but the cocoons are of unusual size, and the fibre of superior strength. The leaves, from their extraordinary dimensions, are gathered with important ceremony of labor and of time, and from their superior nutritious qualities, they are preferred by the insects to all others.

This mulberry should be cultivated in hedge rows, and never suffered to rise higher than seven or eight feet. But a few years are sufficient to raise considerable fields of them in full vigor, sufficient to support an immense number of silkworms; and regular plantations can be formed, by planting the trees at the distance of from six to eight feet asunder; or in rows of eight or ten feet asunder; and the trees at three or four feet distance in the row; a space sufficient fo the extension of the branches, sufficient also for cultivation, and for the greater convenience of gathering the leaves. So greatly is this last operation facilitated by the flexibility of the stalks and the superior size of the leaf, that, as we are assured by M. Perrottet, a child is sufficient for gathering the food for a large establishment of silkworms.

The *Morus multicaulis* since its introduction into France, seems destined to replace everywhere the common white mulberry for the nourishment of silkworms, such is its decided superiority over all others. M. Bonafoux, the director of the Royal Gardens at Turin, and the celebrated writer on silk, has also fully attested its decisive superiority in Italy, where he has found that by close planting & low pruning, whole fields may be suddenly covered with a mass of the most luxuriant foliage. He has tried them extensively. And M. Dupont, of Chiron, near Chamberry, in France, has found that as the silkworms fed on this mulberry, make less waste of litter and of food, so the chances of disease are diminished from the cause, and they finish their labors in three days less time, and that the silk has a more brilliant lustre. He has also found that the saving of labor in gathering the food is so great, that ten quintals of the *Morus multicaulis* are gathered with the same labor that is required to gather two quintals of the common white mulberry. By the most perfect rules of pruning, he makes this mulberry assume the form of a quenouille or vast distaff, fifteen feet high, the form to be always preserved.

This mulberry braves the most rigorous winters of France. Of this important fact we have the indisputable testimony of M. Poiteau and others; even of the uncommonly severe winter of 1829-30: it has there been acclimated, even to the extreme north, as far as Havre; and where it has been cultivated by M. Eyries, from its first introduction into that country.

Dr. Deslongchamps, in his experiments at Paris, had found that the cocoons produced by the silkworms which were fed exclusively on the Chinese mulberry were even rather heavier than other cocoons. And in the report on this mulberry to the academy of Dijoin, in August, 1834. by M. Tilloy, it appeared by accurate experiments, that the cocoons produced from this mulberry being rather heavier, the fibre was consequently stronger than that of the other cocoons; as it was remarked in winding, that of the whole of these, three hundred and eighty four cocoons in number, not a thread was broken, which was not the case with the other cocoons.

Near Montgeron in the north of France, the French government have established an experimental silk farm under the direction of M. Cannille Beauvais; and the extraordinary experiments which are there in progress were published in 1835. Already has he succeeded in producing thirteen pounds of silk from the same number of silkworms which in France usually produced but five pounds and in Italy seven and a half pounds, and in India twenty pounds; and even in that climate he expects soon to be able to produce an equal number of pounds.

In Tuscany, so fine is their climate that two successive crops of silk are anually produced with the common mulberry; and Dr. Deslongchamps has proved, that by aid of the Chinese mulberry, two crops of silk may be annually produced even in the north of France. Our climate is far more propitious than theirs, and at least as favorable as that of Italy; since in the south of that country, the pernicious sirocco, a dreadful south wind, sometimes strikes whole communities of silkworms dead. The cocoons of the second crop which were produced by Madame Parmentuer, being fed exclusively on the Chinese mulberry were of a brilliant and snowy whiteness. Those also which were exhibited at the fair of the American Institute, in New York, in 1833, of the first and second crops, both being fed exclusively on the Morus Multicaulis, completed their labors before midsummer; these cocoons were also of a snowy whiteness.

At the government establishment near Montgeron, in 1835, there were 67,000 mulberries of different species, set out and in a flourishing state, including a great number of the Chinese mulberries; these were kept very low by pruning.—M. Beauvais founds his expectations, his sanguine reliance, on this mulberry alone, for the production of the second crop of silk.

The prediction of the late Dr. Pascalis, in 1830, that *'after the discovery of this plant, a doubt no longer exists that two crops of silk may be produced in a single season;'* this prediction has since been accomplished—its truth fulfiled by experiment. The soil and cultivation, the habitations for the successive generations of silkworms, being yet the same, all thus converted to *double* use, and the production of a *two-fold* harvest, it will be obvious that the actual profit, thus augmented, must be manifold.

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### SOIL, SITUATION AND CLIMATE.

Although the mulberry flourishes most luxuriantly in a moist and rich soil and protected situation, yet the leaves which are produced in such soils are more crude and not of a quality so nourishing. The growth of the tree in such soils and expositions, besides being more rapid, is prolonged to a later period in autumn, or until suddenly arrested by frost; and the immature wood of a forced growth, being more tender, is consequently more liable to be killed by early frosts and by winter. Such appears to have been the case in the winter of 1831-2, which destroyed so many full-grown trees of the hardiest description, even to the root.—The ravages of that destructive winter seem to have been confined to particular situations and soils; to the productions of the forced growth of a summer not less uncommon and extraordinary.

In northern climates, the young and tender plants of the plum and the cherry, the pear and the quince, and numerous others of the most hardy species, require protection during the first winter in a state of cultivation. Their growth being prolonged, and by art *forced on*, nature demands their protection on a soil *rendered defenceless by cultivation*. Death assails *at the surface*, by the combined and alternate action of the frost and of sunshine; the frost by its expansive power operating on the earth, as a girdle, destruction assails at the surface, the point the most vulnerable and the top *dies as a consequence*; or, their roots taking hold feebly in earth, are cast out by death.

In a state of nature, and in the shades and protection of the forest, or of herbage, the growth of the young tree being slow, and the wood completely matured in *due season*, the case is far otherwise; the bountiful covering of moss, of herbage, or of leaves, with which provident nature clothes the ground, being amply sufficient to modify the growth of the plant, and defend *at the root*. This protection, like the fleecy snow, being two-fold, it defends alike from the blast of sudden and excessive cold, also from the still more destructive and pernicious rays of the sun.

These remarks are equally applicable to the very young trees of the different varieties of the mulberry, to those especially which late in autumn have been transplanted to new positions, or, the forced trees of but a single summer's growth; defenceless, unprotected, and all exposed, on an unsuitable and naked soil, they meet the frosts of autumn and of winter unprepared.

A dry, sterile sand is unsuitable; and a shallow soil on a foundation of clay produces leaves of bad quality. In low, rich grounds, and extensive plains of prairies, near ponds and in the valleys of rivers, the mulberry tree indeed grows most vigorously, yet the leaves being more watery, though voraciously devoured, they prolong the labors of the insect by inducing weakness, and injure the quality of the produce. These grounds are alike exposed to the destructive frosts of winter and of summer: the moisture of the atmosphere in such situations causes the leaves to become spotted and to mildew, and the leaves thus infected, if given to the insects, are the sure sources of disease and of death.

Sunny expositions and the declivities of hills, those especially which slope to the south, east, or west, are favorable.—The cocoons of mountainous countries are deemed superior to those of the plains; although not so large, they are usually of a whiter color. Plant the mulberry tree on the high uplands, and on the hills, for here they are neither exposed to suffer from the early and the latter frosts, nor are the leaves liable to become spotted or diseased from the mildew, and from these combined causes, the growth of the tree will be consequently prolonged for a double length of time.

Prepare the soil by suitable nutriment, to the depth of eighteen inches beneath the tree, and to a proper distance around. The roots of the mulberry tree strike downwards; other plants may therefore be profitably cultivated beneath its shade, which is not deemed pernicious, the whole ground being kept as a garden during the first years.

The climate of the countries bordering on the great northern arteries or rivers, is in some degree unfavorable. The winds, which, unobstructed, follow almost invariably the general course of the valleys of these rivers, bring down alternately from high northern regions, and from other climes, a degree of cold, during winter, the most intense and destructive. On the best authority I am assured that the pear, and particularly the peach and the cherry, have during the last winters suffered partial destruction in the valley of the Connecticut, as far south as the country around the city of Hartford, and *even still farther 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, as I am assured, extremely liable to suffer death during winter, from the same destructive climate and causes.

The proper soils for the mulberry tree are *'dry sandy, or stony.'* And trees growing on *dry, sandy, or stony soils*, and situated on the open plains, and on hills the most exposed to cold winds, will be found to suffer least of all from the destructive frosts of autumn and of winter. With all authors I must agree in recommending a soil of but moderate fertility, and least of all, a cold, moist, and heavy soil on a clay foundation, or even a very rich soil; a dry soil on a friable subsoil, on gentle elevations or declivities, being the most suitable of all for the mulberry from China.

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*From the Farmer and Gardener.*

### BRIEF HINTS FOR AUGUST.

The pressure of work which farmers are obliged to attend to through haying and harvesting, often causes them to neglect the extirpation of weeds at this time, when they are about going to seed. This should be carefully avoided.

After the second hoeing of corn, the weeds among the crop, of which there always spring up more or less, are suffered to have undisturbed possession, and the ground becomes completely seeded with them by another year. A little seasonable labor would prevent this evil.—We observed a piece of ground which was kept clear of weeds last year, and another which was but imperfectly cleared of them; the consequence was, that the crop this season (field beet) which grew on the latter piece, was literally hid with a dense growth of weeds, while the other was comparatively free.

Canada thistles, must in no instance whatever be allowed to ripen their seed.

Thistles, mulleins, burdocks, &c., in pastures and fence corners, must be destroyed without fail.

Root crops, as ruta baga, and mangel wurtzel, are liable to be too much neglected after one or two hoeings; they should be kept all the season perfectly clear from weeds, and the benefit they derive from this, and from stirring the earth around them, amply repays the expense of the labor.

With a little pains, it is as cheap to raise a good crop, as a crop of noxious weeds; and seed now selected should be therefore as perfectly freed from foul stuff as possible. If clean wheat is always sowed, we may except on clean ground, a clean crop, but and will become more and more infested with weeds

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