

From hence it appears, that the air at London was, upon several days, hotter than it had been observed at Madeira for ten years together: for, by Dr. Thomas Heberden's observations, mentioned in the Philosophical Transactions, the heat of the air at Madeira, during that period, was never but once at 80.

William Watfon.

LV. *Remarks upon the Letter of Mr. John Ellis, F. R. S. to Philip Carteret Webb, Esq; F. R. S. printed in the Philosophical Transactions, Vol. xlix. Part ii. p. 806. By Mr. Philip Miller, F. R. S.*

Read Dec. 15. 1757. **T**HE paper of mine, which was read before the Royal Society on the 8th of May 1755, and afterward printed in the xlixth volume of the Philosophical Transactions \*, was written at the request of Mr. Watfon; who informed me, that a letter from the Abbé Mazeas to the reverend Dr. Hales had been communicated to the Royal Society, in which it was mentioned, that the Abbé Sauvages had made a discovery of the juice of the Carolina Toxicodendron staining linen of a permanent black. But Mr. Watfon said, that the letter, he thought, required a careful perusal before it was printed; and he wished I would confirm it. I told

\* Part I, p. 161.

him,



him, if the letter was put into my hands, I would look it over, and deliver my opinion of it.

Accordingly Dr. Birch delivered the letter to me; and, upon reading it, I found, that tho' this might be a discovery to those two gentlemen; yet, as it had been mentioned in several printed books long before, I thought it might not be for the reputation of the Royal Society to have it printed as such in their Transactions.

This was my motive for writing that paper: in which I have not endeavoured to depreciate the discovery of the Abbé Sauvages, but have only mentioned what had occurred to me in those books of botany, where that shrub is taken notice of. And as the knowledge of it, and the method of collecting the varnish, might be of service to the inhabitants of the British colonies in America, I took the liberty of adding the account given of it by Dr. Kœmpfer.

Mr. Ellis, in his letter to Mr. Webb, asserts, that the American *Toxicodendron* is not the same with Kœmpfer's *Arbor vernicifera legitima*. This assertion of his makes it necessary to lay before the Society the authorities, upon which I have grounded my belief, that they are the same. But it may not be amiss first to take notice, that the shrub mentioned by the Abbé Sauvages is the same with that, which the gardeners about London call the Poison-ash. The title of it, mentioned by the Abbé Sauvages, was given by myself to that shrub, in a catalogue of trees and shrubs, which was printed in the year 1730; before which it had no generical title applied to it. And about the same time I sent several of the plants to Paris and Holland with that title,  
which



which I had raised a few years before from seeds, which were sent by Mr. Catesby from Carolina.

And altho' this shrub had not been reduced to any genus before, yet it had been some years growing in the gardens of the Bishop of London at Fulham, at Mr. Reynardson's at Hillenden, Mr. Darby's at Hoxton, and in the Chelsea garden, which were raised from seeds sent by Mr. Banister from Virginia; two of which were growing at Chelsea in the year 1722, when the care of that Garden was intrusted to me.

The first intimation I had of the American shrub being the same with Dr. Kœmpfer's true varnish-tree, was from the late Dr. William Sherard, in the year 1726, when that gentleman desired me to bring him a specimen of the American *Toxicodendron* from the Chelsea garden; which I accordingly did: and then the Doctor, and Dr. Dillenius, compared it with a dried specimen in the collection of the former, which was gathered in Japan, and which, if I remember right, he told me he received from Dr. Kœmpfer some years before. It appeared to those two gentlemen, that they were the same; and their skill in the science of botany was never doubted.

About a year after this, I carried a specimen of the American *Toxicodendron* to an annual meeting of some botanists at Sir Hans Sloane's in Bloomsbury; where there were present Mr. Dale of Braintree, Mr. Joseph Miller, Mr. Rand, and some others; which was then compared with Dr. Kœmpfer's specimen, whose collection Sir Hans Sloane had purchased: and it was the opinion of every one present, that they were the same. Nor has any one doubted of their being so, who has compared the American shrub  
with



with Kœmpfer's figure and description of his true varnish-tree, but Mr. Ellis.

And now give me leave to examine his reasons for differing in opinion from every late botanist, who has mentioned this shrub.

He says, that the midrib, which supports the lobe leaves, is quite smooth in the poison-ash, as is also the under side of the leaves; whereas Dr. Kœmpfer, in his description of the midrib of the true varnish-tree, calls it *læviter lanuginoso*; and in his description of the lobes or *pinnæ* he says, they are *basi inequaliter rotunda*; whereas those of the poison-ash come to a point at their footstalks' nearly equal to that at the top. These characters, Mr. Ellis thinks, are sufficient to prove, that they are different plants: and he blames Dr. Dillenius for having omitted these necessary characters in his description of it; and supposes this must have misled the accurate Linnæus, who quotes his synonyma.

But as Dr. Linnæus is possessed of Kœmpfer's book, he would little have deserved the appellation of accurate in this particular, had he not consulted the original, but trusted to a copy. But this I know he has done, and is as well assured, that the plants in question are the same, as Mr. Ellis can be of the contrary.

But here I must observe, that the branch, from which Dr. Kœmpfer's figure is taken, is produced from the lower part of a stem, which seems to have been cut down, and not from a flowering branch; and it is not improbable, that his description may have been taken from the same branch: and if this be the case, it is easy to account for the minute dif-



ferences mentioned by Mr. Ellis; for it would not be difficult to produce instances of hundreds of different trees and shrubs, whose lower and upper branches differ much more in the particulars mentioned by Mr. Ellis, than the figure and description given by Kœmpfer do from the American *Toxicodendron*. I will only mention two of the most obvious: the first is the white poplar, whose shoots from the lower part of the stem, and the suckers from the root, are garnished with leaves very different in form and size from those on the upper branches, and are covered on both sides in the spring with a woolly down. The next is the willow with smooth leaves, which, if a standard, and the head lopped off, as is usual, the young shoots are garnished with leaves much broader, and of different forms from those on the older branches; and these have frequently a hairy down on their under surface, which does not appear on those of the older. So that a person unacquainted with these differences in the same tree would suppose they were different. And the American *Toxicodendron* has varied in these particulars much more, in different seasons, than what Mr. Ellis has mentioned.

Mr. Ellis next says, that the *Toxicodendron* mentioned by Mr. Catesby, in his *Natural History of Carolina*, is not the same with that, which is now called by the gardeners poison-ash: but I am very positive of the contrary; for most of the plants in the nursery-gardens about London were first raised from the seeds, which were sent by Mr. Catesby from Carolina; part of which were sent to the late Dr. Sherard, as is mentioned by him in the *Philosophical Transactions*, N<sup>o</sup>. 367; and another part came to my hands,



hands, from which I raised a great many of the plants, which were distributed, and some of them are now growing in the Chelsea garden.

And that this shrub grows naturally in Carolina, I can have no doubt, having received the seeds of it two or three times from the late Dr. Dale, who gathered them in the woods of that country.

In my paper above-mentioned I likewise observed, that the seeds, which were sent to the Royal Society by Father D'Incarville, for those of the true varnish-tree, did not prove to be so; but the plants, which were raised from them, were taken to be referred to the spurious varnish-tree of Kœmpfer; which I believed to be the same, and own, that it is yet my opinion, notwithstanding what Mr. Ellis has said to the contrary: for the number of lobes or *pinnæ* on each leaf, with their manner of arrangement on the midrib, are the same. And here we must observe, that the figure of this given by Kœmpfer is from a flowering branch; and every gardener or botanist must know, that the leaves, which are situated immediately below the flowers of most winged-leaved plants, have fewer lobes or *pinnæ*, than those on the lower branches: therefore I must suppose it to be the case in this plant; and from thence, with some other observations which I made on the seeds, I have asserted it to be the wild or spurious varnish-tree of Kœmpfer. But Mr. Ellis is of a contrary opinion, because the base of the lobes of those plants, which were raised from Father D'Incarville's seeds, are rounded and indented like two ears. In Dr. Kœmpfer's figure and description of the *fasi-no-ki*, the leaves are intire, and come to a point at their base.



Here I think Mr. Ellis is a little too hasty in giving his opinion, as he has not seen this plant in the state, that the branch was, from which Kœmpfer's figure was taken. For as there are often such apparent differences between the leaves on the lower branches of trees, and those which are at their extremities, as that in the descriptive titles of the species Dr. Linnæus frequently uses them to distinguish one from another; so in making the same allowance for the plant in question, I cannot help thinking that I am in the right, and must abide by my opinion, till the plants, which have been raised from Father D'Incarville's seeds, have flowered, to convince me of the contrary.

However, I cannot help observing, that Mr. Ellis has given a title to this shrub before he had seen any of the characters, which are necessary to determine the genus. And I have pretty good reason to believe it should not be joined to the *Rhus*; for the three seeds, which I received from the Royal Society, were shaped like a wedge, being thicker on one edge than the other, and not unlike those of the beech-tree, as I noted in my catalogue when I sowed them; and, by their structure, seemed as if the three seeds had been inclosed in the same capsule.

If it proves so, this will by no means agree with the characters of *Rhus*; especially if the male flowers should grow upon different plants from the fruit, which is what I suspect. Nor can I agree with Dr. Linnæus in this particular of joining all the species of *Toxicodendron* to the genus of *Rhus*, many of which have their male flowers growing upon different plants from the fruit; and therefore would  
more.



more properly come into his twenty-second class of *Dioecia*, than his fifth of *Pentandria*, into which he ranges the *Rhus*. At the bottom of the characters of that genus he has added a note, to shew the varnish-tree is so.

But as there are several other species, which agree in this essential character of distinction; so, according to the Linnæan system, they should be separated from the *Rhus*, with another generical title.

Mr. Ellis observes, upon the poetical description, which he says Kœmpfer has given of the leaves of the wild varnish-tree turning red in the autumn, that he had not found it to be the case of the tree growing in the stove at Busbridge. How it appeared in that situation, I know not; but the leaves of all those, which are growing in the Chelsea garden, and stand in the open air, do constantly change to a purple colour in the autumn, before they fall off from the shrub: but those of the true varnish-tree are much more remarkable for the deepness of their colour.

Mr. Ellis says, he had received a letter from Dr. Sibthorp, professor of botany at Oxford, in which the Doctor informs him, that there is no specimen of the true varnish-tree in the Sherardian collection at Oxford; but that there is one of *fasi-no-ki*, or spurious varnish-tree of Kœmpfer. How the Doctor could write so, I cannot conceive; for I am very sure there was no specimen of the latter in that collection while it remained in London, having myself often viewed that part of it: and sure I am, Dr. Dillenius never added that synonym to the former: and I do believe the latter was no other way known in Europe, than by Kœmpfer's figure and description of it, ex-



cepting that specimen of Kœmpfer's now in the British Museum.

But, to confirm what I have before said, of Dr. Sherard's having a specimen of the true varnish-tree, I beg leave to quote what Dr. Dillenius has written in the *Hortus Elthamensis*; where, after having described the American Toxicodendron, he says, *Ceterum historiam verniciferæ arboris Japoniæ, diligenter et accurate more suo exsequutus est laudatus Kœmpferius, cujus et descriptio et figura, quin et planta sicca, quæ in Japonia lecta servatur in phytophylacio Sherardino, nostræ huic speciei examussim quadrat: id tantum, sexus nempe differentia, prætervisa fuit auctori: quoniam autem ille liber non in omnium his in locis, multo minus in America, manibus versatur, non alienum videtur, si qui, quorum interest, hæc legerint, ut norint, quæ ille de collectione & preparatione vernicis illius habet, hoc loco transcribere.* Then he goes on transcribing from Kœmpfer the manner, in which it is collected.

After this, I find Mr. Ellis is inclinable to think, that the poison-ash, as it is called by the gardeners, is the same with the *fasi-no-ki*, or spurious varnish-tree of Kœmpfer. The difference between these shrubs does not consist in small and minute particulars, but the most obvious striking marks of distinction appear at first sight; for the poison-ash has rarely more than three or four pair of lobes to each leaf, terminated by an odd one: in which particular it agrees with the true varnish-tree of Kœmpfer; whereas in the figure, which Kœmpfer has given of the spurious varnish-tree, the leaves have seven or eight pair of lobes terminated by an odd one: and  
this



this figure, as I before observed, is drawn from a flowering branch. Every one, who is the least acquainted with these things, knows, that the leaves immediately below the flowers are considerably less than those on the lower part of the branches: therefore this is a more essential note of distinction than those mentioned by Mr. Ellis.

I must also observe, that Mr. Ellis would suggest, that I supposed these two shrubs were only varieties of each other produced by culture: whereas it must appear to every one, who reads my paper, that my intention in mentioning the spurious varnish-tree was to shew it was different from Kœmpfer's true varnish-tree, altho' Kœmpfer supposes otherwise.

For the satisfaction of the curious, I have added a leaf of each shrub, which are now growing in the Chelsea garden, that if any person has the curiosity, they may compare them with Kœmpfer's.

In my paper I took notice, that one of the best kinds of varnish was collected from the *Anacardium* in Japan; and recommended it to the inhabitants of the British islands in America, to make trial of the occidental *Anacardium*, or Cashew-nut tree, which abounds in those islands. This has occasioned Mr. Ellis to take great pains to shew, that the eastern and western *Anacardium* were different trees: a fact, which was well known to every botanist before; and of which I could not be ignorant, having been possessed of both sorts near thirty years. But as I was assured, from many repeated experiments, that the milky juice, with which every part of the Cashew-tree abounds, would stain linen with as permanent a black as that of the oriental *Anacardium*; so I just hinted,



hinted, that it was worth the trial. Nor was my hint grounded on those experiments only, but on the informations I had received from persons of the best credit, who had resided long in the American islands, that people are very careful to keep their linen at a distance from those trees, well knowing, that if a drop of the juice fell upon it, they could never wash out the stain.

But Mr. Ellis, in order to prove that this tree has no such quality of staining, says, he has made some experiments on the caustic oil, with which the shell or cover of the Cashew-nut abounds; and that he found it was not endued with any staining quality. But surely those experiments cannot be mentioned to prove, that the milky juice of the tree has not this property: and Sir Hans Sloane, in his History of Jamaica, says, that the inhabitants of Jamaica stain their cottons with the bark of the Cashew-tree.

I shall not intrude farther on the patience of the gentlemen, who may be present when this paper is read; but humbly crave their pardon for detaining them so long: nor should I have given them this trouble, had not I thought my reputation concerned on the occasion.



LVI. *An Answer to the preceding Remarks.*  
*By Mr. John Ellis, F. R. S.*

Read Jan. 19, 1758. **M**Y letter to Mr. Webb, which is printed in the second part of the xlixth volume of the Philosophical Transactions \*, was intended to shew this Honourable Society, that Mr. Miller, in his reply to the Abbé Mazeas's letter, had brought no proofs to lessen the discovery, which he tells us the Abbé Sauvages had made, in attempting to improve the art of painting or staining linens and cottons of a fine durable black colour, by making use of the juice of the Carolina pennated Toxicodendron, instead of the common method of staining black with gauls and a preparation of iron; which, he says, always turns to a rusty colour when washed.

Mr. Miller, instead of producing the proper proofs, to shew that this method of staining cottons and linens of a black colour was known before, or quoting the authors in which he says it is mentioned, contents himself with telling the Society, that this American Toxicodendron is the same plant with the true varnish-tree of Japan; and that callicuts are painted with the juice of this shrub.

In my letter to Mr. Webb, I have endeavoured to shew, that notwithstanding the authority of Dr. Dillenius, and the authors that have followed him, it does not appear, from Dr. Kœmpfer's description of this Japan plant, that it can be the same with our American one.

\* Page 806.



The design, then, of this paper, is to lay before this Society some further reasons, why these plants cannot be the same; and that even if they were the same, Mr. Miller has produced no authority to shew, that this juice was ever made use of for this purpose abroad; with some remarks on his reply to my letter, in which he obliges me to be more particular than I intended, in explaining some errors, which I find he has run into.

In my letter to Mr. Webb, I have pointed out the exact description, which Kœmpfer has given us of the leaves of this plant, shewing how much they differ from our American one: but now I shall mention some observations that escaped me before, and which, I think, will give us a clearer proof of this matter.

Kœmpfer, then, informs us, that this Japan varnish-tree, or *Sitz-dsju*, is a tree, not a shrub: and this author (it is well known) is remarkably exact in the description of his Japan plants, making the necessary distinctions between a shrub, an arborescent shrub, and a tree. He then goes on to explain the manner of its growth; and tells us, that it grows with long sappy shoots, very luxuriantly, to the height of a fallow or willow-tree, which we may reasonably allow to be from 20 to 30 feet: whereas this Carolina pennated *Toxicodendron*, as Mr. Miller tells us in his Dictionary, 6th edit. in folio, is a shrub, and seldom rises above five feet high with us: and many people, who have been in North America, agree, that it is but a slow grower there, and is one of the shrubby underwoods of that country: so that, allowing it to grow even double the height it does  
here,



here, it is still but a shrub, in comparison with the other.

Further, while Dr. Dillenius was warm with this supposed discovery, of our having got the true Japan varnish-tree in America, attempts were made there, by intelligent persons under his direction, to procure this varnish after the manner of Kœmpfer; but without success, as I am assured by persons of that country now here, with whom the Doctor corresponded.

Let us now consult the growth of the Carolina and Virginia Sumachs, or *Rhus*'s, in our nursery-gardens, and compare them with this little shrubby *Toxicodendron*, and we shall find, that even in this cold climate nature keeps her regular proportionable pace in the growth of vegetables of the same country.

Let us observe the growth of some of these *Rhus*'s, and we shall find that great luxuriance of the shoots, which Kœmpfer so justly describes in his varnish-tree. One of these American ones even seems to promise the same height as the Japan *Rhus*; whereas this little shrubby *Toxicodendron* still preserves the same dwarfish slow-growing habit, that it has in its native country.

This leads me, in the next place, to shew, that these two plants must be of different genus's; the one a *Rhus*, and the other a *Toxicodendron*: and if so, according to Mr. Miller, they ought to be properly distinguished, and not ranked together, as Dr. Linnæus has done.

In order to prove this, let us then examine Kœmpfer's description of the parts of the flower, and see



whether it does not answer exactly to the genus of *Rhus*; and whether the flowers are not male and female in themselves, that is, hermaphrodites, on the same tree. The original of Kœmpfer is as follows, p. 791 of his *Amœnitates*: “Flosculos conti-  
 “ nent pumilos, et citra coriandri feminis magni-  
 “ tudinem radiantes, in luteum herbaceos, pentape-  
 “ talos, petalis carnosiss nonnihil oblongis et repan-  
 “ dis, staminibus ad petalorum interstitia singulis,  
 “ apicatis, brevissimis, stylo perbrevis tricripite, floris  
 “ turbini infidente; fructus flosculum excipit gib-  
 “ bosus utcunque in rhomboides figuram com-  
 “ pressus.” Whereas Dr. Dillenius, and the authors that have copied after him, say, that his *Toxicodendron* has the male blossoms on one plant, and the female on the other; from whence it must evidently be another genus.

It appears, however, that Dr. Dillenius was not altogether ignorant of this difference of genus in these two plants; but, rather than his *Toxicodendron*, which he had made agree exactly in the leaves, should not agree in the fructification, he makes the accurate Kœmpfer guilty of an unpardonable oversight, in not taking notice of the difference of the sexes of this varnish-tree in different plants: whereas we have just now shewn, that nothing can be more minutely and judiciously described, than he has done both the male and female parts of the blossom, which change into the fruit on the same plant.

The original of Dr. Dillenius's remarks on Dr. Kœmpfer's specimen runs thus: “Planta sicca, quæ  
 “ in Japonia lecta, servatur in phytophylacio Sherar-  
 “ dino, nostræ huic speciei examussim quadrat, id  
 “ tantum



“ tantum sexus nempe differentia prætervifa fuit auctori.” Hence we find how this error came to spread, and this false synonym to be adopted by the botanic writers, who copied after Dillenius.

This shews us what little dependance we can have upon the result of that meeting, which Mr. Miller mentions he had with his botanic friends ; where, from the similitude of leaves only, without the parts of fructification, they determined these two plants, so different in their growth, to be one and the same plant.

Mr. Miller remarks very justly, that the leaves of the same tree often vary much in shape, such as those of the poplar, fallow, &c.

But in answer to this, we may reasonably suppose, that Dr. Kœmpfer, who was on the spot, would not choose for his specimens leaves of the most uncommon sorts that were on the tree, and neglect the most common. This would be carrying the supposition farther than can be allowed, unless we suppose this author had not the understanding even of a common gardener ; for otherwise, I am persuaded, Sir Hans Sloane would not have thought his specimens worth purchasing.

For another synonym to the true Japan varnish-tree, as also to Dillenius’s pennated Toxicodendron with rhomboidal fruit, Mr. Miller brings in (in his answer to the Abbé Mazeas’s letter) the Bahama Toxicodendron *foliis alatis fructu purpureo pyriforini sparsis* of Catesby’s Nat. Hist. vol. i. p. 40. so that he would have all these three different plants one and the same : and, in his reply to my letter, he still insists on it, that these two Toxicodendrons are the same. But



here I must beg the favour of this Honourable Society, when they come more attentively to consider this matter, to compare his answer to the Abbé Mazzeas's letter, and his reply to me, in this particular part.

I shall only at present take notice, that Catesby says, this Toxicodendron, with the pear-shaped fruit, grows usually on rocks in Providence, Ilathera, and other of the Bahama islands; and does not mention, that he ever saw it in Carolina. I cannot find it described by any author as growing in Carolina, or in any other part of the continent of North America: nor do I believe that there is a plant of it now growing in England, or that it is even the same genus with Dillenius's rhomboidal-fruited one, from the different structure both of its leaves as well as fruit.

In looking over Dr. Linnæus's *Hortus Cliffortianus*, I find he gives this Bahama Toxicodendron of Catesby as a synonym to his *Elemifera foliis pinnatis*, p. 486.

I now come to that part of Mr. Miller's reply, relating to the China varnish-tree, that was raised from seeds sent to the Royal Society by Father D'Incarville; where he still insists on it, that this is the same with the spurious varnish-tree of Kœmpfer. His reasons are, that notwithstanding the indentation and roundness of the bottom of the lobe-leaves of the China varnish-tree, and tho' the lobe-leaves of the spurious Japan varnish-tree come to a point at the base, and are no-way indented, but quite even on the edges; yet he says, because they have an equal number of *pinnæ*, or lobe-leaves, on the whole leaf of each tree, they must be the same.

In









*Alnus sinense foliis alatis foliolis oblongis  
acuminatis ad basin subtruncatis et dentatis.*



In answer to this, I say their lobe-leaves are not equal; for I have examined both the specimens and drawings of Dr. Kœmpfer's spurious varnish-tree, and I don't find that the number of the *pinnæ* exceed seven on a side: whereas I have a small specimen of a leaf by me, that was taken from the top of one of D'Incarville's China varnish-trees, which is above eight feet high, and stands in an open exposure; and this leaf, tho' but a foot long, has 12 lobe-leaves on a side, and each lobe indented at the base \*. At the same time I observed, that the leaves of the young shoots of another tree were a yard long, as they were this summer at the garden of the British Museum. Another thing is remarkable in the leaves of this China varnish-tree; and that is, the lobes of the leaves, as they approach to the end, grow smaller and smaller; whereas in the spurious Japan varnish-tree they are rather, if there is any difference, larger towards the end.

I shall make this further remark, that tho' these indentations on the lobe-leaves may vary in number in this China varnish-tree; yet, as I observed before, since they are continued on even in the smaller leaves at the top of the branches of a tree eight feet high in the open ground, it appears to me, that this specific character, besides the form and insertion of the lobe-leaves, will ever distinguish it as a different species from the *Fasi-no-ki*, or spurious varnish-tree of Kœmpfer.

Mr. Miller now goes on to tell us, he is confirmed in his belief of their being the same, by making some observations on the seeds of this China varnish-

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\* See TAB. XVII. where this specimen is exactly delineated.



tree ; and therefore asserts, that they are the same. It is natural to suppose he compared them with the accurate drawings of the seeds of Kœmpfer's *Fasi-no-ki*, p. 794. that being the only place where the seeds of it are described.

In the very next paragraph Mr. Miller seems to forget, that from his own observations on the seeds of the China varnish-tree, he has asserted it to be the *Fasi-no-ki* of Kœmpfer ; but now he finds, in his memorandums, that those seeds were wedge-shaped, and like the seeds of the beech-tree ; and that all the three seeds he received seemed to be inclosed in one capsule : so that now he is at a loss what to call it ; and at the same time says I have been too hasty in calling it a *Rhus*.

Mr. Miller goes on, and allows this China varnish-tree changes to a purple in the autumn ; but not so deep as the true varnish-tree. I suppose he means, by this true varnish-tree, the Carolina pennated *Toxicodendron* ; for Kœmpfer has not told us what colour the true varnish-tree of Japan changes to in autumn.

But this is no certain proof on either side of the question, only a corroborating circumstance of the species of a tree : nor should I have mentioned it, but for the manner in which Kœmpfer, with an imagination truly poetical, describes the autumnal beauty of his *Fasi-no-ki*, or spurious varnish-tree. “ Rubore suo autumnati quâ viridantes sylvas suaviter interpolat, intuentium oculos e longinquo in se convertit.” Even this description would make one suspect it is not the same with the China varnish-tree, which, I am informed, did not turn purplish in the garden of the British Museum till the first frost came



came on: whereas it is well known, that some of the *Rhus*'s and *Toxicodendrons*, particularly the Carolina pennated one, change to a fine scarlet colour in the beginning of a dry autumn, even before any frost appears.

Mr. Miller seems surpris'd, how I should think, that the Carolina pennated *Toxicodendron*, or poison-ash is like the *Fasi-no-ki* of Kœmpfer. I must here acknowlege, at this time, not having seen Doctor Kœmpfer's specimen, I imagined, from the shape of the lobe-leaves (as he has described them) and from the remarkable scarlet colour of both these trees in autumn, that Mr. Miller might be right in what he has advanced; for it was from his authority I took it, depending on the information he gives us in his Dictionary, fol. edit. 6. under the article *Toxicodendron*, where he takes some pains to assure us, that they are the very same plants.

In the next paragraph I find Mr. Miller has intirely mistaken the meaning of one part of my letter to Mr. Webb; which I must recommend to him to read again, and he will find it exactly agrees with his own sentiments. There he will find my opinion is, that notwithstanding the change of soil and situation, this *Sitz-dsju*, or true varnish-tree, and the *Fasi-no-ki*, or spurious varnish-tree of Kœmpfer, are distinct species of *Rhus* or *Toxicodendron*, and will ever remain so.

Mr. Miller now desires me, since I have seen Dr. Kœmpfer's specimens in the British Museum, to declare, whether I think I am mistaken.

In answer to this, and to satisfy Mr. Miller as well as myself, I have been very lately at the Mu-



seum, and have looked very carefully over Dr. Kœmpfer's specimens, and do sincerely think, as did other judges at the same time, that the *Sitz-dsju* is not the same with the Carolina pennated *Toxicodendron*, nor the *Fasi-no-ki* the same with Father D'Incarville's China varnish-tree.

Mr. Miller informs us, that one of the best kinds of varnishes is collected from the *Anacardium* in Japan.

In answer to this, I must beg leave to shew the Society, that Dr. Kœmpfer does not so much as mention, that this *Anacardium* grows in Japan; but that the varnish, which is collected from it, is brought to them from Siam: and I believe it will appear plainly, from what follows, that there is not a plant of this kind in the kingdom of Japan; for Siam and Cambodia, especially the parts of those kingdoms, where Kœmpfer informs us this \**Anacardium* grows, lie in the latitudes of from 10 to 15 degrees north, which must be full as hot as our West Indies: so that it is not probable, that it would bear the cold of the winters in Japan; for Japan lies from the latitudes of 33 to above 40 degrees north, which is about the same parallel with our North American colonies.

I shall now beg leave to lay before the Society that passage of Dr. Kœmpfer, which relates to this dispute, together with my translation of it, that it may be compared with Mr. Miller's translation, which he gives us in his reply to the Abbé Mazeas's letter, *Philosoph. Transf.* vol. xlix. p. 164. 2d paragraph.

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\* This is likewise called the Malacca Bean, from its growing in great plenty on that coast, near the equinoctial line.



Dr. Kœmpfer, in his *Amœnitates*, p. 793. speaking of the true varnish-tree, says, “ Colitur frequens  
 “ in provinciis Tsi-kocko et Figo, in quibus inserti  
 “ agris scapi radices agunt et caudices edunt post  
 “ triennium vernicem suppeditantes. Optima regi-  
 “ onis, quin totius mundi, vernix perhibetur circa  
 “ urbem Jassino colligi. Vernicem ceres Japonica  
 “ largitur oppido nobilem et pretiosissimam, sed ad-  
 “ modum parcam; nec pro operibus, quæ regio  
 “ construit, sufficeret, nisi prius cum, *Nam Rak*, i. e.  
 “ vernice ignobiliore ex Siamonia inuenta, pro basi illi-  
 “ nerentur. Siamenfis vernix promitur in provincia  
 “ Corfama, et regno Cambodiæ ex arbore Anacardo,  
 “ incolis *Tong Rak*, i. e. *Arbor Rak* dicta, cujus  
 “ fructus officinis nostris Anacardium dictus *Luk*  
 “ *Rak*, liquor *Nam Rak* appellatur. Perforatus  
 “ truncus immisso tubulo, tantâ copiâ fundit liquo-  
 “ rem ut Sinæ, Tunquino et Japoniæ pro deliniendis  
 “ utensilibus sufficiat, quin jam Bataviam et alia In-  
 “ diæ loca vasis ligneis inclusa appellit.”

Which, translated into English, appears to me to be thus :

‘ This varnish-tree is often cultivated in the pro-  
 ‘ vinces of Tsi-kocko and Figo : there they plant  
 ‘ the cuttings or truncheons in the fields, which take  
 ‘ root, and send forth vigorous shoots, which in  
 ‘ three years time yield this varnish.

‘ The best varnish of the kingdom, nay, of the  
 ‘ whole world, is said to be collected about the city  
 ‘ of Jassino. The produce in Japan of this most  
 ‘ noble and very precious varnish, is so very little,  
 ‘ that there would not be sufficient for the wares  
 ‘ made in the kingdom, if they did not first lay on



‘ a ground with an ordinary kind of varnish, which  
 ‘ they call *Nam Rak*, and is brought to them from  
 ‘ Siam.

‘ This Siam varnish is collected in the province of  
 ‘ Corfama, and in the kingdom of Cambodia, from  
 ‘ the tree *Anacardus*, called by the inhabitants *Tong*  
 ‘ or *Tree-Rak*; the fruit of which is called in our  
 ‘ shops *Anacardium*, or *Luk Rak*, and the liquor is  
 ‘ called *Nam Rak*.

‘ To collect this liquor, they bore a hole in the  
 ‘ trunk, and put in a tube. By this method they  
 ‘ get as much of it as is sufficient not only to varnish  
 ‘ all the utensils of China, Tonquin, and Japan, but  
 ‘ it is even exported in close wooden vessels to Bata-  
 ‘ via, and other parts of India.’

The original of Kœmpfer, p. 794. speaking of the  
 true Japan varnish, is as follows: “ Prostat non sin-  
 “ cera modo, sed et colorata, vel cinnabari nativa  
 “ Sinensi, vel terra rubra (quam Batavi antea, nunc  
 “ Sineses advehunt) vel atramenti popularis ma-  
 “ teriâ.”

Which I apprehend may be read thus in English:

‘ This varnish is not only sold quite pure, but  
 ‘ likewise coloured, and that with Chinese native  
 ‘ cinnabar, and a kind of red earth, which the  
 ‘ Dutch formerly, but now the Chinese, bring them;  
 ‘ and also with the materials that they make their  
 ‘ common (or Japan) ink of.’

Mr. Miller translates it thus (*See p. 164. vol. xlix. Phil. Transact.*): ‘ This varnish is used without mix-  
 ‘ ture to stain black: but the Chinese mix native  
 ‘ cinnabar, or a red kind of earth, with it, to make  
 ‘ a different colour.’

Here



Here we may observe, that Mr. Miller uses the words staining black; which is not the sense of the author, who, by mentioning the materials of Japan ink, shews, that even in varnishing black it was necessary to use this black mixture.

Further, Mr. Miller says, that the Chinese mix these colouring ingredients with this varnish: but the original plainly says, that the Chinese import them, and the Japanese mix them with varnish for sale.

And in a former part of this letter, p. 162. vol. xlix. Phil. Transf. he says, speaking of this true varnish-tree, that callicuts are painted with the juice of this shrub. But this bare assertion of his, without producing a proper authority, I am persuaded this Honourable Society will never admit as a matter of proof to invalidate the discovery of the Abbé Sauvages.

In looking over one of the numbers of Mr. Miller's Dictionary, under the title of Anacardium, I find he quotes a passage from Dr. Grew, which Sir Hans Sloane has placed among his observations on the Cashew-tree, *Hist. Jam. vol. ii. p. 127.* which is, that cottons are stained with lime, and the oil, or mellaginous succus, called Mel Anacardium (but for the account of this Mel Anacardium I shall refer to Parkinson's Theat. p. 1568); and Mr. Miller seems to think it difficult to know which of the Anacardiums is here meant.

One would be apt think, from this passage, and another that follows a little after in the same page of the *Hist. of Jamaica*, relating to the black dye of the melagoof this nut, that Sir Hans, at the time his history



was published, thought them, as Caspar Bauhin did, of the same genus, but different species; and therefore he has mixt the observations on both together.

For, immediately after mentioning the staining of cottons with this mellaginous succus, Sir Hans says, that the gum is, in faculties and colour, like gum-arabic; and that it is given internally in female obstructions; and that the juice stains linen, which will not wash out suddenly: but he says it is false, that they remain till they flower next year, as Du Tertre asserts.

Sir Hans further quotes, from an anonymous Brazilian author, that the apples stain linen; and that the gum is good to paint and write; and the bark dyes yarn and vessels serving for pots.

And in another place he quotes De Laet, who compiled a general history of America, and who likewise takes his quotation from an old Brazilian author, treating of the trees of Brasil, That the gum of the Acajou is used by painters; the bark is used to dye cotton-yarn and earthen ware. Here I must remark, tho' foreign to our present purpose, that in the original of Laet, what relates to the earthen ware runs thus: "*Et a faire de vaisseaux de terre.*" So that I believe it will appear more probable, that the bark of these trees was used rather to burn earthen ware vessels, than to dye them, as we find these earthen vessels were used to boil their victuals in.

These two quotations from Sir Hans Sloane confirm the former, with regard to the use of the gum; that is, its being fit, like gum-arabic, to be used for water-colours, and to make ink; and that it is the juice of the apple that stains, but this we find is not durable.

Mr.



Mr. Miller has now only the bark of the Cashew-tree left to support his argument. This the above-mentioned Brazilian writers say, that the native Indians of Brasil used to dye their cotton-yarn with; but of what colour no mention is made. And whether this bark is used to give strength to this yarn, as we dye and tan our fishing-nets with oak-bark, or for ornament, is uncertain; for a great deal of this yarn was used in the making their net-hammocks, as well as their coarse garments.

Mr. Miller then introduces Sir Hans Sloane, in opposition to Dr. Browne, whose History of Jamaica I had quoted, to prove that the juice of the Acajou was of the same nature and properties with that of the gum-arabic, and consequently not fit for varnish: whereas it plainly appears from the foregoing quotations, taken from Sir Hans Sloane, that Dr. Browne is right, and agrees exactly in opinion with him.

He then makes Sir Hans say, that the inhabitants of Jamaica stain their cottons with the bark of the Cashew-nut tree. By this, one would naturally conclude, that Mr. Miller has been endeavouring to prove, in opposition to the Abbé Mazeas's letter, that the art of painting or staining cottons of a fine deep black colour, equal to that discovered by the Abbé Sauvages, as described in his experiments on the Carolina Toxicodendron, was practised by the English forty or fifty years ago in Jamaica.

If this was the case, it is something surprising, that, notwithstanding our great intercourse with that island, the callico-printers of England never got intelligence of this valuable secret.

Further, if Mr. Miller will consult Piso and Margrave,



grave, writers of the best authority on the Brasilian plants, he will find their accounts of the Acajou exactly correspond with that delivered by Dr. Browne, in his History of Jamaica, as well as Sir Hans Sloane's: for they say, that the juice of this tree is equal in virtue, and mechanical uses, to the best gum-arabic. And if he still doubts, I shall lastly recommend him to go to the British Museum, and there he may see a most elegant specimen of the Cashew-gum, which will put this matter quite out of all doubt.

I shall now leave the decision of this controversy, which Mr. Miller has obliged me so fully to explain in my own vindication, to the candour and impartiality of this Honourable Society.

*P. S.* Since the foregoing paper was read, Professor Sibthorp was so kind to deliver me an exact drawing of the *Fasi-no-ki* in the Sherardian collection at Oxford, taken by the Rev. Mr. William Borlase, F. R. S. the title and synonym of which are both in the Hand-writing of Dr. Dillenius, as the Professor assures me. See TAB. XVIII.





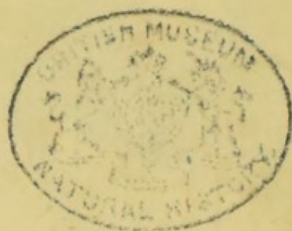
*Toxi-  
naki*

*Toxicaria dendron foliis alatis fructu Rhomboido M. Ellh. from Japan.*

*W. B. G. delin.  
J. M. Sc.*

*In Holo. sive America. Dron.*









Miller, Philip and Ellis, John. 1757. "Remarks upon the letter of Mr. John Ellis ... to Philip Carteret Webb : printed in the Philosophical Transactions, vol. xlix, part ii, p. 806." *Philosophical transactions of the Royal Society of London* v.50: pt.1 (1757), 430–456, plates 17–18.

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