De Naturalis Historia

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Introductions:

As someone devoted to the study of plants and nature, I know that I am bound for a life of venturing, in the fields of academics and in the wilds. My encounter with Naturalis Historia, by Pliny the Elder, was, in essence, purely coincidental. Yet, when I read book XII, the beginning chapter on botany, the beginning struck me as such:

"Animalium omnium quae nosci potuere naturae generatim membratimque ita se habent. restat ut neque ipsa anima carentia – quandoquidem nihil sine ea vivit – terra edita et inde eruta, dicantur ac nullum sileatur rerum naturae opus."

All the animals of nature that could be known are thus arranged, member by member, class by class. It remains that these things themselves are not without soul — since nothing lives without it, things brought forth and excavated from the earth, may they be mentioned of, and no work of nature be left out.

As an aspiring botanist, I am surrounded by my peers, who, after knowing my interests for botany (sometimes I have to painstakingly elaborate on what botany means), ask the common question – "How are plants interesting?" In no way do I blame them, since we are all subjected to this form of bias, and on other

subjects of academics or interest, I am no exception. However, this quote resonated with me particularly, as I do see how the plant kingdom, a collection of the most intricate and diverse creations in our world, tends to go unnoticed. This resonance resulted in this ambitious project of mine, which, starting at the end of my high school (Presuming, hopefully, that I am of good health and capabilities), would last through my entire college career, and end in a published work. The theme of the project was not complicated at all – to interpret and to discuss the observations on plants in Naturalis Historia in the context of modern-day research. Hence, I name it De Naturalis Historia – On Natural History.

This work would be arduous and would carve out a significant portion of my personal time and effort. However, there is indeed one reason for such work. In me, I say something that separated me from my predecessors, who have devoted great effort and conducted the interpretation and translation of Books XII to XVIII of Naturalis Historia with great professionalism – my interdisciplinary capabilities. I saw that, as both a student of botany and of classical Latin, I have the potential to act as a bridge, connecting the two realms of academics. The fruit of this connection would be this very work.

In the end, we are all people. My limits in capabilities in the

fields of history, Latin, and botany made mistakes inevitable. As I continue to develop and make progress, please do not hesitate to offer your constructive criticism. May we join our progress, which ensures no works of the creator would ever go unnoticed.

Conventions:

Original texts from Naturalis Historia would be italicized

Translations and names of literary works would be underlined

Interpretations would remain in normal font

Anything worth mentioning would be in footnotes (1) and, for the clarity of reading, be placed directly after the paragraph it is in

Citations would follow the APA format; proper names of plants would be italicized and capitalized according to academic conventions

The translations would mainly be based on the version by H. Rackham et.al., translated in 1952, with slight adaptations according to my understanding and comments written in footnotes

The ordering of the plants in this book may not necessarily be the order of plants in the original work, sometimes, passages are truncated for clarity and length.

(1): I was often annoyed by the habit of placing footnotes at the end of the book or at the end of the chapter, regardless of using an e-book or a physical copy.

—Book XII (Part I)—

Of the trees and spices from Near and Far East

1. Platanus

Sed quis non iure miretur arborem umbrae gratia tantum ex alieno petitam orbe? Platanus haec est, in mare Ionium Diomedis insula tenus eiusdem tumuli gratia primum invecta, inde in Siciliam transgressa atque inter primas donata Italiae et iam ad Morinos usque pervecta ac tributarium et detinens solum, ut gentes vectigal et pro umbra pendant.

"But who would not justly marvel at the tree, only for the sake of shade, brought from a foreign land? This is the Platanus, first imported from as far as the island of Diomedes in the Ionian Sea, for the sake of that same tomb, from there crossing into Sicily and are then among the first given to Italy and already conveyed all the way to the Morini, making the soil tributary and detained, so that nations pay tribute — and for shade."

The Platanus was certainly iconic at the time of Pliny the Elder (23 – 79 A.D.), and its cultural significance stretches before and beyond his time. The Platanus constituted a vital part of the literary scene of Phaedrus (Composed circa 370 B.C.) by Plato. Cicero

also alluded to the Platanus in De Oratore, in which Scaevola claimed that the shade of the Platanus he saw in Crassus's villa reminded him of the one in Phaedrus.

With this context in mind, it is not surprising that Pliny started book XII, the opening book of the discussion on plants, with Platanus. The use of the perfect passive participle "invecta" suggested that the Platanus was imported from the island of Diomedes (1), or the island of Pelagosa (2), some thirty miles northeast of the Italian peninsula of Gargano. Then, as a popular plant for shade and gardening, it spread through the Italian peninsula. Their purpose as a shade plant was also emphasized by Pliny, noting several famous Platanus in Athens and Lycia (3).

However, the first uncertainty in this text is certainly the interpretation of Platanus. In certain sources (H. Rackham et.al., 1952), Platanus was often translated as the Plane tree or Sycamore. Though they were a collection of members (Plane tree) or a member (Sycamore) of the very genus, since this word is already adopted in modern-day language to refer to the family of plants, in this very interpretation, it would remain so.

In retrospect, as we examine the history of Platanus, analysis of Plastid DNA (4) indicated several lineages originating in North America, Eastern Europe, and Mexico. The most likely subject

here is the Platanus orientalis, originating from Italy and the Mediterranean. They were imported from close proximity, according to Pliny the Elder, but as the sole surviving lineage of the family Platanaceae, it had indeed come a long way in terms of evolution.

(1): Not to be confused with the Diomedes Islands, or Gvozdev Islands, in the Bering Strait.

(2): Also known as the Croatian Island of Palagruza, with modern-day administration belonging to the Croatian municipality of Komiza.

(3): Modern-day Antalya of Southern Turkey

(4): DNA collected from the Chloroplasts and Nucleus, widely regarded as a better marker for evolution due to its stability from maternal inheritance

2. Citron

Malus Assyria, quam alii Medicam vocant, venenis medetur. folium eius est unedonis intercurrentibus spinis. pomum ipsum alias non manditur, odore praecellit foliorum quoque, qui transit in vestes una conditus arcetque animalium noxia. arbor ipsa omnibus horis pomifera est, aliis cadentibus, aliis maturescentibus, aliis vero subnascentibus. temptavere gentes transferre ad sese propter remedii praestantiam fictilibus in vasis, dato per cavernas radicibus spiramento, qualiter omnia transitura longius seri aptissime transferrique meminisse conveniet, ut semel quaeque dicantur. sed nisi apud Medos et in Perside nasci noluit. haec est cuius grana Parthorum proceres incoquere diximus esculentis commendandi halitus gratia. nec alia arbor laudatur in Medis.

The Assyrian apple, called by others the Median apple, heals of poisons. Its leaf is like that of the strawberry tree (1), but with thorns running among them. The fruit itself is otherwise not eaten, but it (here referring to the entire plant) excels in the odor of its leaves, which passes on to clothing when stored together, and drives harmful animals away. The tree itself bears fruit at all seasons, some of the apples falling while others are ripening and others just forming. Because of the great remedy various nations

have tried to acclimatize it in their own countries, importing it in earthenware pots provided with breathing holes for the roots, and similarly, as it will be convenient to record here so that each of my points may be mentioned only once, all plants that are to travel a specially long distance are planted as tightly as possible for transport (2); but it has refused to grow except in Media and Persia. The pips of this fruit, as aforementioned, are the ones that Parthian (3) nobles cook for the sake of pleasant breath. Nor is another tree praised among the Medes

The Malus Assyria, or the Assyrian apple, is a name that seems quite misleading. It is, however, easy to sever its connections to the sweet and succulent fruit that we call apple today. The reason lies in the second sentence of the paragraph, claiming that the Assyrian apple is not known for its fruit, but for the leaves that repel pests and for the seeds that cleanse the mouth of foul odor. Other explanations for the Assyrian apple, including quince and apricot, all lacked persuasiveness, since the former does not have leaves like those of the strawberry tree, and the latter is known for its fruit.

In our modern-day understanding, it is not hard to form the proper conclusion regarding the identity of the Assyrian apple – citron. In fact, its modern name – Citrus medica – came from its

origin in the empire of Media, a vast realm spanning modern day Armenia and Iran. The citron was not known for fruit or juice, unlike other members of the genus Citrus. For most plants, the mesocarp was known for being the softest and tastiest part of the fruit, with citron being the exception. The thick, white rind, originating from the mesocarp, is rich in aroma compounds and holds little juice.

It would be inaccurate to conclude that the citron is completely invalid for human consumption, since the rind is often used to add flavor or diced and marinated with sugar. For the Assyrians at that time, however, such dietary use is not documented. Allow me to make a bold argument here – one of the greatest virtues of humanity is that we always strive, through selective breeding or processing, to make a food more palatable.

(1): The Unedonis, as described in the original text, likely refers to the Strawberry tree, Arbutus unedo, named so due to the resemblance between the strawberry and the arbutus berry. The latter, however, has a somewhat tart and gritty taste, and is far less palatable compared to the real strawberry.

(2): This, presumably, is to prevent collisions that result from

loose packing, quite contrary to the common ideal, the tighter plants and their fruits are packed, the less likely they are to rupture or break, and as a result, spoil.

(3): A kingdom of the modern-day Khorasan region in Iran

3. Ebony

Lanigera Serum in mentione gentis eius narravimus, item Indiae arborum magnitudinem. unam e peculiaribus Indiae Vergilius celebravit hebenum, nusquam alibi nasci professus. Herodotus eam Aethiopiae intellegi maluit in tributi vicem regibus Persidis e materia eius centenas phalangas tertio quoque anno pensitasse Aethiopas cum auro et ebore prodendo.

We have already described (1) the wool-bearing trees of the Chinese in making mention of that race, and we have spoken of the large size of the trees in India. One of those peculiar to India, the ebony, is spoken of in glowing terms by Virgil, who states that it does not grow in any other country. Herodotus, however, considers it to belong Ethiopia, stating that the Ethiopians used to pay, along with tribute to the Kings of Persia, every three years a hundred bundles (2) of ebony, together with gold and ivory.

The word hebenus, widely translated into ebony, does not direct us to any specific plant, but indicates a wide range of black-brown hardwood of the Diospyros genus. Such confusion and inaccuracies are indeed understandable, since the works of Pliny the Elder existed long before the age of Linnaeus and proper, scientific binomial nomenclature. And that is the purpose of this

work: to combine the Roman understandings with modern-day developments, and to view them in tandem.

If we were to take Virgil's records into account, granted that these trees did originate from India, it is almost certain that Pliny is referencing a variant of the Diospyros ebenum, more commonly known as the Ceylon ebony. However, Herodotus's accounts attributing the ebony to Ethiopia are shrouded in further uncertainty. In modern-day understanding, D. mespiliformis, or the African ebony, was native to Ethiopia. However, unlike other members of the Diospyros, D. mespiliformis was known for its pharmaceutical values, with certain compounds from the leaves or trees utilized for medicine. Yet few sources highlight its use in artifacts or carving. And since Pliny did not explicitly mention the characteristics and usage of the ebony in question, its true identity may be permanently shrouded in obscurity.

Despite the ambiguous description of its origin, the value of the ebony did receive widespread acclaim. To non-English speakers, especially the ones fluent in Tamil, Sinhalese, and Chinese, the literal meaning of ebony in three respective languages (Kaluwara gas, Karungali, and Wu Mu, respectively) is black or dark wood. Properly carved and polished, ebony could be shaped into intricate artifacts of a rich, dark texture.

However, the use of ebony rarely extends beyond artifacts and ritual use. Due to its compact, dense nature, ebony does not float on water. Nor was it suitable for architecture, due to the sheer effort and costs required to cut into the wood and shape it accordingly. Whether ebony is suitable or has potential in other, unknown aspects, in the end, is up to the future to decide.

(1): See Book VI, Section 54

(2): Though other sources interpreted this as independent logs, I personally consider the word “bundle” to be a more appropriate translation of phalangas.

4. Cardamom

Simile his et nomine et frutice cardamomum, semine oblongo. metitur eodem modo in Arabia. quattuor eius genera: viridissimum ac pingue, acutis angulis contumax frianti – hoc maxime laudatur, proximum e rufo candicans, tertium brevius atque nigrius, peius tamen varium et facile tritu odorisque parvi, qui vero costo vicinus esse debet. hoc et apud Medos nascitur. pretium optimi in libras III.

Similar to these (1) both in name and shrub is Cardamom, with oblong seed. It is gathered in the same way (2) in Arabia. It has four variants: the green and oily one, with sharp corners, and resistant (hard) to crumble – this praised the highest, the next of a whitish red, the third shorter and nearly black, the most inferior, however, was mottled and easy to grind, releasing little smell – in a true sense similar to the costus (3). This also grows among the Medes. The highest price is three denarii per pound.

Though modern botanical studies attributed the origins of Cardamom to India and Indonesia, the accounts by Pliny the Elder listed it as a plant of Arabia. Quite contradictory to our understandings. However, Pliny the Elder drew parallels between the roles and means of harvest for Cardamom, amomum, andamomis, mentioning the other two indigenous spices of a

similar nature from India. The two were similar in smell and use, and are extremely expensive (48 denarii per pound). Pliny postulated that the latter may be an unripe or processed variant of the former (See Book XII, section 48). This comparison acted as an important testimony of the spread of the family Zingiberaceae (the ginger family).

Regardless, this origin suggests that Cardamom was cultivated en masse and plays a key role in trade and connections, evident in the documentation of price and means of harvest. The importance of Cardamom in modern-day Middle East certainly corroborates this fact. Cardamom is almost always present in the Middle Eastern coffee, known as Qahwa, a strong blend of coffee, sugar, and ground Cardamom powder. It is also common for Cardamom to be added, mostly in powdered form, to meat, rice, and desserts, a true testimony to human ingenuity in cuisines.

(1): See the section on the amomum and amomis

(2): Referring to the method of harvest for amomum and amomis, which is plucked from the roots and gently pressed into bundles when harvested

(3): A genus of the Costaceae family, originating from Africa

5. Cinnamon

Cinnamomo proxima gentilitas erat, ni prius Arabiae divitias indicare conveniret causasque quae cognomen illi felicis ac beatae dedere.

…

Ipse frutex duum cubitorum altitudine amplissimus palmique minimus, quattuor digitorum crassitudinis, statim a terra VI digitis surculosus, arido similis, cum viret, non odoratus, folio origani, siccitate gaudens, sterilior imbre, caeduae naturae. gignitur in planis quidem, sed densissimis in vepribus rubisque, difficilis collectu. metitur non nisi permiserit deus. Iovem hunc intellegunt aliqui, Assabinum illi vocant. XLIIII boum caprarumque et arietum extis impetratur venia caedendi, non tamen ut ante ortum solis aut post occasum liceat.

…

Praecipua bonitas virgultorum tenuissimis partibus ad longitudinem palmi, secunda proximitatis breviore mensura, atque ita ordine. vilissimum quod radicibus proximum, quoniam ibi minimum corticis, in quo summa gratia, eaque de causa praeferuntur cacumina, ubi plurimus torpet. ipsum vero lignum in

fastidio propter origani acrimoniam, xylocinnamomum vocatur. pretium ei in libras X.

The next people were those of cinnamon, were it not more fitting first to describe the wealth of Arabia and the causes which gave it the surname “Fortunate” and “Blessed”.

…

The shrub itself is two cubits at most and at least a hand’s span high, with a thickness of four digits, sending out shoots from the ground at six fingers above it. It appears dried; when green it has no fragrance, with a leaf like oregano, thriving in dryness, growing more barren with rain, and of a nature to be cut down and regrow.

…

The best quality of the shoots is found in the thinnest pieces, about a hand’s span in length; the second in those close but shorter, and so on in order. The poorest comes from what lies nearest the roots, because there the bark, where the greatest value lies, is the fewest. Hence the tops are preferred, where the bark is most plentiful, though inert. The wood itself is disliked due to its oregano-like sharpness, and is called xylocinnamomum. Its price is ten (denarii) per pound.

The importance of cinnamon cannot be overstated. From the

fragrant dishes of the Indian subcontinent to the wide variety of desserts and drinks involving powdered cinnamon in Europe and the United States, Cinnamon is the common and recurring theme. Sometimes adding a hint of flavor, and sometimes, with its strong flavor that some may even consider irritating, dominates the entire dish. It is evident that cinnamon bears equal importance in the minds of the Romans, since Pliny the Elder dedicated a significant portion of book 12 to the cultures, religious procedures, and trade related to cinnamon. Unfortunately, this forces me to truncate certain sections for the sake of workload and the length of the passage. However, I would outline certain points of interest described in the passage itself and the omitted sections.

Within the passage, cinnamon was described as a shrub, instead of the tree that is known to bear our modern variants of cinnamon. However, its value and importance increased along with scarcity. The way that the text constructs it easily causes the perception that cinnamon is only worth ten denarii a pound. However, the true price of a Roman pound of cinnamon could reach above a thousand denarii. It is indeed a cruel truth that, before globalization, items that seem cheap and accessible in modern times could easily consume the earnings of an entire family for a whole year.

6. Mangroves

Gentes supra dictas Persis attingit. Rubro mari, quod ibi Persicum vocavimus, longe in terram aestus agente, mira arborum natura. namque erosae sale, invectis derelictisque similes, sicco litore radicibus nudis polyporum modo amplexae steriles harenas spectantur. eaedem mari adveniente fluctibus pulsatae resistunt inmobiles; quin et pleno aestu operiuntur totae, adparetque rerum argumentis asperitate aquarum illas ali. magnitudo miranda est, species similis unedoni, pomum amygdalis extra, intus contortis nucleis.

The races above mentioned (1) border upon Persia. Along the Red Sea, which in that part we have called the Persian Gulf, where the tide drives far inland, there grows a marvelous kind of tree. Eroded by salt and similar to things cast ashore and abandoned, they stand upon the dry coast, they are seen with octopus-like bare roots clutching the barren sands. Similarly, when the sea comes in and beats upon them with its waves, they remain unmoved; indeed, at high tide they are wholly submerged, and it by the evidence of things they are nourished by the harsh waters themselves. Their size is remarkable; in form they resemble the strawberry tree, their fruit is outwardly like almonds, but within are twisted kernels.

Though Pliny the Elder did not explicitly mention the exact identity of the tree, with our current botanical knowledge, it is very easy to identify the species in question. After all, out of the diverse trees and shrubs of the world, there is only one type that could directly withstand the challenges of saltwater and directly grow in the sea – the Mangroves. This unique capability that even Pliny the Elder marvels at is born from millennia of evolution and specialization. Through designated glands that excrete absorbed sea salt back into the environment, mangroves were the only species that could take advantage of the ocean.

When discussing the flora of the Middle East, it is a common misconception that the entire Middle East is constituted of nothing but barren sands stretching into the limitless expanse. Unbeknownst to many, along the Gulf of Persia, extending into nearby Gulf countries like Saudi Arabia and Oman, lies a massive mangrove forest, constituting a major source of local revenue and a regulating service of the ecosystem. This was indeed an important and concrete proof that the reach of these mangrove forests in modern-day Iran existed two thousand years ago.

(1): Referring to the people in the country of Bactria, in modern-day Afghanistan

7. Cotton

Arborem vocant gossypinum, fertiliore etiam Tylo minore, quae distat X .Iuba circa fruticem lanugines esse tradit linteaque ea Indicis praestantiora, Arabiae autem arborem, ex qua vestes faciant, cynas vocari, folio palmae simili. sic Indos suae arbores vestiunt.

Their name for this tree is the Gossypinum; it is also more abundant on the small Tyros which is ten miles away. Juba(1) mentioned that this shrub has fibers poring round it, the fabric which it was made into was of finer quality than India. There is also an Arabian tree called the cynas, from which cloth is made, with a leaf similar to the palm. Similarly, the natives of India are provided with clothes by their own trees.

Upon mentioning the cotton, from a modern point of view, the most common image that comes to mind is extending fields of short, thin stalks of cotton plants. Yet this form of cotton was far from the primal variants that humans first utilized. Species like the Gossypium arboreum, colloquially known as tree cotton, have been the major source of cotton in ancient China, the Middle East, and India, with its history dating back thousands of years.

Though known and named as a tree, tree cotton was a plant of mere one or two meters tall. Like its shorter relative, tree cotton also produces bundles of fluff that act as cushion for its seeds, making it highly useful for the production of linen. The earliest evidence of use dates back to the Neolithic era, unearthed in modern-day Pakistan. It was also believed that the Indus River Valley and its surrounding regions were the first sites of domesticated tree cotton, though Pliny documented its abundance on Tyros, or modern-day Bahrain. It could be seen that, in the Roman era many products originating from Southeast Asia or modern-day India and Pakistan were transferred and domesticated in the Middle East, achieving widespread use. Hence, it is evident that the Middle East served as an important medium of communication and transport between Europe and Asia.

(1): Juba II of Mauretania (48BC – 23AD), ruler of Numidia and Mauretania, son-in-law of Mark Antony of the triumvirate. Juba II was known for his various works on history, nature, and geography. Aside from his reign, he was widely respected as a prolific scholar and screenwriter.

8. Myrrh

Murram in isdem silvis permixta arbore nasci tradidere aliqui, plures separatim, quippe multis locis Arabiae gignitur, ut apparebit in generibus. convehitur et ex insulis laudata, petuntque eam etiam ad Trogodytas Sabaei transitu maris. sativa quoque provenit, multum silvestri praelata. gaudet rastris atque ablaqueationibus, melior radice refrigerata.

Some have reported that myrrh grows in the same forests, mingled with another tree, but more say that it grows separately, since it is produced in many parts of Arabia, as will be shown in its varieties. It is also brought, in forms praised, from the islands, and the Sabaeans(1) carry it across the sea to the Troglodytes(2). There is also a cultivated variety, much preferred to the wild. It thrives under plowing and trenching, and is improved when its roots are cooled.

Myrrh, with its etymological root originating from the Hebrew word “Murr”, meaning bitter, is the dried resin of the plants belonging to the genus Commiphora, native to modern-day Yemen. Ancient Egyptians applied myrrh onto the deceased, similar to the camphor applied in ghusl (ritual cleaning) of Islamic funerals. And other records documented its pharmaceutical uses,

especially as an anti-inflammatory agent.

These small pieces of reddish-brown sap are harvested with care, and it is inferred from the passage that Arabic people had derived solutions for maximizing the quality and production of myrrh. Plowing and trenching, conventional methods for loosening the soil and improving irrigation, is natural for any crop. However, the deliberate cooling of the roots demonstrated that the Arabic people had knowledge of how the arid weather poses environmental stress, potentially reducing certain metabolic reactions and the quality of myrrh produced.

(1): An ancient group in Southern Arabia, known for active participation in spice trades

(2): The coast of modern-day Egypt, on the Red Sea

9. Fig Trees

Ficus ibi eximia pomo, se ipsa semper serens. vastis diffunditur ramis, quorum imi in terram adeo curvantur, ut annuo spatio infigantur novamque sibi progeniem faciant circa parentem in orbem quodam opere topiario. intra saepem eam aestivant pastores, opacam pariter et munitam vallo arboris, decora specie subter intuenti proculve fornicato ambitu. superiores eiusdem rami in excelsum emicant silvosa multitudine, vasto matris corpore, ut LX passus pleraque orbe colligant, umbra vero bina stadia operiant. foliorum latitudo peltae effigiem Amazonicae habet; ea causa fructum integens crescere prohibet. rarus . . .que nec fabae magnitudinem excedens, sed per folia solibus coctus praedulcis sapore et dignus miraculo arboris. gignitur circa Acesinen maxime amnem.

The, fig tree, remarkable in its fruit, always propagates itself. As it spreads its branches to an enormous width and the bottom ones bend down so heavily that within a year they root in the ground, producing offsprings, forming around the parent, as if some sort of topiary (1) art. Inside this bower the shepherd spends summer, shaded equally and protected by the fence of the tree - a very attractive sight when looked at from below or from a distance, with

its arched surroundings. Its higher branches, however, shoot upward to a great height from the main bulk of the mother tree, forming an extensive grove, so as in many cases to enclose a circle sixty paces across, while they cover with their shade a space of a two stadias (2). The broad leaves have the shape of an Amazonian pelta (3); to that end, it covers the fruit and prevents it from growing. The fruit is rare and not larger in size than a bean; but as it is ripened by the rays of the sun shining through the leaves it has an extremely sweet taste, and is worthy of the tree's marvel. This fig grows mostly in the neighborhood of the river Acesine (4).

Pliny the Elder was certainly not the first to mistake the figs as capable of self-propagating. Three hundred years ago, Aristotle had already made the observation that fig wasps, members of the family Agaonidae, reside in the wild caprifig and assist in the reproduction of figs. In this sense, Pliny the Elder's understanding was certainly incorrect. The rest of the passage does corroborate our current understanding. Due to the long history of fig cultivation, the description that figs require ample sunlight to ripen is no surprise for the Romans at the time of Pliny. The variant of the fig tree could be easily postulated, as Rackham et.al.'s translations correctly identified it as the Indian Banyan tree.

The Indian Banyan trees are among some of the trees with the

widest canopies on earth, and produce a small, reddish-brown fruit that is sweet and edible. Pliny labeled this tree as one of the species discovered along Alexander the Great's conquests, providing valuable information regarding Roman understanding of the flora of conquered territory.

(1): Garden/horticulture-related

10. Pala

Maior alia pomo et suavitate praecellentior, quo sapientes Indorum vivunt. folium alas avium imitatur, longitudine trium cubitorum, latitudine duum. fructum cortice emittit admirabilem suci dulcedine, ut uno quaternos satiet. arbori nomen palae, pomo arierae. plurima est in Sydracis, expeditionum Alexandri termino. est et alia similis huic, dulcior pomo, sed interaneorum valetudini infesta. edixerat Alexander ne quis agminis sui id pomum attingeret.

There is another tree, which the fruit is of larger and superior in sweetness; on it the sages of Indian live. The leaf of this tree resembles birds' wings, and has a length of three cubits(1) and width of two. The fruit grows out of the bark, and is remarkable for the sweetness of its juice; and one fruit is enough for four people. The tree is called the pala, and the fruit ariena. It is most frequent in the territory of the Sydracus (2), which was the farthest point reached by the expeditions of Alexander. There is also another tree resembling this one, the fruit of which is sweeter, but hostile to the health of the intestines. Alexander had commanded that no one in his army should touch that fruit.

In the translation by H. Rackham, the passage identified the

pala fruit as a variant of the fig (There is another fig the fruit of which is larger and superior in flavor…). This description is rather perplexing. Though sharing the common trait of thick, broad leaves, the pala in the passage has nothing in common with the fig. Primarily, the shape of the pala, in addition to its conspicuous flower, differs from the fig so greatly that it is nearly impossible that it would be characterized as a variant of the fig. In later translations, perhaps due to some inconsistencies, the pala was identified as the banana.

This identification, however, adds further perplexity. It could be confirmed through historical accounts that Alexander the Great was responsible for introducing the banana to the western world; however, the discrepancies between the banana and the pala in the passage were impossible to overlook. The banana, though occurring in bundles, would surely not satisfy four people with one fruit. Nor does it have a close-appearing relative that acts as a strong laxative. When analyzing this passage, an initial candidate crossed my mind. That is the Cassia fistula, colloquially known as the golden shower or purging cassia. As the name implies, the fruit of the Cassia, appearing in brown-black colored, thin, long bean-pods, is a powerful laxative. However, this possibility was quickly ruled out, since the pods differ in shape from the banana to

such a degree that it is impossible to confuse them.

In fact, among the indigenous species of the Punjab regions, there is only one candidate that satisfies such description – the Jackfruit (Artocarpus heterophyllus). The jackfruit was undoubtedly the largest tree-borne fruit on earth, weighing up to 42kg (92lbs). After removing the thick, hard skin, the interior of the fruit contains hundreds of seeds. The edible arils, or seed coats, may range from yellow to orange to red depending on the species, and could be easily torn into fibers, releasing an intensely sweet taste and strong aroma that is immediately associated with tropical fruits. The seed itself is hard and rich in starch, and is commonly cooked in boiling water or stewed with me.

However, the investigation of the relative of the jackfruit yielded an uncommon result. This “close-looking relative” may be another variant of the wild jackfruit, or even the jackfruit itself. Due to the high fiber content, the jackfruit is known to incite diarrhea in certain individuals. Though a mere hypothesis of mine, it may be possible that there was never a “evil jackfruit”, but only some unfortunate individuals who could not handle this novel discovery.

(1): ~120cm/3ft 11in

(2): A region in modern-day Pakistan and India, it can be inferred that it is in the modern region stretching from the Indus River to the modern-day Punjab state.

11. Pepper

Oliva Indiae sterilis praeterquam oleastri fructus. passim vero quae piper gignunt iunipiris nostris similes, quamquam in fronte Caucasi solibus opposita gigni tantum eas aliqui tradidere. semina a iunipiro distant parvulis siliquis, quales in phasiolis videmus. hae prius quam dehiscant decerptae tostaeque sole faciunt quod vocatur piper longum, paulatim vero dehiscentes maturitate ostendunt candidum piper, quod deinde tostum solibus colore rugisque mutatur.

Verum et his sua iniuria est, atque caeli intemperie carbunculant fiuntque semina cassa et inania, quod vocant bregma, sic Indorum lingua significante mortuum. hoc ex omni genere asperrimum est levissimumque et pallidum, gratius nigrum, lenius utroque candidum.

Non est huius arboris radix, ut aliqui existimavere, quod vocant zingiberi, alii vero zimpiberi, quamquam sapore simili. id enim in Arabia atque Trogodytica in villis nascitur, parva herba, radice candida. celeriter ea cariem sentit, quamvis in tanta amaritudine. pretium eius in libras VI. piper longum facillime adulteratur Alexandrino sinapi. emitur in libras XV, album VII, nigrum IV.

The olive is barren in India, except for the fruit of the wild olive. But it is true that everywhere there are trees which bear pepper, similar to our junipers, although some writers had reported that they grow only on the sun-facing slopes of the Caucasus. The seeds differ from those of the juniper by being enclosed in tiny pods, quite akin to we see in little beans. These [pods], before they split open, when plucked and roasted in the sun, produces long pepper (piper longum); but as they gradually ripen and burst open, they reveal white pepper (candidum piper), which later, when dried in the sun, changes in color and becomes wrinkled.

It is true that they suffer their own injury, for through the unwholesome climate they become scorched, and the seeds turn hollow and empty. This the Indians call "bregma", such in their Indian language, means dead. This is the harshest, lightest, and palest of all kinds; black pepper is more agreeable, and white pepper is milder than either.

It is not the root of this tree, as some others have thought, which they called zingiberi, and others zimpiberi (ginger)," though the taste is similar. For that (ginger) grows in Arabia and Trogodytica, in cultivated plots. That root quickly decays, despite being so very bitter. Its price is six (2) a pound. Long pepper, moreover, is most easily adulterated with Alexandrian mustard, and is sold for fifteen denarii per pound, white pepper for seven, and black for four.

The Roman understandings of pepper and its processing are highly accurate in some sense, yet in other senses differ from the modern process. Through different forms of processing, pepper could be split, as Pliny the Elder described, into different types. The long pepper, plucked before fully ripening, is the spiciest and the strongest of the three. This may refer to the actual process of selecting and processing for black pepper. The long pepper in modern-day understanding refers to the species Piper longum, which differs from the black and white pepper, or Piper nigrum. The selective process for white pepper is correct in our understanding, in which the pepper is harvested at ripeness, with the flesh removed and only the white seed remaining, providing a milder flavor.

What interests me more is the description of fraud present in the spice trade, outlining the use of Alexandrian mustard, presumably common mustard seeds, to substitute for the expensive long pepper, evident in the sense that the word adulteratur, which is passive tense and suggests that long pepper is the one being substituted. In modern life, fraud in the food and agricultural industry is quite common, yet the connection between modern fraud and the same activity occurring in the Roman era, documented and passed on, creates a sense of absurdity that no

words would suffice to describe.

(1): See (1), Myrrh

(2): Units in denarii, a small Roman coin that originated in the Roman Republic era, the Arabs adopted such currency and applied it to their own use.

12. Clove

Est etiamnum in India piperis granis simile quod vocatur caryophyllon, grandius fragiliusque. tradunt in indica loto id gigni. advehitur odoris gratia.

There is still in India something similar to peppercorns, which is called clove, larger and more fragile. They report that it is grown from the Indian lotus, and it is imported for its fragrance.

The Indian Lotus in the passage, known for its production of cloves, was certainly not the water-borne plant known from our perspective for its beauty and sacred roles in religion. It is evident that there was knowledge of the lotus, or at least its nomenclature, in Pliny's time. Such an association to the Indian lotus could be an act of misattribution, but could also be a deliberate naming, referring to the upward-facing groups of flower buds.

The association of the cloves with peppercorns is also natural. When considering the two in tandem, the dried, semi-spherical buds, connected to a brown stalk, are similar in color, size, and shape to the peppercorn. The modern-day scientific name, Eugenia caryophyllus, is also derived from the name caryophyllon, testifying to the lasting importance and influence of clover through

human history. As both were products imported from India with significant and lasting cultural significance, this grouping and association, from a Roman perspective, is natural, after all.

13. Lycion

Fert et spina piperis similitudinem praecipua amaritudine, foliis parvis densisque cypri modo, ramis trium cubitorum, cortice pallido, radice lata lignosaque, buxei coloris. hac in aqua cum semine excocta in aereo vase medicamentum fit, quod vocatur lycion.

There is also a thorn that resembles pepper, remarkable for its bitterness, with small thick leaves like the cypress, branches three cubits long, pale bark, and a broad woody root of a color like Buxus. When this plant, together with its seed, is boiled in water in a bronze vessel, a medicine called lycion, is produced.

The exact identity of Lycion, when analyzed from the etymological perspective, suggests a correlation with the Greek word “lycion(1)”, deriving from the region Lycia, in modern-day Anatolia, Turkey. Though in modern days we associate a derivative of this word – Lycium, with members of the Solanaceae family, namely the Goji berry, the description deviates from the goji berry so much that I found such an association unlikely. The passage did not mention the goji berry itself, which is quite impossible due to its pharmaceutical uses. The new sprouts of the goji berry, in traditional Chinese cuisine, could be boiled with meat

in a soup. However, it is unlikely that boiling goji berries with their stems in water produces anything of significant pharmaceutical value.

It was presumed that lycion refers to a species known as dyer's buckthorn, a member of the Rhamnaceae family. Members of the Rhamnaceae, including the dyer's buckthorn, in general, are not associated with medical uses, as their name implies. Though certain accounts have mentioned its use as a purgative. Well, why am I not surprised…

(1): It was presumed that lycium, misinterpreted as a derivative of the word "Lycos", meaning wolf in Greek. Hence giving goji berry the alternative name "wolfberry"

14. Mastic

Ergo transit in mastichen, quae et ex alia spina fit in India itemque in Arabia; lainam vocant. sed mastiche quoque gemina est, quoniam et in Asia Graeciaque reperitur herba a radice folia emittens et carduum similem malo, seminis plenum ac lacrimae, quae reumpit incisa parte summa, vix ut dinosci possit a mastiche vera. nec non et ttia in Ponto est, bitumini similior, laudatissima autem Chia candida, cuius pretium in libras X, nigrae vero II. Chia e lentisco traditur gigni cummium modo. adulteratur ut tura resina.

So, we come to mastic, which is also obtained from another thorny plant in India and likewise in Arabia, where it is called laina. Yet mastic itself has variants, for it is also found in Asia and Greece: a plant that shoots leaves from its root and bears a thistle-like fruit, full of seed and of a tear that releases when the upper part is cut, so it could scarcely be distinguished. In Pontus, too, there is a variety more like bitumen; but the most prized is the white Chian mastic, valued at ten denarii per pound, while the black kind brings only two. The Chian mastic is said to be produced from the lentisk tree, like gum. Mastic, like frankincense, is adulterated with resin.

It is evident that when composing the chapter on Mastic, Pliny

the Elder has based some of the observations on mastic from works by Hippocrates, who was the first to refer to mastic as tears of Chios, alluding to the Greek island where it was produced in large amounts. Mastic, a transparent liquid with a texture similar to glue, is released from an incision made on the bark of the tree. When hanging down, the transparent color and teardrop-shaped resin closely resemble a teardrop, hence the name.

Starting from the Greek era, mastic was known for its value as a spice, a medicine, and a breath refreshener. It is also an essential component in Roman flavored wines, along with honey. Mastic was of great importance in both the Roman era and in the later Ottoman rule, where it retained its original functions. As time progresses, mastic was used as a varnish and medium in oil painting, creating layers of colors that could resist the scrape of a knife, in some sense allowing art to outlive the creator. After all, Ars longa, vita brevis.

15. Sleeping trees

Est et alia similis, foliosior tamen roseique floris, quem noctu conprimens aperire incipit solis exortu, meridie expandit; inclae dormire eum dicunt. fert eadem insula et palmas oleasque ac vites et cum reliquo pomorum genere ficos. nulli arborum folia ibdecidunt, igaturque gelidis fontibus et imbres accipit.

There is another similar [tree], leafier and with rose-like flowers, Which closes at night and opens at sunrise. At midday it is fully extended; the inhabitants said that it sleeps. The same island also produces palms, olives, and grapes, and along with other fruit trees, figs. No trees shed its leaves there, and receives cold springs and rainfall.

The passage, although short in length, it's perhaps one of the earliest scientific documentations on the plant behavior of nyctinasty – the response of plants according to stimuli according to the circadian rhythm. In other terms, as the passage describes – plants sleeping. This corresponded with the description of Cold Springs and rainfall, since the presumed function for nyctinasty is to minimize surface area and reduce heat loss.

Placing geographical contexts into consideration, there are two

plants of greatest likelihood – the Chinese hibiscus, or Hibiscus × rosa-sinensis(1), or the Persian silk tree Albizia julibrissin, a member of the Fabaceae. Through comprehensive analysis, though I am not fully certain, I would consider the Persian silk tree to be a more possible variant. When analyzed in terms of flower morphology, the structure of the Chinese hibiscus adheres the closest to a rose-like flower. However, the Chinese hibiscus has never been found outside of cultivation, meaning that the existence of a natural variant in the Times when humans mainly domesticated plants for functional uses instead of horticulture is rather unlikely. On the contrary, the Persian silk tree, though not bearing a rose-like flower, has a far larger likelihood of being available for documentation. Perhaps we could attribute such a discrepancy to the distortion and loss of information as it is conveyed through multiple languages and across countless miles.

(1): This indicates a hybrid cultigen, or a human-created variation for cultivation. Interestingly, rosa-sinensis, meaning Chinese rose, is an apparent misfit since it is neither from China nor is it related to roses.