“An Inestimable Blessing”? 
Clements Markham, Richard Spruce and the Andean Cinchona Missions (1859-1861)

Image 1: A botanical drawing of *Cinchona officinalis*

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Introduction

In the 19th century, the British empire relied on plant materials to feed their people, build fleets, fill their coffers, and heal the sick. Organizations such as the Royal Botanical Gardens at Kew worked both inside and outside of the empire to discover and leverage new kinds of plants to their advantage. Historians have placed these activities under the umbrella of economic botany, a field defined by botanist Gerald E. Wickens as “the study of plants, fungi, algae and bacteria that directly or indirectly, positively or adversely affect man, his livestock, and the maintenance of the environment.” The effects of these organisms “may be domestic, commercial, environmental, or purely aesthetic; their use may belong to the past, the present or the future.”

1 Kew was the central location for economic botany. According to Lucile Brockway, Kew Gardens benefitted the empire “through its research, its dissemination of scientific information, and its practical activities, which included smuggling.” 2 While the many botanists there, or collecting on behalf of the gardens, worked in the pursuit of science, they were not free from the trappings of empire. Their work often directly forwarded imperial aims. 3

The Kew cinchona missions from 1859 to 1861 were a textbook example of economic botany in the British empire. The cinchona missions centered on collections of the seeds and saplings of trees from the plant genus Cinchona. Cinchona trees, also known as the Peruvian bark, were not desired for their beauty. The Peruvian bark was one of the most coveted plants on the earth because of its outstanding febrifuge qualities. When ingested, the grounded bark of the

cinchona tree acted as a miraculous anti-malarial drug. It did not instantly cure malaria, but patients who took it had much higher chances of survival. The active agent in the bark is the alkaloid quinine, and synthetic derivatives of the compound still treat malaria in the modern day.\textsuperscript{4}

As of 1860, only the Andean states of South America had access to this powerful resource.\textsuperscript{5} It was harvested in the forest by professional bark strippers called \textit{cascarilleros} before export to the foreign market. Any empire that wanted quinine had to barter with the people of South America for supply. The British were not too fond of this arrangement, so they decided to start a plantation of their own in the Nilgiri hills of India. To transport cinchona plant material from the Andes to India for plantation, they contracted the famed Clements Markham (1830-1916), explorer of Antarctica and South America, to superintend a number of missions to retrieve plants from the Andes and send them to India by steamer. Markham, in turn, recruited several well-known botanists including Richard Spruce (1817-1893), the preeminent bryologist of the Amazon rainforest, along with two Kew gardeners, Robert Cross (1836-1911) and John Weir (unknown-1898,) to aid in the collection effort. Pairing up, Markham traveled with Weir, and Spruce collected cinchona with Cross. There was a third expedition at the same time by a Mr. Prittchet. The venture, however, had very little documentation, and he made only a small contribution of plants to the total.\textsuperscript{6}

Both Spruce and Markham’s expeditions went to a different region of the Andes and collected various species from the cinchona genus. Collection from different species of closely

related trees was essential; all types of cinchona were necessary to gather because some species and even varieties of the trees contained more quinine than others. They did not know with certainty which tree was best, but for the most part, the botanists prioritized *Cinchona succirubra*, also known as the Red bark, because they believed it had the highest quinine content.  

By collecting a wide assortment of species, they could fully sample the trees of the genus and select the best candidate for plantation.

Splitting up the groups of botanists and separating the destinations for the expeditions also added protection from local resistance. Many of the Andean states were quite protective of their resources, and some of the collection methods the botanists employed were blatantly illegal. Bolivia, for example, was well known for its protective grasp on their natural resources. The legal protection of cinchona was in place because British acquisition of cinchona trees worked towards the greater benefit of the British Empire and the ultimate deficit of the *cascarilleros* who relied on cinchona export for their livelihoods. The South American monopoly defended the *cascarilleros*, and European acquisition of the plant would effectively press them out of business.

Protective governments were not the only obstacle for the botanists to overcome. Cinchona trees were located inside of isolated and thick regions of the rainforest which were not very well understood by Europeans at the time. While the Kew men were the best in their line of work, this task was a tall order. They had no supply chains, very little knowledge about the

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7 Markham’s belief that *Cinchona succirubra* contained the most quinine turned out to be false years later when *Cinchona ledgeriana* proved to have a much higher quinine concentration. This is covered in Drayton, *Nature’s Government*, 210.

cinchona tree’s locations and growth habits, and no organized transportation. Despite these handicaps, the botanists prevailed. They did so by using the tools of the British informal empire.

British informal empire is the area outside of literal British territory but still subject to imperial influence. The countries of Peru and Ecuador fell within this influence. The power of the informal empire was often exercised using the tools of trade and diplomacy. These implements allowed the British to coerce foreign countries into compliance with imperial goals.9

Within this imperial framework, people from outside the formal empire often emerged as intermediaries or go-betweens, serving to broker relations between the agents and locals. In the history of science and exploration, for example, travelers have often used guides and laborers as intermediaries.10 Intermediaries could also be landowners, politicians, or brokers whose social connections lent aid.11

As was typical of travel literature of the time, especially dealing with natural history collections and surveys, the contributions of these individuals often did not make it into the accounts or histories of their projects. For example, Alfred Russel Wallace had a servant named “Ali”, and Charles Darwin himself relied on an abundant number of assistants and guides.12 In a

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similar way, the numerous assistants and intermediaries of the cinchona expeditions who enabled the work of the botanists came to resemble what Steven Shapin has termed “the invisible technician.” These were individuals working alongside a scientist, usually in a laboratory setting, who received little or no credit for their contributions to the lab’s discoveries. In the case of the cinchona missions, the laboratory was a dense forest instead of a sterile workbench. The field site in botany functioned as a kind of natural laboratory. In this context, science was often conducted collaboratively involving a number of workers who have largely been written out of the stories of “discovery” frequently accompanying exploring expeditions.

This paper aims to bring to relief some of the unseen labor of these assistants, guides, and intermediaries neglected in most historical accounts of the cinchona missions by analyzing the diaries and books of Markham and Spruce. I hope to understand the specific nature of the assistance that they received, and also the different ways in which they conducted their research and saw the contributions of their assistants in offering local knowledge. I also hope to explore the attitudes of these two well-known actors and the extent to which they played their part as agents of empire. In this way, I hope to eventually expose the social scaffolding that enabled the work of the cinchona missions and the many other such exploring expeditions that enabled the reach of the British Empire, informal or otherwise.
Ch 1. Markham’s Mission

Before Clements R. Markham received his appointment to the cinchona missions from the Secretary of British India, he was already a well-established explorer of South America. He completed expeditions to cinchona-rich regions of the Andes and claimed to have acquaintance with both Spanish and Quichua, the local languages.\(^{14}\) As a prolific writer, he penned multiple books on cinchona. Markham chronicled not only his personal contributions to the project but also those of his fellow Kew Botanists. He went into great detail over the daily affairs of his work as well as his thought process. He effused enthusiasm for his appointment and spoke repeatedly about the importance and significance of the mission claiming that the British plantation of cinchona would act as a boon for the people of India. In the introduction of one of his books on the cinchona expeditions written in 1880, *Peruvian Bark*, he claimed that the products of the expedition “conferred an inestimable blessing on the people of India”.\(^{15}\) He leveraged this claim frequently throughout his writings, but the cinchona missions did not turn out to have much of a positive effect for most people in India in the end. It became a tool of empire.\(^{16}\) The medication, quinine, was mostly reserved for the British soldiers of the region, and there is little evidence that the intent of the expeditions was to bring cinchona to the common people of India. Lucile Brockway argued that the cinchona was primarily used to allow the British to survive India in greater numbers and attract new settlers, especially women.\(^{17}\) It is not clear whether Markham knew about the reality of quinine distribution in India or that he was


\(^{15}\) Ibid., v.


simply naïve to the government’s true intentions. Ultimately, it is not important whether or not Markham knew the government’s intentions for quinine. What matters is that Markham was an agent of empire collecting materials that would increase imperial power.

The Empire decided that it needed a stable source of cinchona because of a supposed crisis. Markham claimed, along with the European scientific consensus of the time, the overharvesting of quinine in the forest by *cascarilleros* could lead to periodic shortages of the plant as overharvesting would be followed by years of regrowth. He framed Kew’s efforts as a plan to ensure a constant and sustainable supply of quinine to the world.\(^1\) While it is understandable that Europeans would think that overharvesting was a danger to the plants, they were not giving the South Americans enough credit. The difficulty for Europeans to find the trees was often cited as proof of scarcity, but economic data from the coming years does not support their theory. In 1860, 2 million pounds of cinchona were exported from South America, and in 1881 they exported 19.84 million pounds of cinchona. 1881 was just before European plantations posed a significant competitive threat to Andean trade, so the data suggests that the *cascarilleros* provided plenty of cinchona to the world and even increased output significantly over the years.\(^2\) Plantation made quinine more accessible to the European powers, but it was not essential for the survival of cinchona. The extinction narrative was most likely either due to poor European understanding of the Andean domestic trade or pretext for acquisition of the plant by imperial powers.

Markham’s rationale for the cinchona missions reveals his bias as a British man and an unreliable narrator. All of the records of the cinchona missions were written by British men for

\(^1\) Markham, *Peruvian Bark*, 71.
British audiences. As the subtitle of Markham’s *Peruvian Bark*, “A popular account of the introduction of chinchona cultivation into British India”, makes obvious, this work was meant to give a pleasing and positive depiction of British operations in the Andes and outcomes of their work. This intention is important to note because bias will affect how Markham depicted the intermediaries who helped him along his expedition. While he portrays a relationship of benevolence and cooperation between his assistants and himself, he also falls into the traps of the imperialist mindset and marginalizes them. The moments where Markham and his aides find themselves in disagreement define his true outlook on intermediaries and derail his attempt to weave a narrative where native and imperial needs intersect.

On March 2, 1860, Clements Markham landed at the port of Islay in Peru. Arid salty air entered his lungs, and the vista of the rocky coast and desert beyond expanded into the horizon before him. He aimed to cross the sandy wastes and ascend the slopes of the Andes to reach the lush forests of Tambopata beyond. The man would not bear this journey alone; he brought a Kew Gardener named Dr. Weir. Weir accompanied Markham throughout most of the journey. As the only Englishman with Markham on the expedition, Weir carried heavy responsibility which included packaging plants in Wardian cases in order to transport them long distances. Markham’s wife came to South America, but she did not participate in their trek. She remained in Arequipa “to conduct correspondence and organize the work”. While Mrs. Markham is scarcely mentioned in his accounts, it is interesting and important to credit her for her part in the missions as the only woman Markham mentioned possessing a significant role. Mrs. Markham helped her husband by providing free labor. Markham had limited resources and a tight budget;

20 Markham, *Travels in Peru and India*, 68-69.
21 Ibid., 67.
22 Markham, *Peruvian Bark*, 95.
he brought people who he trusted to do the work cheaply. This proved important later in the expedition when the Peruvians learned of his intentions and gradually became less hospitable.

Early, Markham noted that the local officials and common people welcomed him with open arms, often lodging him or even extending invitations to parties.\(^\text{23}\) He appreciated the special treatment and was reliant on goodwill of the Peruvian people in order to progress. One vital resource the locals provided to him was mules. The animals were necessary for him to traverse the country, but they also introduced vexing logistical challenges. Markham described three possible methods to obtain mules for travel “one by purchasing all the required mules and employing servants; the second, by hiring an arriero or muleteer, who supplies the mules at so much for the journey; and the third, by using the wretched animals which are provided at the post-houses”.\(^\text{24}\) Evaluating these options, he purchased a mule for himself and rented the rest from the post houses to save money. His remark that the post-house mules were “wretched animals” was almost a piece of comedic foreshadowing because the mules endlessly caused trouble kicking into the air and running away. Mr. Weir and Markham on several occasions had to run into the forest and attempt to corner them for the better part of a day.\(^\text{25}\) The mule troubles demonstrated that Markham was out of his natural element. The experience he had from his past did not compensate for the myriad unforeseen problems the environment could throw at him. As he progressed deeper and deeper into the forest, he hired more local aides to accompany him for the more complicated treks of the journey and to compensate for his inexperience. Despite the mule difficulties, the early stages of the ordeal were relatively calm as communities warmly welcomed Markham as he passed through.

\(^{23}\) Markham, *Travels in Peru and India*, 194.
\(^{24}\) Ibid., 180.
\(^{25}\) Ibid., 180.
History had conditioned many South Americans to distrust colonialists from faraway lands, and some believed Markham’s presence posed a potential threat to their sovereignty. The Andean and Amazonian states had two significant plant monopolies, cinchona and rubber. European nations reliant on these raw materials eventually saw the value in removing the plants from their natural habitat to begin plantations of their own. When the South American monopolies were eventually broken, a large segment of their economy disappeared into thin air as seen with the end of the rubber boom in the early 20th century. Well aware of this threat, the South American states were often aggressively protective of their lucrative plant economies. Markham knew this was the biggest obstacle in his way before he even started the missions. Originally, he oscillated between visiting Bolivia and Peru for his collections. He ultimately decided upon Peru because the Bolivians were notoriously protective of their plants and would likely impede his travel in the area in anticipation of a possible military conflict with Peru. In Markham’s discussion of this topic, some of his imperialist inclinations seeped through. With enormous condescension, he characterized the South American desire to protect their economy as childish and ignorant later referring to resistance as from one alcalde (mayor) as “misguided and lamentable ignorance of the true interests of his country.” Despite his belief that the Peruvians would not become “jealous,” he avoided mentioning his journey’s purpose while travelling the country. Everything ran without a hitch until he met a “red faced man” at Acco-Kunka.

The “red faced man” was a former colonel named Don Manuel Martel. Martel claimed to face political persecution and have lost money in the cinchona trade. More interestingly, Martel

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28 Markham, *Travels in Peru and India*, 276.
29 Ibid., 216.
talked about M. Hasskarl, a Dutchman, who tried to collect cinchona trees from the region in 1854. Martel was not sympathetic to Hasskarl’s mission and warned “if he, or any one else, ever again attempted to take cascarilla (chinchona) plants out of the country, he would stir up the people to seize them and cut their feet off.” Markham had to move fast before Martel could mobilize local resistance.

Markham’s encounter with Martel revealed that the power of British reputation had limits. While Markham’s status bought him lodging at the homes of local leaders among a number of other privileges, some Peruvians revoked their hospitality when they learnt his true aims. As more took objection to his work, Markham’s life became much harder. A lack of a political intermediary or local ally left Markham vulnerable in a rainforest far from British eyes and ears. The British empire meant different things to different people in this time and place, and some people were not afraid to get in its way. There were “red faced” men all over the continent unwilling to yield to the requests of a foreign power, and they did not give in easily. For the following weeks while Markham collected cinchona samples in Tambopata, Martel wrote letters to the local leaders of the surrounding villages alerting them to Markham’s intentions in the region.

Markham’s party expanded before he descended into the cinchona country of Tambopata. He hired a mestizo man named Pablo Servalos and three Indians named Andres Vilca, Julian Ccuri, and Santos Quispi to act as porters and conduct the manual labor. The botanists needed the labor because they had more baggage than they could carry alone. When referring to his porters, he separated them by race and most of the time referred to Andres, Julian, and Santos as

30 Ibid., 216-217.
31 Ibid., 275.
32 Ibid., 225.
“Indians” while calling Pablo by name. This was despite the fact that they were all essentially
doing the same job. Markham had an interesting perspective on indigenous peoples as he said
“[The indigenous people] have many vices engendered by centuries of oppression and evil
example, from which their ancestors were probably free: they are fond of chicha and aguardiente,
and are very suspicious” and “on the other hand, they are intelligent, patient, obedient, loving
amongst each other”.\(^{33}\) He often reiterated these stereotypes throughout his writing. Markham
always made a point of demarking the race of the individuals he encountered on the trail.
Understanding his racial schemas helps to infer the logic behind some of his future actions and
assumptions.

Coca was an aspect of South Peruvian society to which Markham devoted an entire
chapter of his writings. The coca plant *Erythroxylon coca* is a shrub that grows in the warm
valleys of the Andes. The leaves of the plant contain the psychoactive alkaloid cocaine which is
a powerful stimulant that allows the user to endure more fatigue over a long period of time
without as much food. Traditionally, indigenous peoples chewed the leaf to help them complete
long treks through the mountains and forests. Markham often looked down upon their use of
drugs and alcohol, but he believed that coca was an invaluable tool to survive the environment
partaking in moderation himself.\(^{34}\) He said that with coca “I found that I could endure long
abstinence from food with less inconvenience than I should otherwise have felt, and it enabled
me to ascend precipitous mountain-sides with a feeling of lightness and elasticity, and without
losing breath”. Markham recommended coca to any tourist travelling the mountains.\(^{35}\)

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\(^{33}\) Ibid., 178.

\(^{34}\) Ibid., 132-139.

\(^{35}\) Ibid., 138.
Markham emphasized the importance of coca because he needed to provide it for his workers to keep them loyal. The whole journey they chewed coca leaves to make up for the shortages of food and difficult labor. While sparse on supplies and food, he sent Andres to their supplier, a man named Gironda, to retrieve both food and coca leaves. They were of almost equal importance to his indigenous workers. The British developed an understanding of effective bartering out of strong necessity. Markham kept careful attention to identify the commodities that allowed him to goad foreigners into working past their normal limits.

Closing in on the cinchona rich region of Caravaya inside of the Tambopata valley, Markham met his supplier, Gironda. Don Juan de la Cruz Gironda was an old Bolivian man who owned a remote farm along the Tambopata river. He had several farmhands and mostly produced sugar beer with his agricultural product. At this point deep in the forest and far from most settlements, Gironda became Markham’s singular source of food and supplies. Markham began collecting cinchona in this area, and Gironda’s food became the party’s only lifeline to sustenance. Unable to forage for himself and without any kind of sophisticated supply chain, Markham bartered with the locals to earn his dinner.

Markham made another friend in the Tambopata valley, a cascarrillero named Mariano Martinez. Martinez was the final piece of the expedition’s social scaffolding. Compared to the other members of the troupe, Martinez possessed unrivaled knowledge of cinchona trees and the forest ecosystem. He also aided another British naturalist named Dr. Weddell when he visited the valley of Tambopata in 1846. Markham often mentions descriptions of the plants of the area

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36 Ibid., 175.
37 Ibid., 244.
38 Ibid., 263.
39 Ibid., 247.
provided to him by Dr. Weddell who was guided by Martinez. The cascarillero’s relationship with the men of the Kew Gardens already had a legacy.\(^{40}\) Martinez did not only guide the botanists through the forest, the bark stripper saved Markham from unfamiliar hazards in the forest. As with the mule problem earlier, Markham was never quite able to fully understand the forest. In one instance, he was about to touch a nasty hornet’s nest attached to a fern-frond when Martinez “with great dexterity, hurled the plants down the precipice, before the savage creatures were aware of their danger”.\(^{41}\) When Markham stumbled onto trouble or unfamiliar territory, Martinez was there to save him. The cascarillero compensated for Markham’s lack of knowledge both in terms of safety and science. According to Markham he could “distinguish these treasures [cinchona plants], amidst the close entanglement of the undergrowth, in the dense forests”, and in addition to that, he possessed “a most complete and thorough knowledge of all forest-lore, and was acquainted with the native name of almost every plant, and with the uses to which they were or might be applied”.\(^{42}\) Martinez was an irreplaceable resource for the expedition. Kew could not have possibly provided anyone with as much experience as him from Britain, and he worked very effectively with the botanists. Venturing deep into the Tambopata region under Martinez’s tutelage, Markham’s expedition collected 529 plants between May 1\(^{st}\) and May 14\(^{th}\), 1860.\(^{43}\)

According to Markham on May 11\(^{th}\), 1860 “Gironda received an ominous letter from Don Jose Mariano Bobadilla, the Alcalde Municipal of Quiaca, ordering him to prevent me from taking away a single plant; to arrest both myself and the person who had acted as my guide; and

\(^{40}\) Ibid., 254.
\(^{41}\) Ibid., 251.
\(^{42}\) Ibid., 250.
\(^{43}\) Ibid., 274.
to send us to Quiaca”.\textsuperscript{44} Markham was no longer welcome in the forests of Peru. He decried this action, calling it a violation of the Peruvian Constitution of 1856 and against the best interests of Peru. Despite his legal objections, he knew that he had to ship the plants out of the country as soon as possible. Gironda was shaken by the letter and suggested destroying most of the plants out of fear that “the finger of scorn would be pointed at him, as the man who had allowed the stranger to injure his countrymen”.\textsuperscript{45} Markham’s façade dropped; he found this unacceptable and threatened with the use of force in defense of the plant material. The cinchona mattered but his faithful agents, the people who had enabled their collection and indeed Markham’s very survival, took a backseat. Though he eventually offered them protection before leaving the region by petitioning authorities, he could not actually provide a guarantee of safety.\textsuperscript{46}

If Gironda’s letter was a signal, the cavalry was not far behind; The next day Markham ran into Martel’s son and a party of locals who, according to a local he spoke to previously, were there to arrest him and seize the collection of plants. As Markham passed through some scrubland, they met each other on the trail face to face. According to Markham “The young Martel asked the Indians in Quichua how they dared to carry the plants, and called after them that they would be seized at Sandia; but he was civil to me, and we continued our journey peaceably, though full of apprehensions at the turn affairs might take on our arrival at Sandia”.\textsuperscript{47} Markham’s peaceful passage was quite surprising. Martel’s son had him in his clutches but decided to let him go. Three potential reasons could explain this turn of events. First as Markham proposed, he was waiting for the caravan to pass through the town of Sandia to apprehend the botanists. Second, he did not have the legal authority within Peru to detain Markham, or third, 

\textsuperscript{44} Ibid., 275.
\textsuperscript{45} Ibid., 275-276.
\textsuperscript{46} Ibid., 276
\textsuperscript{47} Ibid., 276-277.
Markham’s status as a British citizen gave the son hesitation due to the possible consequences of arresting a member of the empire. As Markham said, Martel’s son derided his workers while remaining civil to the botanist. There is no way to find a definitive explanation, but it is odd that Martel’s son would ride out into the forest but not act. Perhaps if his hands were legally tied as Markham argued, he saw his singular option as scare tactics. It is worth emphasizing the threat Martel’s son gave to the 3 indigenous men. They lacked the political privilege the British men possessed, and after they left his company, they would find themselves at the whims of their disgruntled countrymen. Assistants of other British botanists have faced death over cinchona, and it is not unlikely that the same fate could have befallen Markham’s porters, guides, and suppliers.48 Not only did Markham’s intermediaries bear the load of his baggage but also the potential consequences of his actions.

Markham justified his actions in the region by claiming that since the Peruvians no longer exported much cinchona, it was not illegal for him to collect it, and in addition, he argued that British possession of quinine would benefit the Peruvian people. Interestingly, however, in the footnotes of his work Markham included an excerpt from a local newspaper called La Balsa de Arequipa that contradicted his claims. Part of it translates as follows.

“I want it to be known in that city that the foreigners have been exporting [printed as esportar, but likely a misprint of exportar meaning to export] these husk plants, which is known to be prohibited: an Englishman has just shipped a multitude of them to India on official commission from his Government. I do not know how this is tolerated, defrauding one of our best and most exclusive branches of our wealth like this”.49

48 Charles Ledger, an Englishman who sold cinchona plants to the Dutch, worked with a Bolivian named Manuel Incra Manami. When the Bolivian authorities found out he was selling cinchona seeds to a European, they imprisoned him, seized his property, and beat him to death. Markham, Peruvian Bark, 215.
49 Markham, Travels in Peru and India, 285.
This article offered a rebuttal to many of Markham’s claims. The Peruvian perspective is a rare insight given the source material. According to the journalist, British export of cinchona plants was prohibited, and additionally, he named it an incredibly valuable national resource. Peruvians knew the plant was important and wanted to preserve its exclusivity. Given this perspective, Markham’s expedition was at best an affront against the desires of Peruvians and at worst blatantly illegal.

In spite of mobilized resistance against the mission, Markham was able to find help from Peruvians on his journey back to the port of Islay. He arrived at the town of Sandia, paid the indigenous porters, and bid them farewell. Moving to hire some pack mules to carry the bundles of plants to port however, he met a roadblock. Nobody would rent him mules except to ride to the town of Crucero where Martel resided. He considered carrying all the bundles on the mule he purchased but good luck befell him. A man named Don Manuel Mena, whom Markham met on the first half of his journey, agreed to provide mules in a trade for his gun. Markham eagerly accepted the offer and embarked on the back roads to the port of Islay while sending Weir and Pablo to Crucero as a diversion. Time was of the essence because the stress of travel and the cold of the Andes were very hard on the plants. If Markham did not send them off to sea quickly enough, most would perish.\footnote{Ibid., 278-279.}

Markham’s mule provider was named Angelino Paco. Paco served as an alcalde in 1859 and acted as Markham’s final guide on the last leg of his journey.\footnote{Ibid., 279.} It is worth noting that Paco and Mena were willing to help Markham while the rest of the region turned against them. Perhaps it was for personal gain, or maybe they disagreed with the consensus that British
possession of cinchona would hurt Peru. Either way, their actions demonstrated the heterogeneity of populations and personal motives. Agents of empire like Markham could capitalize on these differences in opinion to gain allies in a time of need. Paco provided Markham with mules and food but unfortunately was not a very good guide. The mules were likely of post-house quality because they fled often and attempted to roll around on the ground on multiple occasions. This wasted valuable time and slowed Markham’s approach to Islay.52

Arriving to Islay, Markham hit one final obstacle. Weir packaged all the plants for shipment, but the Superintendent of the custom house of Islay said Markham needed permission from the Minister of Finance and Commerce at Lima to ship out the Cinchona plants. Markham thought this was due to the ruckus Martel raised with his letters. It took 20 days, but Markham obtained permission from the Minister of Finance. He provided no detail besides that he gained it “after much difficulty”.53 The minister’s permission added another intriguing wrinkle to the narrative of the mission’s legality. Markham was able to gain permission from one of the higher authorities of Peru despite clear disapproval from many in the countryside. Markham noted the dangers posed by the countryside discontent and cancelled his second expedition to collect seeds in August.54 There was a stark divide between the policy of the large-scale government and small-town mayors. Perhaps the Minister of Lima feared the British empire’s weight than the “red faced” men in the remote regions or simply did not think cinchona was a big enough issue to take a stand on. It is impossible to definitively discern his reasoning based upon Markham’s writings, but regardless, the Minister’s actions continued to demonstrate the heterogeneity of opinion on cinchona present in Peru.

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52 Ibid., 279-283.
53 Ibid., 286.
54 Ibid., 279.
After receiving clearance from the government and surviving an attempt by locals to bribe the captain of his steamer to destroy the plants, the voyage to India began, and Markham was hopeful that the plants had recovered from their arduous journey through the Andes.\textsuperscript{55} Unfortunately for him, issues with the transit of the ship and a long journey through the Red Sea damaged the collection before it arrived in India.\textsuperscript{56} Martel’s delay strategy may have stressed the plants too much for transport.

Despite this unfortunate return voyage, Markham’s expedition was full of successes. He overcame local resistance, unforgiving terrain, and a limited budget to place hundreds of cinchona plants on a steamer. He did not accomplish this task purely through his and Dr. Weir’s abilities. They relied on intermediaries to navigate the forest, collect the plants, bear cargo, acquire transportation, find food, and gain shipment clearance. Gironda, Martinez, and the porters in particular bore a massive portion of the responsibility of the expedition and provided local knowledge along with their skill set at a risk to their own lives. These intermediaries, nearly forgotten in the many retellings of this famed expedition were in fact the foundation for its success. Without them, Markham may not have left Peru on his own two feet.

\textsuperscript{55} Ibid., 286.
\textsuperscript{56} Markham, \textit{Peruvian Bark}, 210-211.
Image 2: A portrait of Clements Markham in Old Age
Ch. 2 Spruce’s Mission

When Richard Spruce received his commission to collect seeds and saplings of Cinchona succirubra, also known as the Red Bark tree, he was in Tarapoto Peru, approximately 1000 miles away from the home of the Red Bark in Ecuador. Distance, however, did not dissuade him from the task. Unflinching, he embarked on the long and arduous journey to Ecuador’s Red Bark forests. The Red Bark trees were located on the slopes of the volcano Chimborazo in the Andean mountain range. It was considered the most important tree to obtain for the plantations as Markham believed that it contained the highest amount of the “febrifuge alkaloid” quinine of all the trees in the cinchona family.

Spruce zealously embraced the assignment with his confidence bolstered by an already illustrious resume of experience. By 1859, he already proved his mettle as an explorer. Arriving to South America in 1849, Spruce determined himself to study the unique flora of the Amazonian basin. Spruce’s contributions to the botanical study of the Amazon remain unparalleled even today. Richard Schultes, a famous ethnobotanist of South America in his own right, wrote in 1988 that “[Spruce’s] monumental Hepaticae Amazonicae et Andinae, published in 1885, still remains the greatest work in South American bryology.”

Bryology, the study of mosses and liverworts, was Spruce’s greatest passion, but his achievements stemmed far beyond collecting non-vascular plants. He held great interest in all of the plant life of South America from quaint palms to the lucrative rubber tree. Branching out even further, Spruce collected

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58 Markham, Peruvian Bark, 217.
information of an anthropological nature. Spruce noted how indigenous people used plants in their daily lives in addition to other data on their culture. This work included the vocabularies of 21 Amazonian dialects alongside sketches of the indigenous Amazonians and their villages.\footnote{Schultes and Sledge, “Richard Spruce”, 8.}

Spruce’s genuine interest in indigenous people contrasted the way in which he often talked of them. Spruce never named his indigenous assistants opting to refer to them broadly as Indians. His work relationship with them was sometimes odd and paternalistic. Spruce credited himself with exceptional skills in “managing” indigenous workers from the area. He compared himself to another famous naturalist Humboldt claiming the German had not “attained the art” of proper management of indigenous labor. On the “art” of conducting indigenous workers Spruce wrote,

“It does not do to ask them to do anything as a task, however much money, etc., you may offer for the performance of it. My usual invitation is ‘Yasso yaoata’ (‘Let us go for a walk ’). We get into our montaria (canoe), enter one of the igarapes (small streams), and when we reach the heart of the forest they are all alacrity to climb or cut down the trees, the gathering of the flowers being all the while represented as a mere matter of amusement.”\footnote{Richard Spruce, \textit{Notes of a Botanist on the Amazon \\& Andes}, 1:231-232.}

This excerpt evokes themes that will reappear throughout the analysis of Spruce’s cinchona mission. Spruce describes his relationship with indigenous workers as informal and collaborative where the indigenous people wanted to do the work for him. His words also reinforced common stereotypes that characterized indigenous peoples as childlike with the implication that they would rather work for recreation than actual payment. This borrows in part from the “noble savage”
trope where indigenous peoples were characterized as “a mythic personification of natural goodness.”  

Spruce’s use of such tropes contrasted with his genuine interest in their culture and valuable anthropological work. The dichotomy between appreciation and condescension will appear frequently in his description of interactions with indigenous intermediaries.

Evident in his notes, Spruce was an adroit communicator capable of talking his way out of tight situations and brokering valuable deals. Spruce attained many helpful intermediaries such as landowners and army commanders through diplomatic means. The goodwill he earned by building relationships with the people of the area paid off dividends in critical moments. This distinguished him from Markham. While Markham antagonized the local leadership of Peru, Spruce skillfully negotiated his position with landowners in Ecuador. His negotiations bought him time to collect and remain safe from violent conflict.

In order to reach the slopes of Chimborazo, Spruce had to make progress through the dense Amazon rainforest in eastern Ecuador and hike up the Andes, no small task on its own. There was, however, an additional complicating factor to the journey. War entangled itself in the backcountry of Ecuador as a consequence of territorial conflicts with Peru. Ecuador attempted to peddle disputed border regions to British bondholders. As a response in 1858, the caudillo Ramon Castilla from Peru blockaded the Guayaquil harbor. In 1959, he sent 5000 soldiers to Ecuador to put pressure for a border settlement. Adding to the chaos of the moment, Ecuadorian conservatives Gabriel de Garcia Moreno and ex-president Juan Jose Flores launched a civil war against the standing liberal government of Ecuador. This turned the war into a conflict of three

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factions: Peruvians, liberal Ecuadorians, and conservative Ecuadorians. Such an environment was certainly not ideal for Spruce’s collections, and several skirmishes between the different forces took place on his journey to Chimborazo.

In July of 1859, just before he began his first survey of the Ecuadorian cinchona forests, the battle of Tumbuco took place and Spruce found himself in a dangerous position in the aftermath. One of the armies marched through Ambato, the town Spruce resided in at the time. He wrote, “I had nowh ere to flee to, so I laid in a stock of live pigs and fowls, and of potatoes, stuck out the Union Jack, and prepared for a siege.” Thankfully, the army marched by, and he remained unharmed. This event among many others, restricted his travel out a necessity for caution. There were many instances throughout Spruce’s writings where he had to put his projects on hold to avoid the hazards of the war.

Supply shortages as a result of the conflict also placed strain on the expedition. After leaving Ambato, he struggled to find food to sustain his pack animals, and he sent his aides to scavenge for alfalfa to keep them alive. Wartime conditions continually layered logistical complications on the back of the expedition, but Spruce persisted. In a situation distinct from Markham’s in Peru, Spruce utilized his negotiation skills, intermediaries, and status as a British citizen to skirt around the dangers of the countryside.

Spruce’s first stop in his quest for cinchona was the forests of Alausi after war conditions permitted him to move. He did not intend to collect there, simply encounter the cinchona trees in order to become familiar with and study them. He hired a cascarrillero named Bermeo who had

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64 Richard Spruce, Notes of a Botanist on the Amazon & Andes, 2: 251-252.
65 Ibid., 234.
knowledge of the *Cascarilla roja* (Red Bark). Spruce described Bermeo as an “honest, active fellow,” and solicited his services in all of his excursions of that district. Hiking through these forests, Spruce passed by many cinchona trees that were felled and stripped of their bark. After some time, he finally found a slender cinchona shoot about 20 feet high. Bermeo slit the bark to demonstrate that underneath was a milky sap which turned red after exposure to air. Spruce marveled at the phenomenon because plants in the Red Bark’s family, Rubiaceae, rarely had milky sap under the bark. In addition to this observation, Spruce noted other qualities of the tree including its approximate growing altitude and temperature. After studying this specimen, Spruce began his journey out of the forest of Alausi and moved on without Bermeo. While Spruce did not collect any cinchona samples on this short excursion, the *cascarillero* taught him valuable lessons on the phenotypic qualities of the *Cascarilla roja* and its preferred growth habits.

After Alausi, Spruce did not conduct many cinchona related activities until 1860. He opted to prepare a strong foundation for the massive collection effort that would soon ensue. Before beginning to harvest material from the cinchona trees, he acquired permission from those who owned the Red Bark forests to take seeds and saplings. The two plots of land Spruce harvested were owned by General Flores and the church. The farms of General Flores were leased by a man named Senor Cordovez, and the church’s land was rented by Dr. Francisco Neyra. Initially, neither of them wanted to strike a deal, but after prolonged negotiations, Spruce made an incredibly advantageous treaty with the landowners. First, he obtained permission to use their land for a payment of 400 dollars so long as he did not touch the bark of the trees. The

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66 Ibid., 237-238.
67 Ibid., 242-245.
68 Ibid., 262.
decision to move slowly and conduct his work legally may have saved his entire expedition. Through transparency and negotiation Spruce avoided rousing the local leaders, the cardinal mistake of Markham’s expedition. He understood the difficulty of plant collection in the field and did everything in his power to remove variables that would further convolute the proceedings of the expedition. Dr. Neyra and Senor Cordovez were political intermediaries. The kind of people Markham needed to advocate for him against the “red faced” men but sorely lacked. As matters proceed, the importance of this negotiation will grow clearer, especially in light of how Markham’s expedition came to a sudden and chaotic conclusion.

Spruce also secured a workforce from the deal. He wrote, “They also bound themselves to aid me in procuring the necessary workmen and beasts of burden. Through the intervention of Dr. Neyra, who has throughout done all he could to favour the enterprise, I engaged with his cascarilleros (who all inhabit the village of Guanujo, adjacent to Guaranda) that whilst they were procuring bark for him, they should also seek seeds and plants for me.” This labor was key because due to the war the armies contracted all men to fight besides purebred indigenous peoples, and they were often pressed into carrying baggage for the soldiers anyway. Finding a workforce would have presented a monumental logistical challenge for Spruce. Even with this deal, complications arose. Spruce was unable to procure licenses for many of the cascarilleros that Neyra promised him. He spent days trying get a license to get an exemption for the cascarilleros to help him later on while in Guaranda. Unfortunately, only one cascarillero could accompany him to their collecting site at Limon, and this particular man, according to Spruce, drank too much to aid the collection. On the bright side, Neyra pulled through and provided

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69 Ibid., 262-263.
Spruce with four indigenous people of Guanujo who provided great service to the expedition.\textsuperscript{70} Despite the fact that the war prevented Neyra from fully delivering on their deal, he still provided Spruce with vital workers. Spruce’s inability to find anyone else to help demonstrated how scarce war made the labor force. Without Neyra, Spruce would have had trouble recruiting a sufficient party of workers for the journey ahead.

It is fortunate Spruce secured such a favorable deal because he suffered a severe rheumatism shortly after on April 29\textsuperscript{th} 1860 in Ambato. On that day he wrote, “Woke up this morning paralysed in my back and legs. From that day forth I was never able to sit straight up, or to walk about without great pain and discomfort, soon passing to mortal exhaustion.”\textsuperscript{71} This unfortunate bout of illness made an ambitious expedition even more complicated. He had not yet reached the slopes of Chimborazo, and he could only move using a horse or by limping around with a long walking stick.\textsuperscript{72} Spruce wanted to delegate his commission to Dr. James Taylor from Riobamba because of his disability. Dr. Taylor had lived in South America for about 30 years, and previously acted as the personal medical attendant for the ex-President Flores. Taylor even married a Peruvian woman and had a child, settling down to live in Cuenca and Riobamba. Spruce considered him “a very kind-hearted, honourable man, which can’t be said of many Englishmen I have met in South America.”\textsuperscript{73} This high praise explains why Spruce placed the utmost trust in Taylor. The doctor had decades of experience in South America and Spruce had positive previous experiences with him. Spruce appeared ready to give up the reigns of the expedition, but Taylor convinced him to travel to Chimborazo in the hopes that the warm

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\textsuperscript{70} Ibid., 266.
\textsuperscript{71} Ibid., 259.
\textsuperscript{72} Ibid., 260.
\textsuperscript{73} Ibid., 191.
weather may recover the use of his limbs.\textsuperscript{74} Taylor remained a major fixture of Spruce’s company for the rest of the cinchona expedition providing necessary support to the ailing botanist.

They departed Ambato on June 11\textsuperscript{th}, 1860, and on the route to Chimborazo a group of young soldiers with lances confronted Spruce’s party demanding to see their passports. Spruce did not have any, so he quickly came to a clever solution. He wrote, “a shot from one of our revolvers would probably have put them to flight, had I not been furnished with a weapon which I have found far safer and more efficacious in such contingencies, namely, a bottle of strong aguardiente, a taste of which dispelled all opposition to our progress, and also served to induce the guardians of the pass to boil us water for making coffee.”\textsuperscript{75} Spruce assessed the obstacle rationally and resolved it to the satisfaction of all parties involved. This particular encounter provides a powerful demonstration of Spruce’s affinity for negotiation. He dissected the situation, assessed his options, and chose the most effective solution. This connects to Spruce’s ability to negotiate with intermediaries. Spruce had a knack for figuring out what people wanted and giving it to them to broker their assistance.

Spruce arrived at his base of operations El Limon on June 18\textsuperscript{th}, 1860. El Limon was a small group of cane farms near the Red Bark region.\textsuperscript{76} Spruce resided in a trapiche (cane mill) for the duration of the collection. He found the residence in a degree of disrepair, so the workers patched up the holes in the roof with bamboo and palm leaves.\textsuperscript{77} With a shelter in order, Spruce properly began to survey the area and collect cinchona.

\textsuperscript{74} Ibid., 263.
\textsuperscript{75} Ibid., 265.
\textsuperscript{76} Ibid., 260.
\textsuperscript{77} Ibid., 269.
One day while Spruce made his round among the cinchona trees, he noticed that two of them had been stripped off all their seeds. He determined that someone did it in the expectation that Spruce would purchase the seeds from them. This would not pose such a problem except for the fact that the seeds of the trees were not yet ripe. Spruce could only use fully ripened seeds, so any seeds picked prematurely by the locals were no use to him. Spruce “immediately went round to the inhabitants and informed them that the seeds would be of no value to me unless I gathered them myself; and I offered a gratuity to the owners of the chacras where there were trees in fruit to allow no one to approach the trees except myself and Dr. Taylor. This had the desired effect, and I do not think a single capsule was molested afterwards.”\(^7\) Once again, Spruce brokered a deal to clear out an obstacle to his mission. He identified an intermediary that could fix his problem, the owners of the chacras, and compensated them to keep the locals away from the trees. Instead of attempting to protect the trees by himself or with his workers, he used the owners as agents of his expedition to protect the trees without burdening himself with extra responsibility.

While the collecting commenced, the war still churned on in Ecuador. For a period of six weeks, Flores’s conservative army marched through their region. Spruce was convinced that “unless there had been two of us, both independent of the political feuds of the country, the enterprise must have fallen through.”\(^8\) It is worth noting from this quote that despite Taylor’s close ties to one of the generals of the war, general Flores, he remained politically independent of the turmoil. Even as he settled with a wife in Peru, his identity as a British man overrode his ties in South America. Regardless of their neutrality, the close presence of the army stressed their

\(^{78}\) Ibid., 270.
\(^{79}\) Ibid., 270.
supplies. Taylor had to ride with one of their indigenous workers by horse for over a day’s journey in order to find food for the operation. 80 This made every single day at Limon a struggle for survival. If Taylor did not find food, they simply would have to leave. It never came to that degree of severity, but supply became tighter and tighter as the soldiers consumed more of the resources of the area over time.

In July of 1860, Spruce received word of an Englishman carrying a number of boxes into the city of Ventanas. Spruce sent Dr. Taylor to investigate, and to their joint excitement, found a man named Robert Cross. Cross was a Scottish gardener sent by Markham to maintain the plants Spruce gathered and ensure their safe transport. 81 It took Cross a long time to reach them because labor shortages rendered it almost impossible for him to find men to row his boat on the river. Despite his tardiness, Dr. Taylor and Spruce were elated to have him onboard. 82 Cross immediately began building a garden to induce the cinchona cuttings to growth. The cuttings needed to take root and mature before they could survive transport in the Wardian cases, so this task was a top priority. He placed hundreds of cuttings into the soil to let them mature. This was no easy task in the forest. Factors such as the hot sun, water shortages, and caterpillars threatened the lives of the plants. Spruce wrote, “it is impossible to detail here all the obstacles encountered, and which only Mr. Cross’s unremitting watchfulness enabled him to surmount.” 83 Spruce would have met considerable difficulty in managing the garden and the collections at the same time, especially considering his poor health. Cross was an indispensable member of the mission.

80 Ibid., 270.
81 Markham, *Peruvian Bark*, 99.
82 Spruce, *Notes of a Botanist on the Amazon and Andes*, 2:293.
83 Ibid., 294.
Gardening was a task Spruce likely did not have the time or facilities to complete on his own on top of the collections.

The indigenous workers toiled daily to secure the garden’s water supply for Cross. A small canal carried water to the trapiche from a rivulet about a mile away. The canal provided a convenience but had a poor construction. Spruce wrote, “the cattle, roaming about, generally trod and dammed it [the canal] up at least once every day, when the Indians had to seek out and repair the damaged spots.” This was an essential daily task to ensure the prosperity of the fragile cinchona cuttings. With occasional poor luck, water management became even more arduous, “when the supply of water failed just at the moment of one of those outbursts of sun, there was no alternative but for all hands to run with buckets down to the deep glen, where there was a considerable stream, although the steep ascent from it was very toilsome.” Spruce credited Cross for the success of the plant growth, but their workers deserve equal credit. They played an essential role in securing the resources necessary for fostering the cuttings.

Spruce claimed that most inhabitants of Ecuador knew the cinchona bark was valuable but were not aware of its medicinal properties. He wrote, “the prevalent opinion [of Ecuadorians] being that a permanent coffee- or chocolate-coloured dye (still a desideratum in Ecuador) is extracted from it.” After explaining its use as a medicine to people in Limon, they remained incredulous and believed he was lying. He wrote that in Guayaquil, the physicians often did not refer to cinchona bark while administering quinine as medicine because of a general disbelief of patients that it had medical properties. This was quite a peculiar phenomenon, especially considering the prevalence of malaria in the region. This

84 Ibid., 295.
85 Ibid., 271.
misunderstanding of cinchona’s function could explain why Ecuadorians were less protective of the plant than the Peruvians or Bolivians. The possibility that Spruce’s account was a misrepresentation cannot go without mention. Records exist of indigenous peoples of the Andes utilizing the fever bark long as early as 1663. It is not impossible that this knowledge died in the area of Ecuador over time, but the loss of awareness of such a valuable and accessible malarial treatment would have been strange. Either way, Spruce operated on the assumption that the true function of cinchona was forgotten, and this information may hint at how he convinced or rationalized to the people of Ecuador to give it away to him and by extension the British empire.

While Dr. Taylor fetched Mr. Cross over from Ventanas, about 800 army men encamped in the area. The morning after they arrived, Spruce woke up to the sight of his four indigenous workers taken prisoner. The previous day, the army seized one of their mules. The 4 indigenous workers took it back under the cover of night and hid it in the forest. The army noticed the mule’s absence, however, and someone saw the four handling the mule the night before. This led the army to immediately arrest the workers as suspects. Despite this grim position, Spruce had an out. Luckily, he had met the commander before at Ambato and granted him lodging in his trapiche at Limon. Spruce wrote “I had some right to expect he would not deny any request of mine; and accordingly, after a short parlay with him, he ordered the Indians to be released. Thus I kept my Indians, and the Indian kept his mule, which was all we wanted.” This situations was one of the closest calls of the entire expedition. Without his labor force, Spruce would have

87 Indigenous populations have also been known to conceal knowledge from bioprospectors intentionally. This could explain the phenomenon Spruce observed. This topic is covered in Schiebinger, *Plants and Empire*.
88 Spruce, *Notes of a Botanist on the Amazon and Andes*, 2:297.
needed to delay the collections significantly. The colonel’s willingness to emancipate the workers was influenced by two factors. First, the hospitality and company Spruce had given him. The colonel may have simply felt grateful for Spruce’s actions and ceded the mule as a personal favor. Second, he did not want to step on Spruce’s toes as an agent of the British empire, so he decided to give back the mule. This reasoning is supported by Spruce’s aforementioned statement that the expedition would have failed if him and Taylor were not independent of the current events of the country. Spruce, as a foreigner, could leverage his neutrality to cut deals, a luxury his workers did not possess. They were not given the benefit of the doubt when they stole back their mule. Spruce knew exactly what to say and utilized the colonel as a political intermediary to regain his workforce and the mule.

Animal-theft was not the only unpleasantry brought upon Spruce’s workers by the army’s presence. The army left behind hundreds of deceased pack animals in its wake. Spruce recorded that at least 20 of them laid within “nose-shot” of his hut. Tired of the smell, Spruce sent his workers to “roll them into ditches and hollows and cover them with branches and earth.” They attempted to do it but “the horrid smell turned their stomachs and they never half performed the task.” Spruce did not want to make Taylor or Cross do the deed, so he sent his indigenous workers. He did not reason why Taylor or Cross were exempt from the labor, but it is important to highlight the fact that Spruce specifically sent his indigenous workers to complete such an ugly task, not his British counterparts. This speaks to how his indigenous intermediaries were often made to complete the more dirty and undesirable tasks of the expedition. As the animals continued to lay dead on the bare ground, the stench of decay lingered around El Limon for some time.

89 Ibid., 296.
By the end of September, Spruce’s party gathered about 2500 well grown seed capsules. Good seed capsules carry about 40 seeds each, so in total, the expedition recovered about 100,000 cinchona seeds. General Flores recently captured the port city of Guayaquil, so Spruce determined to head there in order to ship off the seeds. The transportation of the seeds did not have any significant complications, and by October, a large portion of the ripe seeds were shipped off to Jamaica.

While the transportation of seeds did not pose much of a challenge, the young plants offered numerous complications. The newly rooted cinchona plants were still very delicate to both climate and wear. As such, they required placement in Wardian cases. Spruce needed these cases assembled, and then placed on a raft to reach Guayaquil. He headed to the city of Aguacatal, the closest port to the plants in Limon. Here, he hired a black carpenter to build the Wardian cases to wait for Cross’s arrival. Cross bought the plants to Aguacatal from Limon by wrapping them with moss and placing in baskets upon beasts of burden, which took time to locate because of the wartime shortages. It took Cross until the 13th of December to reach Aguacatal. Upon arrival, a man named Don Matias lent them laborers, which were still scarce due to the war. They carried dirt, sand, and dead leaves for making the soil of the cases. With all of the work said and done, the botanists prepared 637 intact plants in cases for the raft.

Cross hired raftsmen, including the old black man who sold him the craft, to guide the vessel for what Don Matias foretold was a “speedy but perilous voyage.” The river moved very swiftly, and trees flanked both sides. Despite the efforts of the men on the oars, they frequently

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90 Ibid., 299.
91 Ibid., 301.
92 Ibid., 301-302.
93 Ibid., 305.
brushed against the trees on the sides of the river and even ran head first into a bundle of wood and twiners in the middle of the river. This smashed the roof of the raft and slammed the cases into one another. The old man was caught in the wreckage of the roof and the branches but thankfully emerged mostly unharmed. They again made a second, albeit less extreme, collision head on with a mass of sticks before finally reaching Guayaquil. Thankfully, everyone, in addition to the plants, emerged from the voyage without serious injury. This river voyage demonstrates the difficulty of expeditions even with expert assistance. Spruce and Cross hired men familiar with rowing and the river, but they still encountered great peril and damage to the boat. Granted, without their aid, the botanists likely could not have piloted the vessel themselves, but it is important to note that despite intermediaries being helpful, they were not always solution to every problem. They were humans and subject to error like any man who has lived.

On January 2nd of 1861, Cross boarded a steamer with the plants to head out from Guayaquil. The deed was done. Spruce completed the cinchona mission despite near disability due to the rheumatism he suffered that April before. His particular batch of plants made it to India in great condition, allowing their plantation. As time passed, however, the British realized that the Nilgiri hills were not the best climate for the cinchona plants due to the dryness of the soil in the dry season. By the turn of the century, the cinchona plantations in India slowly diminished until they disappeared. While the Nilgiri plantations were extinguished, the Dutch plantations in Java flourished, eventually becoming the source of the world’s supply of cinchona. They effectively held a world monopoly until World War II. The success of the Dutch

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94 Ibid., 306-309.
95 Ibid., 309.
96 Ibid., 310-311.
plantations does not put any stain on Spruce’s record, however. He completed his task beyond the call of duty and far exceeded the output of any of the other Kew Botanists while navigating a warzone. The key to Spruce’s success was his ability to negotiate and strike deals with the people of Ecuador. He took his time and gained permission and alliances from the right people so that he could collect in peace. Even in surprisingly perilous situations such as the passport checkpoint or mule dispute, Spruce was able to talk his way out of a bind. The intermediaries he recruited and struck deals with provided most of the knowledge and legwork. From Bermeo the cascarillero to the oarsmen of his raft to the indigenous workers in Limon, there were people all along the journey who completed tasks Spruce physically could not. Almost more importantly, Spruce garnered political intermediaries such as the plantation owners and the army colonel. If he could not collect legally or negotiate with the army, he likely would have had to abandon the mission. When Spruce fell horribly ill, he compensated for his disability by forming and relying upon a robust social network. At every step of the way, Spruce relied on this robust social network to make his expedition a success.
Image 3: Spruce in Old Age
Analysis and Closing Thoughts

Markham went on to become one of the most esteemed British explorers of the late 19th and early 20th century. Directly after the cinchona missions, he oversaw the establishment of cinchona plantations in India though they were not as successful as hoped for. Later, he became the president of the Royal Geographic Society in 1893 and published almost fifty books on topics varying from history to geography to biography. During his presidency of the Royal Geographic society, he revived the polar expeditions inspired by his trip to Antarctica earlier in life. His contributions to the society and British exploration were among the highest. When he died in 1916, Geographers from all over the world sent condolences and even the King of England sent the Royal Geographic Society a telegram expressing his sympathy.\footnote{Description of Markham’s Life Achievements as accounted by his peers in: “Death of Sir Clements Markham,” The Royal Geographical Society (with the Institute of British Geographers) 47, no. 3 (March 1916): pp. 161-176.}

Spruce lived a much quieter life after the cinchona missions. He remained in South America until 1864, which marked fifteen years of collections in the Amazon. Unfortunately, his tenure in the rainforest came at a grave cost. His health was in severe disarray, and the financial crash of a trading company in Guayaquil extinguished most of his savings. He returned to an empty home as both his mother and father died before his return to Britain. He moved to Yorkshire and spent his final days examining the thousands of specimens he sent back to Britain and writing about his favorite topic, plants.\footnote{John Hemming, Naturalists in Paradise: Wallace, Bates and Spruce in the Amazon (New York: Thames and Hudson, 2015), 331.} He did not begrudge his fate and enjoyed the opportunity to collect plants in the world’s largest rainforest. Spruce is remembered for his love of plants and passionate pursuit of knowledge. He described his fondness for plants in a letter to
Daniel Hanbury “I look on plants as sentient beings, which live and enjoy their lives—which beautify the earth during life, and after death may adorn my herbarium.”

The legacies of these men reflect their differences in character and motivation. Spruce loved plants, especially liverworts, and lived for their collection and study. He did not go to South America because of a grand royal assignment, he wished to expand his knowledge of the world’s flora. He lived this passion to his death. Markham was an explorer with far higher ambitions. He worked more for the empire and on assignment than spruce did. He wanted to reach unseen frontiers and did many missions on behalf of the crown. Markham placed his dreams on the global scale while Spruce had goals that were more tame and humble.

These traits carried to how each approached the cinchona expeditions, especially in respect to their use of intermediaries and views of their assistants’ contributions. Spruce took the more methodical and social approach. He found out how to goad individuals into helping him and attained amicable relationships. In times of strife, he remained calm and made the most rational decisions. He maintained communication with the local leaders and landowners to ensure that his presence did not perturb them. Markham, on the other hand, took a more rushed and less diplomatic approach. When he met opponents like Martel, he did not attempt to negotiate. He simply carried on and hoped that nobody would find out his plans. In regard to his workers, he left them behind with no real protection and at the potential whims of the “red faced men.” He had no further plans to remain in Peru, so he did not care much about the reputation he left. Spruce on the other hand, planned on collecting in South America as long as possible. Enraging the people of the countryside would have cut his plans to explore the mosses of South

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100 Spruce, *Notes of a Botanist on the Amazon and Andes*, 1: xxxix.
America a few years short. Spruce’s thoughts for the long term helped him in the short term. He approached the expedition in a sustainable fashion and emerged the most successful.

While Spruce and Markham’s names remain in the history of science, those of their assistants have almost faded into time. Despite their overwhelming contributions to the success of the cinchona missions, they have received almost no reward or recognition. For example, the *Cascarilleros* such as Martinez or Bermeo were responsible for teaching the British men the nuances of the cinchona trees. Through the Kew men, the bark strippers informed the wider world but received little credit. Additionally, the indigenous people who were hired to lug around cargo and conduct all of the manual labor went completely unnamed in the case of Spruce’s narrative. The cinchona plants would never have touched Indian soil if not for the oarsmen, traders, *cascarilleros*, laborers, landowners, and politicians who enabled their collection. Despite the limited perspective offered by the available sources, it is evident that these two missions are not the stories of a handful of British men. The cinchona missions illustrate a complex social network where British men, indigenous people, Peruvians, Ecuadorians, and Bolivians collaborated with contributions, both big and small. Each individual the botanists encountered had their own agency and could chose to help or hinder the collections, and the dense rainforests, the steep mountain slopes, difficult terrain, and even the mules themselves could prove formidable challenges. If there were any “inestimable blessing” to the success of the cinchona missions, it resided in the complex web of social relations that have been written out of conventional histories of scientific exploration.
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Images

Image 1:


Image 2:


Image 3:


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