

## Richard Spruce and the potential for European settlement of the Amazon: an unpublished letter

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One of the most unsung heroes of the natural sciences and exploration of northern South America is Richard Spruce, the English plant explorer who spent some fifteen years studying and collecting in the Amazon of Brazil and the Andes of Peru and Ecuador between 1849 and 1864 (Fig. 1).

Spruce's collections are still basic to any floristic study of these areas. His voluminous notes, if fully appreciated, would add much to modern phytogeographic investigations. In addition to the amassing of an incredible wealth of material of the native floras, his studies of a number of economic plants—especially of *Hevea* and *Cinchona*—added invaluable information helpful to the establishment during the last century of the rubber and quinine plantation industries of the Old World.

A true naturalist at heart, he once wrote: "Then there is the greatest of all pleasures to the naturalist, however some utilitarians may affect to undervalue it, that of discovering new species, of dotting in (as it were) new islands on the map of nature, and, in some cases, of even peopling continents that appear to be deserts". At another time, he expressed himself even more poetically: "I like to 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. When they are beaten to pulp or powder in the apothecary's mortar, they lose most of their interest for me. It is true that the *Hepaticae* have hardly as yet yielded any substance to man capable of stupefying him or of forcing his stomach to empty its contents, nor are they good for food; but if man cannot torture them to his uses or abuses, they are infinitely useful where God has placed them, as I hope to live to show; and they are, at the least, useful to, and beautiful in themselves—surely the primary motive for every individual existence".

Partly, I believe, because of this side of his character—expressed in so many of his letters and documents—students may have underestimated the basically sound practicalness of much of his work and many of his ideas. The researches which he carried out on rubber and quinine are prime examples of the relevancy

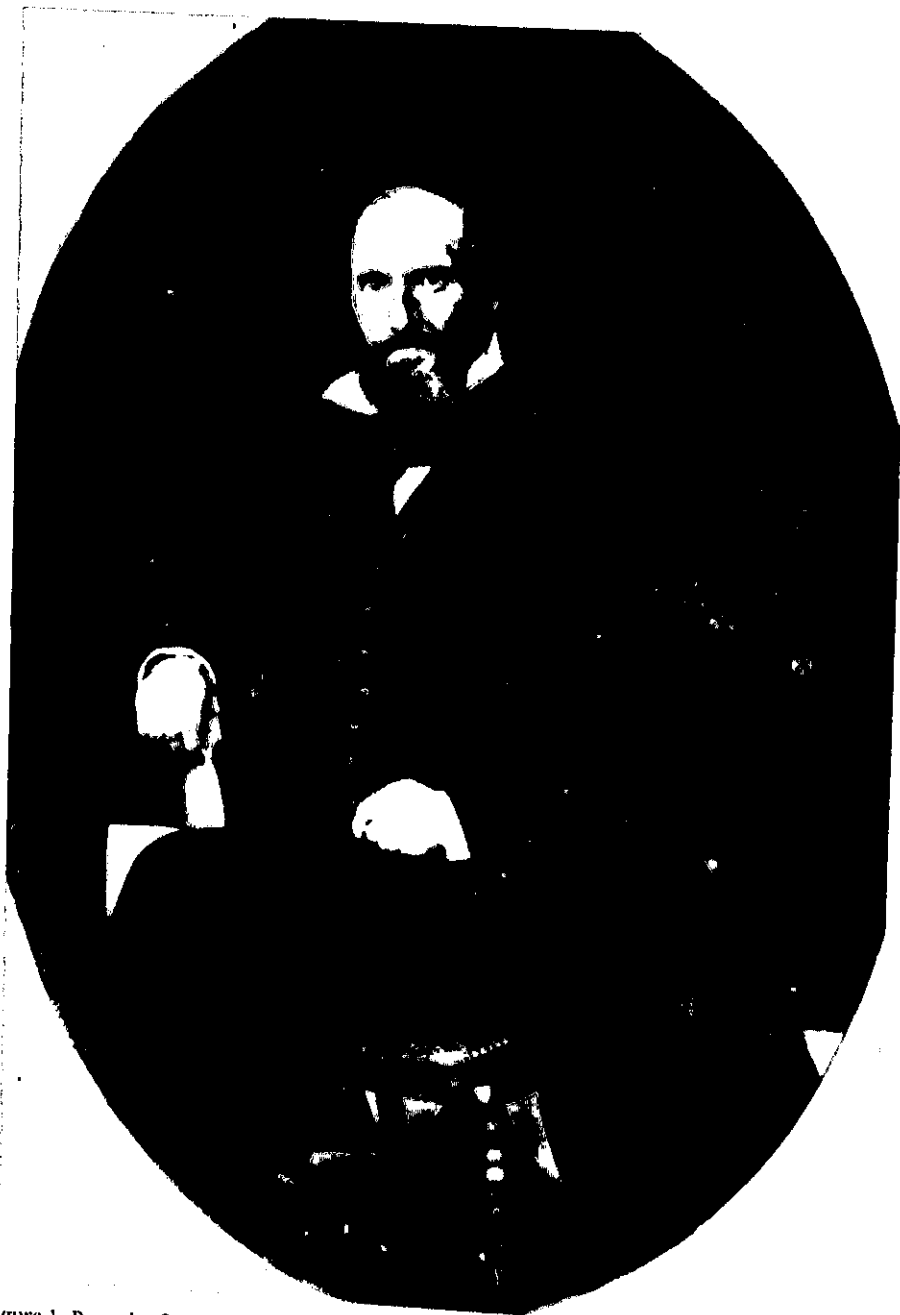


Figure 1. Portrait of Richard Spruce taken shortly after his return to England from South America, probably between 1864 and 1870. Courtesy of the Gray Herbarium of Harvard University.

of his studies to practical economic botany. The hitherto unpublished letter quoted below opens up still another avenue indicative of his down-to-earth interest in man and the biosphere. The information contained in this letter, although in many aspects brief and even sketchy, could have been written this year. It reflects his uncanny ability to become thoroughly at home in a very short period of time in new tropical surroundings and to appreciate the potentialities

as well as the drawbacks to human inhabitation of the wet tropical forest areas.

The letter, written in Spruce's hand, is reproduced with the permission of the Controller of Her Majesty's Stationery Office and of the Director, Royal Botanic Gardens, Kew. Crown Copyright.

*Rough draft of letter written to agent of Ecuador Land Company (Mr G. P. Pritchett) in reply to enquiries to the feasibility of forming a colony of Europeans in Forest of Canelos. (Written at Baños, Dec. 1857.) R.S.*

"I regret that my reply to the queries cont. in your letter of 1st inst. must necessarily be imperfect, but I will make it as full & clear as the scanty nature of my materials will allow.

"To your first query, whether the Forest of Can<sup>s</sup> (wh. is the name popularly given to the country) between the Bomb<sup>a</sup> and Past<sup>a</sup> be eligible for the formation of a colony of Europeans, I answer that it possesses the desirable requisites of a fertile soil in which gold is almost everywhere dissem<sup>d</sup>, and a temper. climate. The native Ind<sup>s</sup>. inhab<sup>t</sup>. this district are now few in number. They are well-disposed to the whites. The negro race does not exist in it, & is indeed very rare in the adjacent cultivated & peopled districts of the Ecuador, so that the repugnance which white men so generally feel to work by the side of blacks would here have no place.

"Before bringing a large number of colonists hither direct from Europe, it is essential that some preparation sh<sup>d</sup> be made for their reception—that a small quantity of forest should be cleared & plantations of yuca & plantain made, as also a few commodious huts erected. I have been a witness to the failure of two attempts to establish European colonies on the Amazon, one by the Peruvians, who bro<sup>t</sup> 300 German emigrants to that part of the Amazon wh. lies between the Braz. frontier & the m. of the Ucayali. No preparation what<sup>r</sup> had been made for the reception of the emigrants, who were nearly all young unmarried men, & not a few of whom had been taken out of the jails in their own country to be dispatched to Peru. The conseq. was that they speedily became dissatisfied—what with scanty food, the oppressive heat (considerably exceeding that of the Bombonasa) and the plague of zancudos (nocturnal mosquitos) from which the Bomb<sup>a</sup> is happily quite free—and the very most of them made their way down to Brazil. At the present moment I believe only 4 souls out of whole number remain in Peruvian territory. Warned by the experience of this abortive attempt I w<sup>d</sup> recommend that poor families of good character be chosen for emigrants. The risk of desertion will be thus reduced to a minimum; and the more children they include the better—so many things can be done here equally well by women & children as by men, & the presence of the children will be the strongest possible stimulus to the adults to remain on the spot & battle with the difficulties wh. have to be vanquished in all attempts to transform a wild forest into a fertile garden.

"To speak more especially of the climate—I may premise that in the mo<sup>s</sup> April, May & June last I travelled from Tarapoto in Peru (lat 6°½ S) by way of the rivers Huallaga, Marañon, Pastasa & Bomb<sup>a</sup> to Baños in the Ecuador, near the head of the Pastasa where I now write. As I neared the equator I noticed, as I had done in ascending other of the northern trib<sup>s</sup>. of the Amazon, what I may call the fusion in of the wet & dry seasons. Thus, on the upper Rio Negro, where I resided 3 years—almost on the actual equator—rare was the day that passed all the year round without more or less of bright sun, and equally rare without rain. The

same seems to be the case in the upper part of the Bomb<sup>a</sup> at the Ind. vill. of Paca & wh., as you know, is reached in a day from Canelos. I was kept waiting 3 weeks for peones, & in this time made some obs<sup>ns</sup> on the climate, of wh. the foll<sup>g</sup> is a brief abstract. The mornings generally brck clear, and from 5½ to 6 AM the whole range of the cordillera was visible, from the volcano of Macas (Sangay) on the S. to Cotopaxi on the N., with the interm. snowy summits of Las Alturas, Chimb<sup>o</sup> & Tunguragua. As the sun rose, volumes of mist came rolling from the east & speedily obscured both sun and landscape; at 9 o'clock the mist cleared away and the sun looked out bright & hot, but the heat rarely became inconvenient. Soon after midday. at 3 PM we had a heavy sh<sup>r</sup>, but the evening was again clear and the view of the cordillera more or less distinct. More rarely we had rain in the m<sup>g</sup> instead of the mist & then the afternoons were dry.—The temperature of the air during this time was delightful—the minimum (at 6½ AM) was gen<sup>y</sup> abt 68°, & until near noon I w<sup>d</sup> take vigor. exercises in open air without being oppressed by heat. The thermometer att<sup>d</sup> its max. at from 2 to 3 PM, once it rose to 87° but more freq<sup>y</sup> it did not exceed 81°. When there was rn. in the mg. the therm. did not reach 80° through<sup>t</sup> day. Gentle breezes, from 9 or 10 in mg. till the aft<sup>n</sup> shower, tempered the heat of the solar rays, but we had no violent winds, tho the vill. stands on an elev<sup>n</sup>. 240 ft. above Bomb<sup>a</sup>. At time of my visit there were no sandflies (small diurnal mosquitos) but when you were in Canelos in Nov. the weather was less rainy. I believe you were rather teased by them!

“A more important matter than agreeable temperature is healthiness of climate & you have had ample experience of how one may travel the whole day through the forest of Canelos, soaked with rain, and sleep soundly at night, protected from the damp ground by a few palm-l<sup>s</sup> strewn over it, & from the night dews by the modest covering extemporised for the occasion. In the morning, you rise refreshed without having even caught cold, which in some other parts of S. Amer. wh. I have visited, to do this but once w<sup>d</sup> spawn an attack of ague. In the for<sup>t</sup> of Canelos, however, agues and malignant fevers of every descr<sup>n</sup>. are unknown. The only endemic is the singular disease called the “bicho” which is owing to the presence of intest<sup>l</sup> worms & attacks persons who, being new to the climate, eat inord<sup>y</sup> of fresh fruits; it admits, however, as you have been a personal witness, of a certain and speedy cure.

“On the Pastasa beyond the frontier of Ecuador, i.e. from a little below the m. of the Bomb<sup>a</sup> to its junction with Marañon, ague somt<sup>s</sup> makes its appear. when the r. is low (Sept. to Jan<sup>y</sup>); when the clear mountain streams wh. are its upper affluents being down little w<sup>r</sup> & travellers often drink of the black slug<sup>sh</sup> streams which enter in its lower half, where its course is entire<sup>y</sup> through the plain. Yet it is said that persons who are careful to drink water taken from the middle of the r. only are never attacked by ague.

“To speak now of gold. From my own obs<sup>s</sup> and from the trustworthy inform<sup>n</sup>. of others, I can confidently assert that the lower alluvial slopes of the Andes which gradually subside into the great Amazonian plain, all contain gold, from the sources of the Napo on the N to the Marañon above the P<sup>o</sup> of Manseriche on the S.—perhaps nowhere in very great quant<sup>y</sup> but still amply suff<sup>t</sup> to be worth the trouble of working. In my voy. hither, we began to encounter beaches strewn with pebbles of granite & quartz at a little less than half-way up. the Bomb<sup>a</sup>; the pebbles gradually became large and more numerous as we ascended, & were always accomp<sup>d</sup> by gold. In fact, thro<sup>t</sup> the upper Bombonasa—on the ridges &

in the valleys—you can hardly anywhere scoop up the gravel to the depth of a foot without encountering small fragments of gold. Near those streams where gold is known to be most abundant, the loose wet gravel extends to a great depth; thro this the larger pieces of gold percolate by their own weight, & I have no doubt are to be found by searching for; but as the Ind<sup>s</sup> only work the surface gravel, scooping it up merely with their hands, it is not to be wondered at that they rarely find a nugget.

“It w<sup>d</sup> undoubtedly be worth while to explore the mount<sup>n</sup> Llanganati from the snow of which comes down the turbulent Topo, where rock with quartz veins and even blocks I know of pure quartz are copiously strewn. The tradition of gold having been got in time out of this mt. is so universally diffused that it can hardly be altogether without found<sup>n</sup>, but I cannot find that any well-concerted attempts have ever been made to ascend Llanganti.

“There is not at present any cult<sup>n</sup> of cotton on the Bomb<sup>a</sup>. The few plants that struggle for existence among rank weeds in the chacras are of any sort of which a seed has accidentally come to land. The wild Ind<sup>s</sup> (Jibaros) scatt<sup>d</sup> this [through] the forests of the upper Pastasa, weave their cushmas (long warm ponchos) of cotton grown by themselves, and they are stronger than the stoutest unbleached cotton I have seen in England, but I know not what species they cultivate.

“As I ment<sup>d</sup> in a previous note, the shores of the Bombonasa about Paca-y[?] are at exactly the same height above the sea as Tarapoto in Peru (1500 ft.), where an arboresect. species of *Gossyp.* is abundantly planted & yields a cotton of the strongest fibre I have seen in any part of the world. No doubt this same sp<sup>s</sup> might be cult<sup>d</sup> to any extent on the Bomb<sup>a</sup>, & altho the climate of the Bomb<sup>a</sup> is rather cooler than that of Tarap<sup>o</sup>, yet I have seen the same cotton cult<sup>d</sup> at various points between Tarap<sup>o</sup> & Moyobombas up to a height of 3000 ft., where the air is much fresher than it ever is on the Bomb<sup>a</sup> & the wool was to all appear<sup>s</sup> as copious & of as good qual<sup>y</sup> as at Tarap<sup>o</sup>.

“Your suggestion of establishing a hacienda in Barrancas I think a very good one, for it might be made self-supporting from the very first & would soon become highly remunerative; it would also afford precisely the preliminary preparation necess<sup>r</sup> for the reception of a more extensive emigration. The wax of which you speak is found coating the fruits of a so<sup>t</sup> of Gale (*Myrica cerifera*) very like our English Gale in aspect.—it is popularly called “Lamelo”, but has no affinity with the true lamels. The normal station of this shrub is on the lower hills at 5 or 6000 ft. elevation tho I have seen it in Tung<sup>o</sup> up to 11,000 ft., but (like many other hill-plants) it has been carried downwards by the chasms as low as 2000 ft. above the sea, and between Baños & the mo. of the Pindo, there are perhaps thousands of acres of it on the beaches of the Pastasa. At present the Jibaros collect so much of the wax as they need for buying laner-head axes, etc. of the whites, but it might undoubtedly be got out in such quantity, & at so modest a cost as to allow of its being externa<sup>y</sup> exported. The process of separating the wax is exceedingly simple, & the only trouble is in collecting the fruits, for which women & children would be excellent<sup>y</sup> adapted, as the bushes are low and bear fruit down to very ground.

“On the lower ridges, offshoots of Llanganti, the wax-palm also is found, & people somet<sup>i</sup>. go from Baños to collect the wax, which has merely to be scraped off the trunk of the palm.

“The collection of wax is however only one of the branches of industry that a



Figure 2. A tree of *Ilex guayusa* left from a plantation set out in the 18th century in Pueblo Viejo, Mocoa, Colombia, near the boundary with Ecuador. Photograph by R. E. Schultes.

subord. one, to which the hacienda of Baranca might be made subserviant. Cane might be planted to any extent and the aguard<sup>e</sup> & sugar manuf<sup>d</sup> from it w<sup>o</sup> find a speedy sale. Sugar is often very scarce & dear at Baños, where I have paid as much as 2½ Reales (1/3 1/2) a lb. for it, but it might with ease be produced in the forest of Canelos at ½ that cost.

“Large plantations of Cacao might be made. You are aware that Canelos produces 3 native species of Cacao, all yielding fruit of exc<sup>t</sup> quality. One of these is

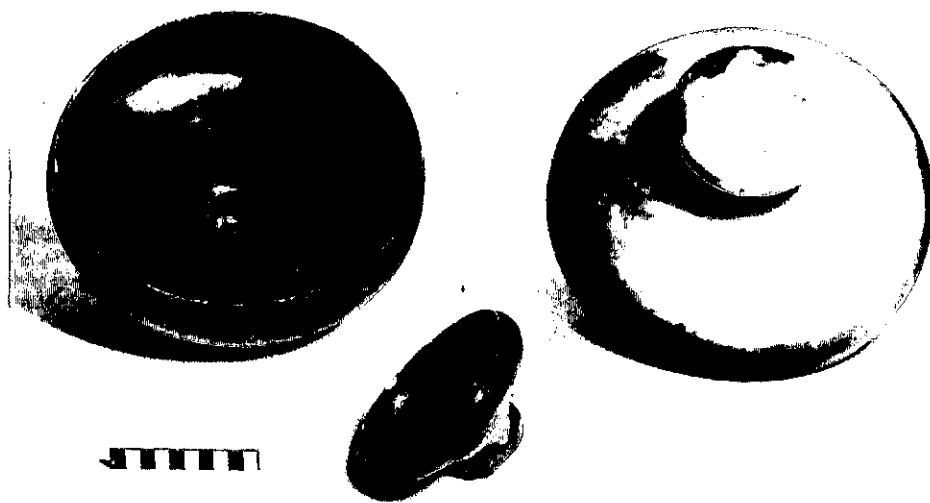


Figure 3. *Guayuceros*—earthenware pots in which the Jivaro Indians of Ecuador prepare the drink from *Ilex guayusa*. The smaller pot is the ladle from which the beverage is drunk. Courtesy of the Botanical Museum of Harvard University.

a very remarkable and (as it w<sup>d</sup> seem) undescribed species. I have hitherto seen only the fruit which is as large as a pumpkin. The seeds are flattish, not unlike those of the garden-bean in form & size, and they are white within. Chocolate made from them is of excellent flavour, but so very oily as to be undrinkable without admixture with that made from the common cacao. It is a question whether it might not be worth while to cultivate this species of *Theobroma* for the sake of the oil alone.

"Coffee yields excellently—better, I think than on the Amazon. For the growing of coffee, as also of cotton, there are thousands & thousands of acres available; and the same might be said of all tropical fruits—I need not tell you how abund<sup>t</sup> & delicious the pine<sup>s</sup> are on the Bomb<sup>a</sup>, even under the imperfect cultiv<sup>n</sup> of the Ind<sup>s</sup>.

"I am not sure that the Guayusa [Fig. 2]<sup>\*</sup>, which the wild Ind<sup>s</sup> plant near their houses [Fig. 3], might not successf<sup>y</sup> compete in the English market against the inferior sorts of Tea. This is the leaf of a sort of Holly, perfectly diff<sup>t</sup> from the Mate or Paraguay tea tho somewhat allied to it, and it has much of the aromatic

\* Several species of *Ilex* (*I. paraguayensis* St. Hil. of southern South America; *I. vomitoria* Aiton of southeastern United States; *I. guayusa* Loes. of the eastern slopes of the Andes in southern Colombia and Ecuador) are rich in caffeine and are or have been employed for their high content of this protoalkaloid. The centre of use of *Ilex guayusa* is now eastern Ecuador. In colonial times, the tree was exploited commercially as the source of medicinally valuable leaves. The Jivaro Indians still employ a strong tea of *Ilex guayusa* leaves as a ceremonial emetic and stimulant. Recent archaeological evidence suggests that the leaves were used in Bolivia as long ago as A.D. 500 in the preparation of a snuff.

*Ilex guayusa* is known only from cultivated trees. Flowers of the species are unknown and there is some evidence that the tree may not blossom.



Figure 4. *Astrocaryum vulgare*, the palm from which the fibre known in Colombia and Ecuador as *chambira* is extracted. Photograph by R. E. Schultes.

flavour without the bitterness of Chinese tea. I have used it for weeks togr instead of tea, and I believe you have done the same.

"Timber of larger size & suit<sup>d</sup> for all sorts of useful & ornamen<sup>l</sup> work might be sawn up in any quant<sup>y</sup> & w<sup>d</sup> command a ready market all the way down the Amaz. not only in Peru but also in Brazil.

"For economic purposes, colonists w<sup>d</sup> find in the woods everything wh. they could need. Palm & bamboo, for framing neat & cleanly huts, exist in endless abund. Ropes & hammocks are made from the Chambira palm (the Tucum of Brazil) [Fig. 4]. From the beard of another palm, called Biriti—huasi (n. sp. of *Attalea*) excellent brooms are made—the fibre is not so long as the Piassaba of Brazil, but is quite similar, & I have no doubt that ropes might be made of it in the same way.

"Of all the products of the forest, the Cinnamon (Canela) which induced the Spaniards who first visited this region to give the name of 'Canelos' to the entire

district, is at present the most important.† This is the bark of a sort of Laurel & Ishpingo is the calyx of the same Laurel wh. becomes enlarged & remains on the tree even after the ripe fruit has fallen away. Ishpingo has a much finer & stronger aroma than canela & is equal to the best East Indian Cinnamon. Between the two, something like 3 or 4000 lbs. are annually got out & sent to Quito, Guayaquil, etc., but I believe all is consumed within the republic.

“Caoutchouc (called here Jeve) exists at Saray<sup>f</sup> & Canelos, but I did not succeed in finding it at the interm<sup>c</sup> point of Pacary<sup>o</sup> nor have the Ind<sup>s</sup> ever noticed it there.‡ I have seen Ind<sup>n</sup> r. brot from Canelos & I am told that a few years ago sev<sup>l</sup> entire cargos of it were bro<sup>t</sup> out. From its appearance, I have no doubt that it is prod<sup>d</sup> by a tree of the same genus (*Siphonia*) as I [sic] been for years familiar with on the Amaz. & its trib<sup>s</sup> & of which I have discovered several endemic species.

“There is a species of *Cinchona* on the beaches of the Pastasa along with the *Myrica*, but the bark is thin & contains little alkaloid. In crossing the Shina on my way from Canelos hither I noticed a few trees of a broad-leaved *Cinchona* of consid. size wh. I have no doubt would afford Cascarella of good qual<sup>y</sup>. This *Cinchona* had most probably been bro<sup>t</sup> down by the water of the Shina from the more temper. regions wh. are the habitat of all the best sorts of *Cinchona*.

“The? [plant] (called in Peru Bombonaje), the *Carludovica palmata* of botanists, from the straw of which are made the beautiful Guayaquil & Moyabamba hats now so lucrative an article of commerce in these parts, especially for exportation to Brazil, grows abundantly on the alluvial cliffs all along the Bombonasa, & is a plant of the easiest possible cultivation. The predominance of moist weather in Canelos renders it peculiarly suitable for the weaving of these hats—I have noticed at Tarapoto in very dry weather that the straw curled up & became brittle, so that the weavers had to moisten it every few minutes.

“To ascertain exactly the mineral & vegetable riches of the Province of Canelos w<sup>d</sup> demand a careful scientific exploration, expec<sup>y</sup> towards the higher grounds—Llanganati & other ridges that run from it across the head of the Bomb<sup>a</sup> tow<sup>s</sup> the Giguino & other trib<sup>s</sup> of the Napo.

“I have thus replied as explicitly as I do to your various queries. I w<sup>d</sup> only add that in the event of a hacienda being estab<sup>d</sup> in Barrancas, it might be found advisable to open a road thence to below the mouth of the Tashapi, wh. enters the Pastasa on the rt. bank, a little below the m. of the Pindo. At this point there are narrows & whirlpools dangerous to navig<sup>n</sup>, but below it there is, so far as I can ascert<sup>n</sup>, no obstruction to the navig<sup>n</sup> of Pastasa for small steamers to its very mouth, and conseq<sup>y</sup> by way of the Amazon, out into the Atlantic. In this way is to be avoided the tedious navig<sup>n</sup> of the winding Bomb<sup>a</sup>, which is besides (as you have seen) so insignif. a stream that only small canoes can ascend it.”

† The identity of the plant which Spruce calls “canela” is not clear but refers probably to a species of the lauraceous genus *Endlicheria*. Several species occur in the region and are still known as “canela” and “ishpingo”. They are trees and have a highly aromatic bark. In some areas, the bark is actively exploited, although, at the present time, production has significantly dwindled. There is the possibility, however, that Spruce was referring to a species of the related genus *Ocotea*.

‡ Representatives of the rubber-producing genus *Hevea* are rare in the flora of the eastern Andean slope and westernmost Amazon of Ecuador, but *H. guianensis* Aubl., which yields a rubber of inferior albeit usable grade, has been collected from Amazonian Ecuador.