

On the cascarilla plants of the West India and Bahama islands / by W.F. Daniell.

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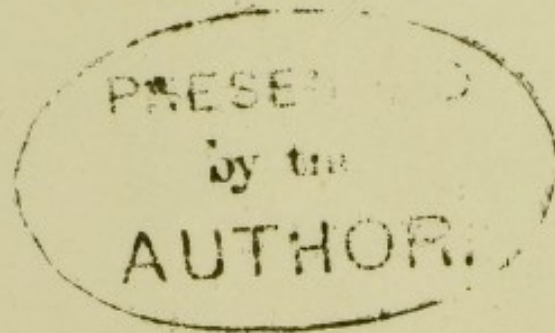
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ON

THE CASCARILLA PLANTS

OF THE

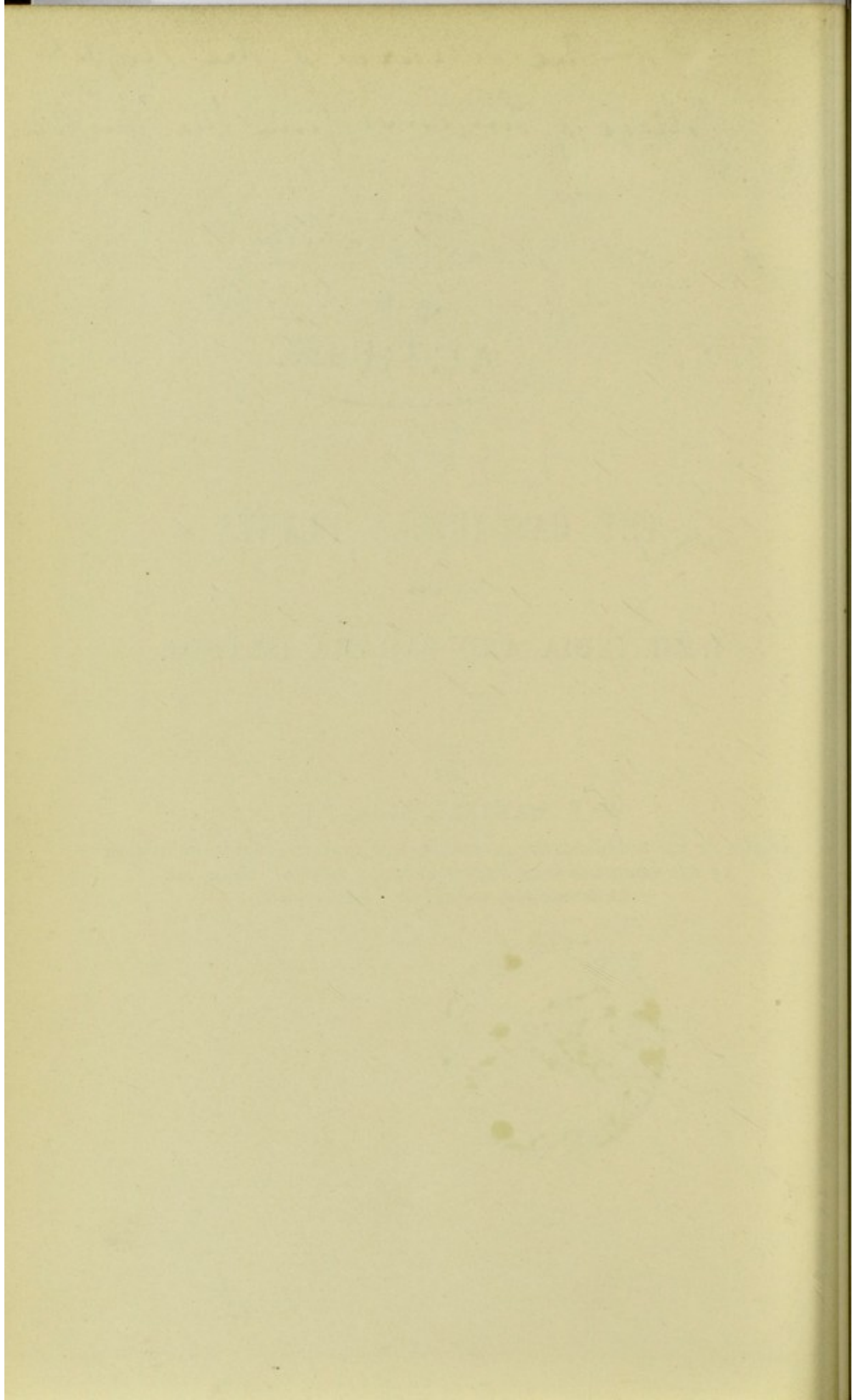
WEST INDIA AND BAHAMA ISLANDS.

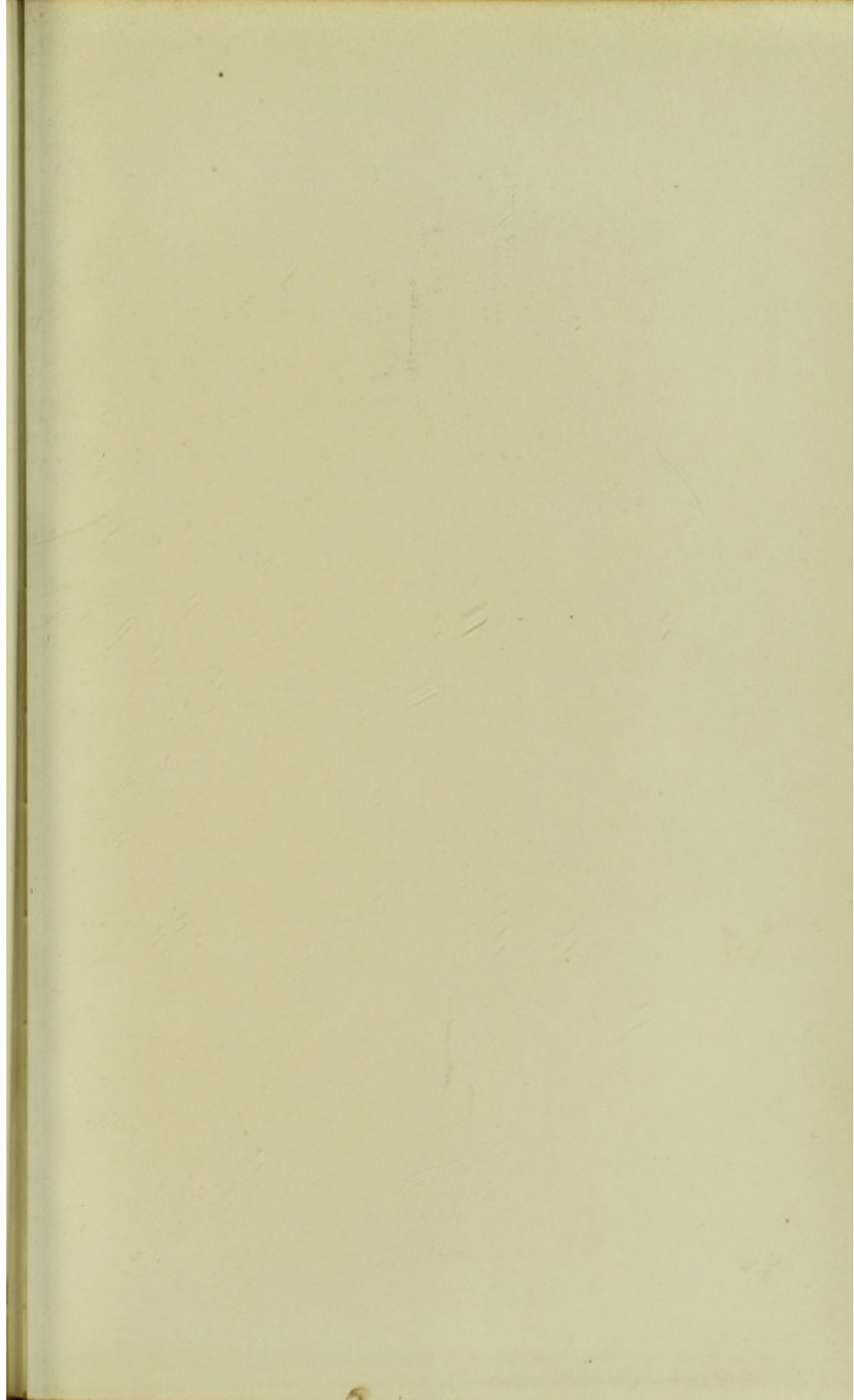
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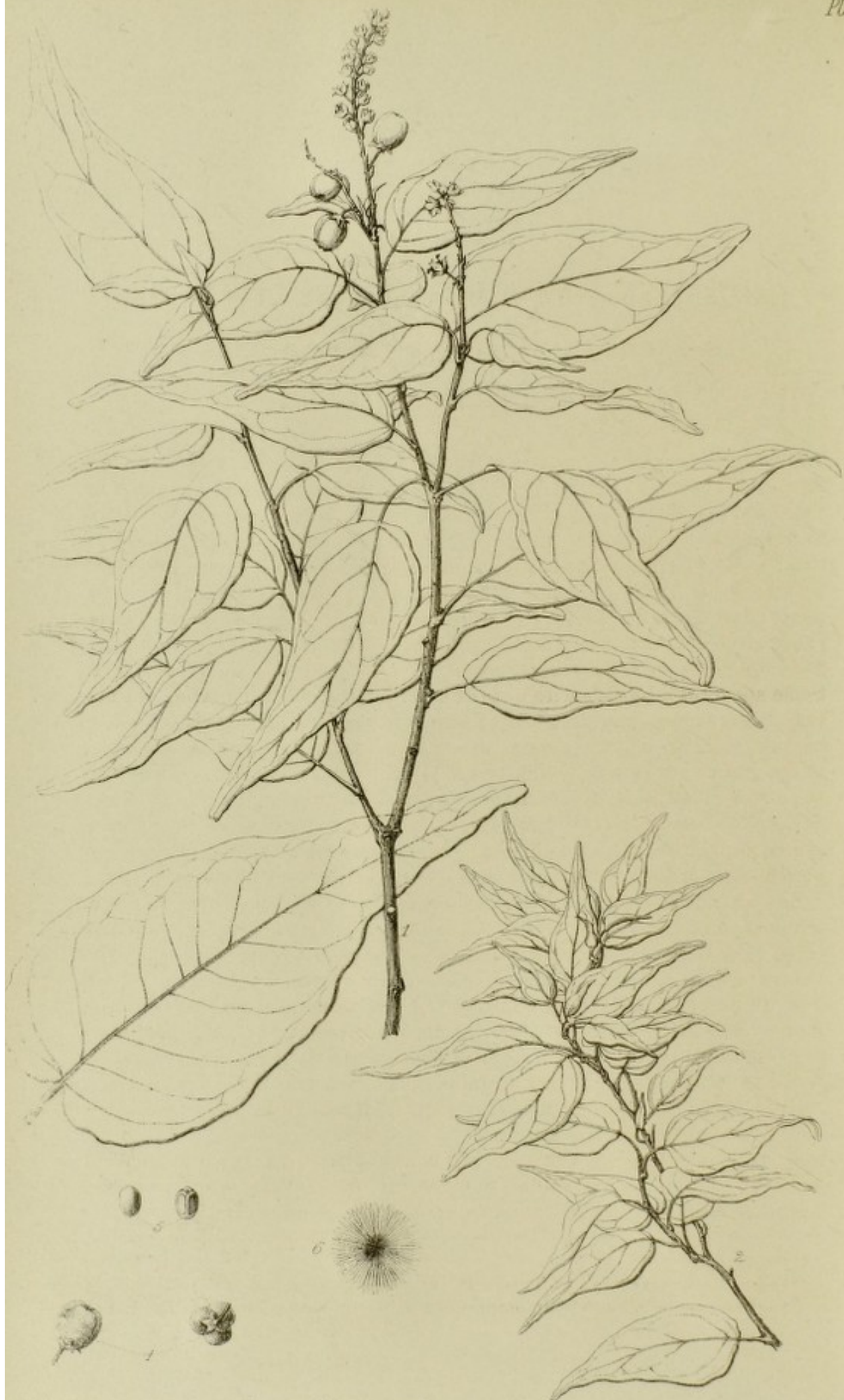
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Croton Elaeagnifolius Benn.

G. Jarman del. et sc.

ON THE
CASCARILLA, AND OTHER SPECIES OF CROTON,
OF THE BAHAMA AND WEST INDIA ISLANDS.

Although much of the confusion which formerly prevailed, respecting the sources of the Cascarilla barks of the West Indies, has been dissipated by the researches of Woodville, Lindley, and other pharmaceutical authorities, nevertheless considerable doubt existed with reference to the species of Croton, that originally supplied the markets of Europe, and to which the term Cascarilla was first applicable. That the plant yielding the article of commerce, during the last century was also unknown, is evident from the discrepancy of opinion, that pervades the statements of comparatively recent writers. This obscurity, never entirely dispelled, has continued up to the present date. Some apparent inconsistencies in their descriptive account, requiring elucidation, I was induced during a tour of service in the Bahama islands in 1857-8, to make inquiries into the general history of the medicinal Crotons indigenous to the group; the results of which were placed in the hands of my friend Mr. Bennett, and published by him in the Journal of the proceedings of the Linnean Society.* From his careful revision of their botanical characters, intricate synonyms, and other specific details, I have been enabled to rectify many important inaccuracies, perpetuated in the works of *Materia Medica*.

Any attempt to trace the aboriginal uses of the Cascarilla barks, can only terminate in disappointment, owing to the rapid extinction of the Carib races, that from an early epoch populated these and other islands of the West Indian archipelago. These primitive inhabitants, according to report, were fully cognizant of their remedial and other economic properties, which they rendered subservient to the treatment of diseases, and other necessary purposes. If we may credit local traditions, the native priests or doctors, resorted to the dried plants for fumigations and in religious ceremonies; and while the fresh leaves were infused in their medicinal baths, the cortical portions were more exclusively reserved for internal administration. The dried bark also was reduced to a powder, and mixed with their tobacco previous to smoking. The inhalation of this mixture was reputed to act as a powerful stimulant, and to induce effects analogous to those of intoxication.†

* Vol. iv. p. 29.

† The conjunction of other substances in the smoking of tobacco, with the view of modifying or improving its flavour, appears also to prevail among several of the Indian

The European colonists who first settled in the Bahamas apparently obtained a partial knowledge of these appliances, in the course of time from the natives, and hence their practical value has been derived, and handed down to the present period. The famous Buccaneers who infested the secret Cays, or islets of the Bahamas, and inspired such terror by their piratical excursions in former centuries, appear to have held these products in high esteem. Selecting the fresh cortex, they infused it either in wine, or ardent spirits, and this constituted not only an agreeable bitter, but a prophylactic agent, for the preservation of health. Dried in the sun, and subsequently pounded into small fragments, it was smoked mixed with tobacco; and this method of employment, independently of the agreeable flavor inhaled, was equally considered to be an antidote against the attacks of febrile, and other local maladies. The system of conjoining these barks with tobacco, partly introduced into England and other countries of Europe towards the close of the seventeenth century, may be traced to these seafaring usages, which, again, were adopted from those of the Carib tribes. For the information which led to their appropriation, as one of the chief ingredients in the composition of incense, and other fumigating compounds, we are indebted to the labours of the early Spanish missionaries, who during their sojourn among the West India islands, gained a practical illustration of this aboriginal mode of employment.

I. SWEETWOOD BARK, OR BAHAMA CASCARILLA.

(*Croton Eluteria*, Benn.)

Elutheria Providentia, folio cordato subtus argenteo. Sweet Bark, s. cortex bene olens, *Petiver, Collect.* 4. n. 276.

Eluteria, *Linn. Hort. Cliffort.*, p. 486.

Clutia Eluteria, *Linn. Spec. Plant.* ed. 1. p. 1042 (*excl. synonym. omn. præter Hort. Cliff.*).

Clutia Eluteria, s. *Cascarilla*, *Woodville, Med. Botany*, ed. 1. vol. iv., *sup. fig. 2*, (1794.)

Clutia Eluteria, s. *Cascarilla Clutia*, *Woodville, Med. Bot.* ed. 3, p. 633, *pl. 223, fig. 2*.

Croton Eluteria, *Benn. Journ. Proceed. Linn. Soc.*, vol. iv. p. 29.

From this plant the ordinary *Cascarilla* bark of commerce is procured. The species is tolerably abundant in the Bahamas, especially in the larger islands of Andros, Long, and *Elutheria*, from the latter of which its appellation has been derived, owing to the great supply it formerly yielded. In New Providence, it flourishes only to a very limited extent, having become nearly extinct from previous demands. A number of small shrubs and young trees may yet be found, within the track of brushwood to the rear of Fort Charlotte, adjoining the town of Nassau, and a few isolated bushes in other districts of the isle.

tribes of North America. During the late overland transit of the troops through Canada, powdered Willow-bark, an article much used for this object, by the Indians, was freely offered for sale, and it is stated that on trial, a peculiar taste and odour was imparted to the smoke.

Except a few local traditions referring to the use of the cortex for smoking, or fumigating purposes, in the religious or state ceremonies of the ancient Caribs, the data requisite to determine the various native preparations of this plant, are lost in obscurity. The custom of smoking the powdered bark conjoined with tobacco, in vogue with the earlier European colonists, in these and the Caribbean islands, either to disguise the flavour of the herb, or as a prophylactic agent to avert attacks of sickness, may evidently be ascribed to their primitive usages. It is somewhat remarkable that Catesby, who visited the Bahama islands about 1722, should include a specimen of this shrub in his collection, without name or other explanatory remarks, a fact that would lead to the inference this product had not at that period acquired sufficient importance to constitute an article of export. Moreover, the mere descriptive outline of "*Elutheria Providentiæ folio cordato, subtus argenteo*, with the sole annotation of *Sweet bark, s. cortex bene olens*," in Petiver's collection of plants, will tend to confirm the opinion, that the bark had not been brought into popular request, otherwise such a special event would have been recorded.

Linnaeus first briefly, but incompletely, described this species under the true synonym of *Cortex Ilatheria*, in the 'Hortus Cliffortianus,' from a specimen now in the British Museum; but subsequently forgetting this detailed fragment, and quoting a series of discordant synonyms in his works, contributed greatly to complicate the identification of later specimens. In the first edition of his 'Species Plantarum' under the name of *Clutia Eluteria*, he correctly refers to the *Eluteria* of the 'Hortus Cliffortianus,' but in the following editions improperly inserts other Crotons, obviously distinct. Linnaeus also classed several of these species by the generic title of *Clutia*; later botanists have however defined them to be true Crotons in the most comprehensive sense of the term. To Woodville, although he indiscriminately confounded the Jamaica (*C. Sloanei*, Benn.) and Bahama (*C. Eluteria*, Benn.) plants together, under the general designation of *Clutia Eluteria s. Cascarilla*, may be attributed the merit of having pointed out the plant producing the Cascarilla bark of modern commerce, at the same time truly stating the locality from whence it was imported. The difference and contemptible character of the specimens he figured in illustration, indicated such apparent inconsistencies, as to induce Pereira and other authorities to doubt whether he had clearly established the source of the drug in common use. Lindley finally decided the question, by obtaining from New Providence authentic specimens of this species of Croton, fully confirming the accuracy of Woodville relative to its local origin. The shrub is stated to have been introduced into England by P. Miller, but not being a showy plant, it probably became neglected, and was ultimately suffered to decay, as no traces of its existence could subsequently be discovered.

Under the aspect of a young tree, this species may sometimes be noticed, with a stem from 4 to 8 inches in diameter; the usual growth however is that of a small, compact-branched, scanty-leaved shrub, from 3-5 feet in height. The inferior portion of the stem is devoid of branches, erect, marked at irregular intervals by epidermoid greyish, or white rugous stains, and covered by a variety

of parasitical lichens. The leaves are petiolate, at the base varying from slightly cordate to acute, obtusely acuminate or frequently abruptly acuminate, as if the apex had been cut off, pale or greyish green, sparingly clothed with peltate scales above; beneath, densely clothed with shining and silvery scales, which in the distance present a white colour. They alter in size, in proportion to age; for it is characteristic of the species, that the younger the plants the greater are their dimensions. They average from 2 to 3 inches in length, and 1-1½ inches in breadth. In the arborescent form they become more narrow and elongated, lose their cordate base and are considerably reduced in dimensions, being only ½-1 inch long, and from ¼-½ inch wide. As the plant gains in growth the leaves fall from the lower branches, and are permanently collated at the summits of the younger branchlets. The inflorescence consists of numerous small, closely set white petiolate flowers, male and female, attached to a simple spike, either terminal or axillary. They appear in March and April, and then diffuse around a most exquisite perfume. In the arborescent shrub, the spike is however uniformly terminal. The fruit, a small, roundish oblong, smooth, lobated capsule, is about the size of a pea, of a greyish or silvery hue. It is divided into three cells, each containing a small dark brown, oblong, shining seed, convex externally, with flattened sides, converging to a ridge, and about 2-2½ lines in length. The pericarp is covered with numerous silvery peltate scales, somewhat resembling those on the leaves. These capsules attain maturity in May and June. The cortical layers change from a pale, to dull red, according to age or dimensions of the plant.

In the late and previous editions of Pereira's 'Materia Medica,' this species has been denominated the sea-side Balsam, a name by which the *C. balsamiferum*, Linn., is recognized in the West Indian and Bahama islands. This title was conferred by Browne on a plant he considered to be identical with the *Croton Eluteria* of Swartz. The latter botanist however had apparently his doubts whether it was the same product, as he has not adduced it as a synonym in his descriptive account. From the circumstance of a thick balsamic liquor exuding from the younger branches, whenever wounded or broken, with other structural peculiarities, it is probable that the Crotons of Browne and Linnæus may be nearly allied, if indeed they are not synonymous. The *Croton Sloanei*, Benn. (*C. Eluteria*, Swartz), however, clearly differs from both.

Woodville quotes a German author, who states that the bark comprised one of the principal exports of the Bahamas, and could be purchased at the low rate of 10s. 6d. per cwt. He may therefore be presumed to have visited these islands towards the end of the last century. During my residence in New Providence in 1857-8, the prices ranged from nine to twelve shillings per cwt.; but at some periods, owing to the cessation of any demand, were almost nominal. The subjoined table, from official sources, will indicate the quantity exported from these islands from 1850-58, at the estimated value of £10. 10s. per ton.

	Tons.	Cwt.		Tons.	Cwt.
1850.....	46	3	1855.....	16	1
1851.....	50	4	1856.....	16	2
1852.....	10	13	1857.....	68	8
1853.....	24	13	1858.....	21	14
1854.....	25	15			

The parts of the plant employed for remedial purposes by the inhabitants of the Bahamas, are chiefly the cortex and tender shoots, which are administered in the form of a decoction or infusion, in cases of dyspepsia, loss of appetite, and other visceral derangements occurring as the sequel of acute endemic diseases. The leaves are selected chiefly to medicate their warm baths. Doubtless from being viewed more in the light of a mercantile product, than as a medicinal agent, it has of recent years fallen somewhat into disrepute, and is less frequently resorted to in the treatment of these maladies. It would not come within the scope of this paper to enter into the comprehensive details connected with the appliances of this drug in Europe. I may however remark, in addition to other uses, that I have found an infusion of the fresh bark, combined with ammonia or other stimulants, to prove of benefit in the latter stages of yellow fever, where, from the results of previous febrile excitement, the stomach has assumed an atonic or depraved condition, rendering it barely capable of exercising its ordinary functions.

II. THE JAMAICA, OR CARIBBEAN CASCARILLA.

(*Croton Sloanei*, Benn.)

Mali folio arbor, artemisiæ odore et flore, *Sloane, Jamaica*, vol. ii. p. 30, t. 174, fig. 2.

Clusia Eluteria, Linn. *Amœnit. Academ.*, vol. v. p. 411.

Croton fruticosum; foliis subrotundo-ovatis, subtus subincanis alternis, spicillis alaribus? *Browne, Hist. Jamaica*, p. 348.

Croton Eluteria, Swartz, *Flor. Ind. Oc.*, p. 1183.

Croton Elutheria, Wright, *Lond. Med. Jour.*, vol. viii. p. 3.

Cluytia Eluteria, Woodville, *Med. Botany*, ed. 1, t. 211, f. 1. p. 2.

Croton Eluteria, Sw., *Nees v. Esenbeck, Plantæ Medicinales*, Band 1.

Croton Eluteria, Sw., Hayne, *Getreue Darstellung und Beschreibung der in der Arzneykunde*, etc., vol. xiv. t. 1. p. 1.

Croton Eluteria, Sw., Guibourt, *Histoire Nat. des Drogues*, ed. 4. vol. ii. p. 340.

Croton Eleuteria, Sw., Pereira, *El. Mat. Medica*, ed. 4, vol. ii. part 1, p. 412.

Croton Eluteria, Wood & Bache, *Dispensatory of United States*, ed. 11, p. 198.

Croton Sloanei, Benn. *Journ. Proceed. Linn. Soc.*, vol. iv. p. 30.

This plant appears to be indigenous to Jamaica, and has not hitherto been discovered in any of the Bahama islands. It was introduced into notice by Dr. Wright, who not only confounded it with the *Clusia Eluteria* of Linnæus (*C. Eluteria*, Benn.), but also stated that it constituted the source from whence the Cascarilla barks of the shops was obtained. His remarks are as follow: "This tree is common near the sea-shore, and rises to about twenty feet.

The leaves are from two to three inches long and of a proportional breadth. On the upper side they are waved and of a rusty colour, on the under, ribbed and of a fine glossy or silvery appearance. From the axillæ they have numerous small spikes, with a great quantity of white, small, and fragrant flowers. The capsule is tricoccus like other Crotons. The bark is the same as the Cascarrilla and Elutheria of the shops." Pereira, however, proved the fallacy of several of these statements; for on an examination of the customs entries, he ascertained these imports were brought from the Bahamas, and that the two supposed distinct barks retailed in the shops were in fact identical, and procured from the same plant. He also observed that two circumstances threw great doubt over the validity of Dr. Wright's conclusions: viz., that it was very unlikely that Cascarrilla and Eluteria barks should be vended as distinct substances, if they were identical, and that it was possible they might be, or were nearly allied, but their identity was impossible; moreover if Cascarrilla was the produce of *C. Eluteria*, how was it that none of the bark was imported from Jamaica, where, as Dr. Wright stated, the tree was very common? Nevertheless both this and the Bahama species (*C. Eluteria*, Benn.) were considered to be synonymous, by botanical and pharmaceutical authors until the present time.

Sloane, in his work on Jamaica, was the first to notice this plant under the descriptive outline of "Mali folio arbor, artemisiæ odore et flore," a dried specimen of which, exists in the Sloanean herbarium of the British Museum, in a good state of preservation. In the fifth volume of 'Amœnitates Academicæ,' Linnæus, under the same designation of *Clusia Eluteria*, confused it with the Bahama Cascarrilla (*C. Eluteria*, Benn.): Swartz, in his 'Flor. Indiæ Occidentalis,' described the tree with ovate acuminate leaves, silvery beneath, and composite axillary racemes, by the name of *Croton Eluteria*, under the impression it furnished the ordinary bark of commerce; and this mistake has subsequently been continued in most of the works of Materia Medica.

Woodville, in the several editions of his 'Medical Botany,' gives a bad delineation of both this and the Bahamian Cascarrilla, evidently viewing them to be identical. Nees von Esenbeck, in his 'Plantæ Medicinales,' has also incorrectly stated this species to constitute the officinal Cascarrilla bark. His figure has apparently been taken from the plant in the Herbarium of the British Museum. Hayne also, in his 'Arzneykunde,' adheres to the same mistake; and Pereira, in his elaborate work, labouring under the impression that Swartz's and the Bahama plants were identical, has also erroneously represented the former, with its connected descriptive details, as supplying the modern drug of the markets. Guibourt, in his 'Histoire des Drogues,' has also considered it to yield the same article.

This species, though commonly met with as a low bushy shrub, from 4-6 feet in height, often assumes an arborescent form, and attains an elevation of twenty feet or more. The trunk is more or less covered with a whitish wrinkled epidermis, as in the preceding plant. The leaves are petiolate, broadly ovate, blunt or with a blunt point, perforated with transparent dots, thinly sprinkled on the upper surface with peltate scales, beneath, more numerous, and of a whitish or silvery hue. A marked distinction

may be observed in the character of the inflorescence compared with other species, the compound spikes, or rather racemes, being more frequently axillary than terminal, and densely clothed with small, subsessile, white, and fragrant flowers. The fruit consists of the usual tricocous capsule, indicative of the genus, about the magnitude of a pea, each cell containing a small brown ovoid seed. The pericarp is minutely warted (Swartz), and studded with peltate scales. There are grounds for supposition, that the employment of the cortex of this plant by the colonists of Jamaica for various medicinal uses, may have led Dr. Wright into the belief that it was identical with the Cascarilla bark of the shops, and the warm aromatic taste and agreeable flavour of all parts of the shrub would tend to confirm this opinion. Although it is stated to be applied to the cure of disease, by the negro inhabitants of the island, I have not been able to obtain any detailed account of the mode of administration, or of the affections, for the treatment of which it is exhibited. I may observe that the plate of this Croton is taken from Dr. Wright's own specimen in the Herbarium of the British Museum.

III. THE SMOOTH-LEAVED, OR FALSE BAHAMA CASCARILLA.

(*Croton lucidum*, Linn.)

Croton fruticosum, *Miller, Gard. Dictionary.*

Croton lucidum, *Linn. Species Plant. n. 1426; Amœnitat. Acad., vol. v. p. 410.*

Croton spicatum, *Bergius, Philosophical Transact., vol. lviii. t. 7. p. 132.*

Croton erectum glabrum, foliis ovatis oppositis vel ternatis, spicis terminalibus, *Browne, Hist. Jamaica, p. 347.*

Croton lucidum, *Swartz, Flor. Ind. Oc., vol. ii. p. 1193.*

Croton (Astræopsis) Hookerianus, *Baillon, Euphorb. p. 363.*

Croton lucidus, *L. Grisebach, Flor. Brit. W. India Islands, vol. i. p. 40.*

In several of the districts of New Providence, the negro settlers were in the habit of collecting the cortex of this plant, with the object of boiling it with that of the *C. Eluteria*, Benn., under the notion it exerted a more favourable influence in the modification of its curative powers, and I found on inquiry that it was recognized by the specific term of *False sweetwood bark*. Elsewhere, however, these supposed remedial virtues are either apparently unknown, or not so much appreciated.

The species occurs in the Bahamas usually as a low dwarfish shrub, from 3 to 4 feet in height, and is common throughout the group, and in most of the West India Islands. The stem is erect, with epidermis more or less stained by white or greyish rugous blotches, branches smooth or rarely lepidote, leaves long, petiolated (the petiole and midrib frequently of a pinkish hue), elliptical, perforated by transparent dots, with plain or slightly undulated margins, glabrous on upper surface, or sparingly covered with minute stellate hairy scales; devoid, beneath. Spikes abbreviated, simple, terminal, clothed with long petiolated white flowers, which emit a fragrant odour. They are produced in March and April, male and female on the same spike. The capsule is oblong,

or ovate-oblong, partially embedded in persistent calyx, three celled, with a solitary seed in each. Pericarp glabrous, or sprinkled with a few stellate hairs. Seeds 2-2½ lines long, ovoid oblong, pale-brown, shining, convex externally, with flattened sides. Fruit ripens about May or June.

The cortical layers of the bark are of a dull red colour, and in their fresh state have a slight bitter and somewhat astringent flavour; they are much less spicy and aromatic than the true Cascarilla. Under the preparation of a decoction it appears to be administered conjoined with that of the *C. Eluteria*, Benn., in cases of mild or ephemeral fevers, disorders of the chylopoietic viscera, and slight constitutional debility.

IV. THE WILLOW-LEAVED CASCARILLA.

(*Croton Cascarilla*, Benn.)

Ricinoides elæagni folio, Plumier, *Icones*, p. 236, t. 240, f. 1, spec. 20.

Ricinoides elæagni folio, Catesby, *History Carolina*, vol. ii. t. 46.

Clutia Cascarilla, Linn. *Species Plant. ed. 1.* p. 1042.

Croton Cascarilla, Benn. *Journ. Proc. Linn. Soc.*, vol. iv. p. 30.

This species, indigenous to Elutheria, Long, and other large islands of the Bahamas, and formerly equally abundant in that of New Providence, became almost extirpated in the latter during the last century, a few plants now only existing at the eastern extremity of the isle. The same product appears to be also common to several districts in St. Domingo, but I am not aware that it has ever been found in Jamaica, as asserted by some writers. That this species originally yielded the Cascarilla bark of commerce, until superseded by the *Croton Eluteria*, Benn. (*Clutia Eluteria*, Linn.), there can be little doubt; for though unknown to the inhabitants of Nassau, several from Eleutheria had a faint recollection of it constituting an article of export many years since. The dried cortex was also denominated *Ilatheria* or *Eleutheria* bark, and employed by the people in the treatment of diseases, incidental to different localities of the island.

Dr. Wood, of America, and the late Dr. Pereira were both of opinion that the ordinary Cascarilla bark of the shops may have been procured from this plant, and there are sufficient grounds for belief that their conjectures would have proved well-founded had they assigned the origin to a less modern date. But I was assured by one of the wood-cutters of Eleutheria, that even recently, the bark of this *Croton* when met with, is collected, and incorporated with that of the *C. Eleuteria*, Benn., for exportation. This statement, however, requires confirmation.

Plumier was the first who described this *Croton* in his 'Species,' etc., under the title of *Ricinoides elæagni folio*, and gave a figure of it in the "Icones, etc." Catesby, in his *History of Carolina*, mentions it by that of *Ilatheria bark* or *La Chachrille*, and observes that the shrub "grew plentifully in most of the Bahama Islands, seldom above ten feet high, and rarely so big as a man's leg, though it is probable that before these islands were exhausted of so much of it, that it grew to a larger size; the leaves are long, narrow, and sharp-pointed, and of a very pale light-green colour; at the ends of the smaller branches

grow spikes of small hexapetalous white flowers, with yellow apices, which are succeeded by tricapsular pale-green berries of the size of peas, each berry containing three small black seeds, one in every capsule. The bark of this tree being burnt, yields a fine perfume; and infused in either wine or water, gives a fine aromatic bitter.* The result of my inquiries tends to substantiate the accuracy of these statements, so far as they relate to the general history. The custom of smoking certain portions of this plant conjoined with tobacco, adopted by the earlier European settlers, either to impart an agreeable flavour, or as a stimulant and prophylactic to avert the attacks of disease, is evidently to be traced to the usages of the preceding Carib population. The term 'Ilatheria' is merely a vernacular corruption of Elutheria. Catesby's plant is the *Clusia Cascarilla* of the first edition of Linnæus's 'Species Plantarum,' who misstated the habitat of Carolina for that of the Bahamas. Nicolson, in his "Essai sur l'Histoire Naturelle de St. Dominique,"† evidently alludes to this or a similar production under the synonym of "*Ricinoides*;" and by the creole appellation of Sauge du Port de Paix.—Chaumeton, in his 'Flore Médicale' gives a tolerable illustration of it, remarking that the shrub flourished so extensively on the northern coasts of the island, as to form large forests occupying an extensive arid track of country, in the neighbourhood of Cape La Grange, and the immediate vicinity of the town of Port du Paix. It is there known by the name of "Thé du Port de Paix," from an infusion made by the inhabitants from the leaves. He adds, in a note, that it was very plentiful in the island of Eleutheria, and was distinguished by certain pharmacologists by the term Cortex Eleutheriæ.‡

The comparative rarity of this species of Croton, with the difficulty of obtaining authentic specimens, has rendered it very imperfectly understood; a wide diversity of opinion existing among botanical writers, with reference to it constituting a distinct species, or only a variety of the *Croton lineare* of Jacquin. The delineation of the plant in Catesby's work is of such an indifferent character as to lead Lindley to question to what Croton it could belong.§ By the majority it has been confounded with Jacquin's plant. The general habit, form of leaves, and other peculiar characters however, obviously separate it from this and all other species of *Croton*; so much so, that when placed in comparison no question could arise about the recognition of their specific differences. The following remarks by Pereira indicated the doubt and obscurity in which these details were involved. He observes that the plant called by Linnæus "*Croton Cascarilla*" was regarded for many years as the source of our Cascarilla bark. In 1787, Dr. Wright declared that Linnæus's *Croton Cascarilla* is the wild Rosemary shrub of Jamaica, the bark of which has none of the sensible qualities of Cascarilla. It appears however that the wild Rosemary shrub of Jamaica is the *Croton lineare* of Jacquin, and that some botanists are not quite decided whether we ought to regard it as a variety

* Vol. ii. t. 46.

† Page 207.

‡ Vol. ii. p. 174. t. 103.

§ It is also to be noticed that it is impossible to say what the plant is, that Catesby figured; for I know of no Croton, nor indeed any other plant, to which it can belong. ('Flora Medica,' p. 179.)

merely of, or a distinct species from, the *Croton Cascarilla* of Linnæus. Willdenow considered it to be a variety; Sprengel a distinct species; Don says it is identical with Linnæus's plant. It is remarkable, however, that the specimen in the Linnæan Herbarium is, according to Mr. Don, *C. lineare*, and we are therefore in want of a good botanical description of the plant alluded to by Catesby.* This desideratum has lately been supplied by the excellent Paper of Mr. Bennett, in the 'Journal of the Proceedings of the Linnean Society.'

Guibourt, in his 'Histoire des Drogues,'† appears to incline to the opinion that this species was the one formerly supposed to supply the markets with the article of commerce, although he considers it now to be chiefly yielded by the *C. Eluteria* of Swartz, the production from which, however, as I have previously remarked, was not the case.

Of this *Croton*, a few plants only were discovered growing at the eastern extremity of the island of New Providence, among the interstices of limestone rocks skirting the beach, it apparently delighting in dry localities, exposed to the influence of the regular sea breezes. With a solitary exception; all partook of the habit of bushy shrubs, from 4-6 feet in height, much branched, with a peculiar pale or greyish-green stem. The epidermis was destitute of lichens, and the white rugous patches, so frequently met with in other species. The branchlets were of a pale or orange-yellow, clothed with pubescence similar to that on the leaves. The inflorescence consisted of numerous simple spikes, invariably terminal, with male and female subsessile flowers on each spike, the small white petals of which were sometimes tinged by a faint yellow hue. They generally appeared in March and April, and when fully evolved emitted a very fragrant perfume. The fruit, a tricocous capsule, deeply furrowed, about the dimensions of a pea, with a pale yellow more or less rugous, pubescent pericarp, clothed by minute stellate hairy scales, is divided into the ordinary number of cells, each containing a small brown shining seed of variable proportions (1-2½ lines long), externally convex and flattened on each side, so as to form an angular ridge. They attain maturity in May and June. The leaves are petiolate, glandular at base, narrow-lanceolate, sharp-pointed, flat or slightly waved at the margins, tapering towards both extremities, smooth, yellowish or rusty green on their upper surface, pale yellow beneath, and densely tomentose, being covered with numerous intricate stellate hairs.

The cortical layers in the younger shrubs are of a pale, or greyish-green colour, but in those of an arborescent size become changed to a dull red. The dried bark is deficient in the warm aromatic flavour of the *C. Eluteria*, Benn., but appears to be endowed with more bitter extractive matter. The absence of the whitish epidermoid stains, and parasitical cryptogams, the peculiar nodulate character of the stems and greyish-coloured inner bark, will serve to distinguish it from that of *C. Eluteria*, Benn.

According to local traditions the Carib populations highly valued the entire plant, and also that of the *Croton lineare*, Jacq., both of which exhaled a

* Medical Gazette, vol. xx. p. 847.

† Ed. 4, vol. ii. p. 340.

grateful spicy odour, qualities that invariably command the regard and esteem of most barbarous tribes. These products they rendered subservient to a variety of useful purposes, of which the process of fumigating, comprised one of their favourite modes of appliance. European colonists subsequently obtained the knowledge of their medicinal virtues from these sources. They macerated the fresh cortex in wine or spirits, and thus prepared a palatable and pleasant tonic for the relief of dyspepsia, and loss of appetite. In St. Domingo the negro inhabitants have designated the shrub by the name of Port de Paix Sage. The beverage termed "Thé du Port de Paix" is made by infusing the fresh leaves in boiling water, which, previous to use, required to be well strained, otherwise irritation of the throat would be induced. The agreeable aromatic taste of this infusion had doubtless suggested its employment as a stimulant and stomachic in functional derangements of the stomach and bowels, and the nervous lassitude or debility, that so frequently ensues as the sequel of endemic febrile affections.

V. THE ROSEMARY-LEAVED CASCARILLA.

(*Croton lineare*, Jacq.)

Ricino affinis odorifera fruticosa major rosmarini folio, fructu tricocco albido, *Sloane, Hist. Jamaica*, 1, p. 133, t. 86, f. 1.

Croton fruticulosum; foliis longis, angustis, subtus incanis, margine reflexis, *Browne, Hist. Jamaica*, p. 347.

Clusia Cascarilla, *Linn. Amœnitat. Acad. vol. v. p. 411.*

Croton lineare, *Jacquin, Stirp. American. p. 256, t. 162, f. 4; Pict. p. 124, t. 263, f. 80.*

Croton Cascarilla, *Woodville, Med. Botany, ed. 1, vol. iii. p. 116, t. 41.*

Croton lineare, *Benn. Journ. Proc. Linn. Soc., vol. iv. p. 30.*

This species is indigenous to most of the Bahama and West India islands, where it is known by the title of Spanish or wild Rosemary bush, from the leaves and other portions of the shrub resembling those of the common Rosemary (*Rosmarinus officinalis*, Linn.); although every sweet-scented plant of the genus was formerly so designated in Jamaica, irrespective of this supposed similarity. It is also indigenous to the southern provinces of North America, whence specimens collected by Michaux were transmitted to the British Museum, under the erroneous title of *Croton Cascarilla*. Among the Creole population it enjoyed a wide repute for its efficiency in the cure of various maladies. In the Bahamas it is met with under the form of a low scrubby bush, seldom exceeding 3-4 feet in height, growing in waste, arid places, or by the roadsides. The stems, sometimes white, or of a peculiar greyish-brown colour, occasionally marked by white rugous stains on the epidermis, are always more or less shrubby and branched, seldom assuming an arborescent character, although stated to attain an altitude of seven or eight feet in Jamaica. The branchlets are white, or of a pale or orange-yellow hue, partially covered with stellate hairs. The leaves $\frac{1}{2}$ - $\frac{3}{4}$ inch broad, and from 1-2 $\frac{1}{2}$ inches long, are nearly sessile, linear, blunt, more or less reflected at the margins, deeply channelled green and smooth above,

beneath white or pale-yellow, very densely pubescent, being clothed by numerous intricate stellate hairs. The inflorescence is axillary and terminal. Odoriferous, subsessile white flowers, occasionally tinged by yellow-green at their apices, are sparingly attached to simple spikes, the male and female being set on distinct spikes. The fruit, the ordinary trilobular capsule of the genus, containing three small, deep-brown, ovoid seeds, is about half the size of the common pea. The pericarp, of an orange-yellow hue, is rugous, and thickly studded with stellate hairy scales. The fruit ripens in May and June. Similar to the preceding species, the entire plant, when rubbed between the hands, imparts a pleasant aromatic fragrance, which continues for some time. The cortical layers of the bark are of a greyish-brown colour, and of an agreeable bitter flavour, but do not possess the warm aromatic aroma of those of the *Croton Eluteria*, Benn., and are also much inferior in quality to the cortex of the *C. Cascarilla*, Benn. According to Swartz, the leaves become more largely developed in the inland districts, than in those adjoining the seacoast. Sloane, in his 'History of Jamaica,' first noticed this plant under the description of "*Ricino affinis odorifera fruticosa major rosmarini folio*;" and Patrick Browne, in his work on Jamaica, by that of *Croton fruticulosum*. In the fifth volume of the 'Amœnitates Academicæ' of Linnæus, it was termed *Cluytia Cascarilla*. Jacquin, however, conferred upon it the more appropriate title of *Croton lineare*, having both described and figured it in his work on American plants. By many authorities this species has been confounded with the *Croton Cascarilla* of Bennett, a product widely dissimilar in every respect, not only as regards the habit, arborescent stem, but in the distinctive character of the petiolate, lanceolate and sharp-pointed leaves of the latter. Wright, in the 'London Medical Journal,'* has incorrectly referred it to the *C. Cascarilla* of Linnæus, which designation Mr. Bennett has clearly pointed out was originally founded on Catesby's representation of the Bahama specimen. Woodville has also committed the same mistake, and erroneously delineated it under the name of *Croton Cascarilla*, in his 'Medical Botany.' Under the article *Croton*, in 'Rees's Cyclopædia,' the diagnoses of these two species has, however, been clearly defined, as would appear by the following statement:—"Lamarck was justified, by well preserved specimens, in the herbarium of Jussieu, that this plant (*C. lineare*) was specifically distinct from the preceding (*C. Cascarilla*), though they have been confounded by Linnæus. The author of 'Hortus Kewensis' (Aiton) appears to have been of the same opinion, by his excluding the synonyms of Catesby and Plumier."† Grisebach, the most recent authority on this subject, however, describes this plant as a mere variety of the *C. Cascarilla*, Linn.‡

Under the form of an infusion or decoction, different portions of this *Croton* appear to have been employed as medicinal agents by European colonists at an early date. Barham considered the dried leaves in powder, to constitute a specific in colic, and to equal in virtue, as a stimulant and stomachic, those of our common Rosemary. The young branchlets and leaves, under the form of

* Vol. viii. p. 249.

† Vol. x.

‡ *B. linearis*, Jac., Flor. B. W. Ind. Islands, vol. i. p. 38.

a decoction, were used as fomentations in painful tumors, neuralgia, and muscular rheumatism, and likewise entered as a principal ingredient into the composition of the warm medicated baths in popular usance. During my residence in New Providence, I was informed that an infusion of this plant was deemed a successful remedy in the treatment of ulcers and other cutaneous affections, and administered internally in copious warm draughts to promote diaphoresis in the first stages of febrile and other inflammatory complaints, both by the creole negro soldiers, and the inhabitants of the island. This species appears to have been introduced into England by Dr. Houston prior to 1733, and was subsequently cultivated in some of the public gardens.

VI. SEA-SIDE BALSAM OR SAGE.

(*Croton balsamiferum*, Linn.)

Croton balsamiferum, Linn. *Mant.* 125.

Croton balsamiferum, Jacquin, *American. t.* 162, *f.* 3; *Pict. p.* 124-242. *Hort. Botan. Vindob. vol.* iii. *t.* 46.

Croton fruticosum erectum, et subvillosum, foliis cordato-acuminatis, spicis terminalibus, Browne, *Hist. Jam.*, p. 347.

Croton balsamifer, Grisebach, *Flor. Brit. W. I. Isl. vol.* i. p. 38.

This well-marked species flourishes in many of the West India islands, as also in several of the Bahamas. In that of New Providence it is usually found, more or less under cultivation in the gardens, or on the outskirts of the town of Nassau; hence, probably it has been introduced and naturalized from other localities. Tradition also asserts that this comprehended one, among other favourite plants, resorted to by the Caribs for remedial purposes. Its reputation as a medicine has not declined since their extinction, for manifold preparations from the shrub still attest the popular esteem in which it is held by the various populations of the above islands.

Owing either to its odoriferous qualities, or from an imaginary resemblance to the rugose leaves of our garden Sage (*Salvia officinalis*), this and some other Crotons have received the title of Sage or Sea-side Sage. Hence an infusion of the leaves, prepared in a similar manner to that from the *Salvia* in England and America, is also termed Sage-tea. The designation of Balsam, frequently conjoined with it, appears to be derived from the circumstance of a thick, yellowish aromatic sap exuding from the extremities of the broken branches, or wherever the stem has been wounded. Jacquin has furnished brief detailed outlines of this species in several of his works, remarking that it was called in Martinique by the name of *Petit Beaume*, or Little Balsam.

The stem is erect, with a grey or pale-brown epidermis. Branchlets pale-yellow, more or less clothed with stellate hairs. Leaves long-petiolate, broad, ovate-lanceolate, pointed, perforated by pellucid dots, pale-green, smooth, or partially covered with stellate down on upper surface, pale-yellow, hoary, densely studded with intricate stellate hairs, with two urceolate glands at the base beneath. Spike simple. Inflorescence terminal, flowers white, sometimes faintly tinged with yellow, male and female on same spike. Fruit consists of an oblong roundish capsule, one-third less in size than that of the

C. Eluteria, Benn. Pericarp rugose, covered with numerous stellate hairs. Seeds 1-2½ lines long, ovoid, deep-brown, and shining, one in each cell. Fruit becomes mature about May or June.

In several of the West India and Bahama islands, different parts of this product are rendered applicable to the cure of endemic diseases. The young leaves and branchlets introduced into warm baths are supposed to communicate their agreeable fragrance and medicinal virtues to the water, and these act in a remedial mode through the cutaneous system, while a decoction of the same is employed as a fomentation in arthritic swellings of the joints, and as a stimulant lotion to indolent sores, and chronic ulcers of the leg. Similar to the Sage-tea, in English and American use, an infusion made from the tender leaves, and drunk in copious warm draughts, is administered to procure diaphoresis in fevers, and local inflammatory complaints. Probably their stimulant, aromatic qualities render them more agreeable to the stomach, and consequently allay the nausea and gastric irritation that often accompanies the invasion of these tropical affections.

In New Providence the bruised branches and balsamic exudation, conjoined with the infused leaves, have been found beneficial in bronchitis, and as a gargle in some morbid conditions of the pharynx and mouth. A cordial liquor, termed *Eau de Mantes*, is said to be distilled from the yellow, glutinous sap, with spirits of wine, in Martinique, and valued as a medicine in the treatment of certain uterine irregularities, independently of its appropriation as an article for domestic use. Neither the bark of this species, nor that of the *C. lineare*, Jacq., are apparently held in any esteem as curative agents in the Bahamas, and therefore are never diverted to these purposes.

PLATE I.

Fig. 1. *Croton Eluteria*, Benn., four-fifths of the natural size. 2. Portion of the arborescent form, six-sevenths of natural size. 3. Leaf of young plant, natural size. 4. Fruit, natural size. 5. Seeds, natural size. 6. Scale from leaf, magnified.

PLATE II.

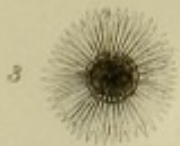
Fig. 1. *Croton Sloanei*, Benn., two-thirds of the natural size. 2. Portion of the inflorescence, magnified. 3. Scale from leaf, magnified.

PLATE III.

Fig. 1. *Croton Cascarella*, Benn., natural size. 4. Fruit, natural size. 5. Seeds, natural size. 6. Stellate hairs from leaf, magnified.

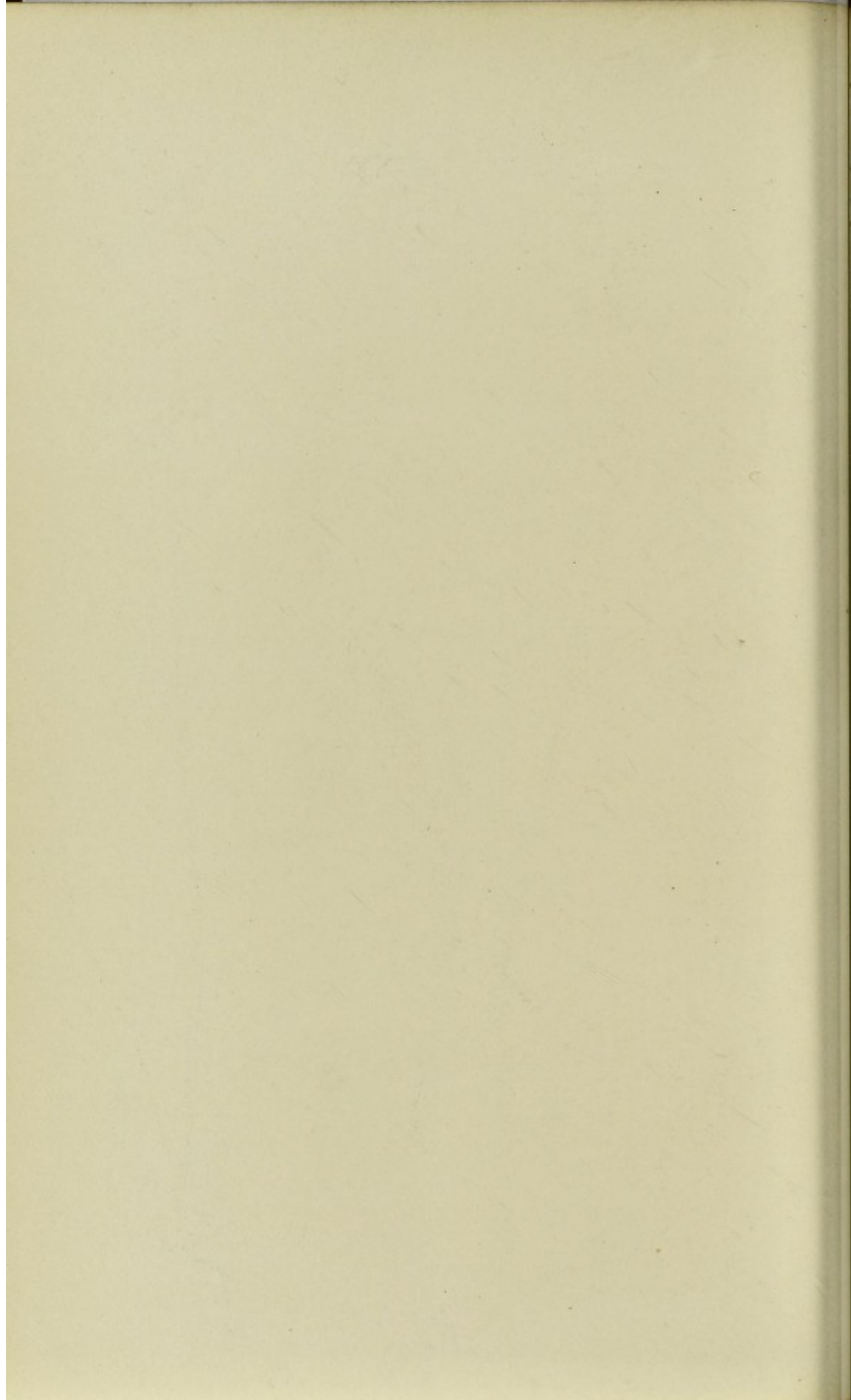
Fig. 2. *Croton lineare*, Jacq. (Jamaica), natural size. 7. Stellate hairs from leaf, magnified.

Fig. 3. *Croton lineare*, var. *b.* (Bahama), small variety, natural size.



Croton Sloanea Benn.

G. Jarman del. et sc.





Croton Cascavilla, Bonn.
Croton Linear, Var. b.

Croton Linear, Jacq.

