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MADRAS RECORD OFFICE

GOVERNMENT OF MADRAS

Revenue DEPARTMENT

G.O. No. 568 Press
B.P. No. Mis.

Dated 3-5-1876 196—

Not to be folded or roughly handled

No. 20. Read the following letter from A. O. HUME, Esq., c.B., Secretary to the Government of India, Department of Revenue, Agriculture, and Commerce (Forests), to the Secretary to the Government of Madras, dated Calcutta, 17th April 1876, No. 328:—

WITH reference to Mr. Collins' report on the caoutchouc of commerce forwarded to the Government of Madras with Her Majesty's Secretary of State's Despatch, No. 8 (Revenue), dated the 30th April 1873, I am directed to transmit copy of a despatch No. 27 (Revenue—Forests) of the 23rd December last and of its enclosure, and to request, in case the Government of Madras desire that the *Castilloa* should be cultivated in the garden on the Coonor Ghaut, that the Secretary of State may be addressed direct as regards the number of plants required and the mode and time of their transmission from England.

2. I am to add that the *Castilloa* being a purely tropical tree, regarding which it is doubtful whether it will stand the long dry and hot season of the greater part of the Peninsula of India, it may perhaps be found that Travancore offers the only locality in the Peninsula suitable for its cultivation on a large scale, but that perhaps a commencement may usefully be made in the garden below the Coonoor Ghaut.

ENCLOSURE No. 1.

Despatch from the Right Honorable the Secretary of State for India.

Revenue—Forests,
No. 27.

INDIA OFFICE, LONDON,
23rd December 1875.

MY LORD,—I have to acknowledge the receipt of your Excellency's despatch, dated the 6th of September (No. 18) 1875, and am glad to find that the plantations of *Ficus elastica* in Assam are on the whole progressing satisfactorily. Together with the cultivation of the plants, the questions relating to the best time for tapping, the yield per tree, and to improvements in the collection and manufacture should receive careful attention.

2. With a view to the introduction of the valuable India-rubber yielding trees from South America into India, I have sanctioned several steps to be taken, and among others the employment of Mr. Cross to obtain plants of the *Castilloa* trees from the forests of the Darien Isthmus. Mr. Cross has performed this service successfully, and has brought home 300 *Castilloa* cuttings, which are now established in a hot-house at Kew. They will be transmitted to India in accordance with advice received from Dr. Hooker as to the time and method, and I herewith transmit, for the information of your Government, copy of Mr. Cross' account of the native habitat and growth of the *Castilloas*. Dr. Hooker suggests that it is desirable that both the *Hevea* and the *Castilloa* plants should not be detained at the Calcutta gardens, where the climate will be injurious to them, but that they should be entrusted to the care of Mr. Gustav Mann and forwarded to Assam with as little delay as possible.

I have, &c.,
(Signed) SALISBURY.

His Excellency the Right Honorable
The Governor-General of India in Council.

EXTRACTS from report on the collecting of seeds and plants of the India-rubber tree (*Castilloa elastica*) in the forests of the Isthmus of Drien by Robert Cross.

THE tree is found growing from 1° south latitude to 20° or more north of the equator, but in such a wide expanse of country there are probably various varieties, most of which, however, may bear a close resemblance to each other, although some may be of more robust habit than the rest and attain to a greater size.

Of late years a good deal of India rubber has been brought from the forests on the Pacific Coast south of Panama near to a scattered village called Darien. The Indians in this region have been rather hostile to the Collectors, and the export has in consequence been much reduced. The greater portion of the interior of the Isthmus has been explored and the largest trees have been cut down. North of Panama, in the district of Chorera, there were once considerable numbers of trees, but these have been, to a great extent, demolished by the natives, who usually cut down the trees in order to tap or bleed them more easily.

The rubber saplings always appeared to grow most freely on the banks of little cool clear streams, the roots often running down to the edge of the water. They abounded also in deep rich soil along the base of the hills and in both deep and shallow ravines. Plants were likewise met with on the summits of the ridges, and in fact in all localities where there was no swamp or marsh land. Some plants were observed growing among masses of volcanic rock, where there was not much soil, but plenty of decaying leaves and particles of *débris*. Prostrate trunks were observed on the way, some of which had attained to a great size.

Shortly after my first arrival I collected a few plants, which, with some stout pieces of the stems of saplings cut into lengths, I planted to experiment with. The greater number prospered wonderfully, and some natives were surprised at the quickness of the result. I put the most advanced of these plants into a small box, and, although some lost a few leaves, yet I brought the best portion home alive.

In general, full-grown trees do not much exceed 160 to 180 feet, with a diameter of five feet and a produce of 100 pounds of rubber. The bark of the trunk is thicker than that of most trees of the same dimensions. The wood is spongy and soft, and decays rapidly wherever injured. The slender branchlets that crown the trunk terminate with four or five large leaves alternately arranged and thickly covered with short brown hairs. Many of the leaves measure 14 inches in length and 7 inches in breadth, and exceed in size those of any other tree of tropical America. According to the natives the leaves fall off the trees in January, after which they begin to flower. In April the new leaves push, and attain their full size in May. But I was assured that young plants and saplings retained their leaves throughout the year. The milk-like juice of the tree, which when congealed forms India rubber, is obtained by cutting out a groove or ring of bark around the base of the trunk. The milk exudes from the bark into the channel thus formed, and large leaves are placed so as to receive it as it trickles down. The tree is then felled, and rings or channels are cut out around the prostrate trunk, at about twelve or fourteen inches apart. Beneath these leaves vessels are placed into which the milk flows. The contents of all the vessels are afterwards put in a hole previously dug in the ground. The milk left in this way becomes curdled in about two weeks. In the Republic of Ecuador most Collectors use the soft green stem of a Climber, a species of *Ipomea*, which, when bruised and stirred about in the milk, congeals it in a few minutes. By this last process the milk takes up all the watery particles it may contain, and the produce seemed to be of an inferior kind, possessing a strong peculiar smell, and continually sweating a black ink, like water. Soap is resorted to by some Collectors, and also wood-ashes which contain potash. Collins mentions that alum is used in Brazil and salt in the east.

In collecting the milk, the *Combium* need not be hurt as the vessels which contain it really occur in the middle of the bark. Such at least is the case with the Darien-rubber tree.

The employment of any simple implement so formed as to make a groove in the bark to about one-half its thickness is all that is required.

Such an operation would require to be directed by an intelligent careful person, who thoroughly understands how much success depends upon the proper performance of the work. In this way not one single tree in a thousand would be lost, and the trees might, in my opinion, be operated on annually instead of once in three years, which I have been informed is the practice at Nicaragua.

The temperature of the forests in the interior of the Isthmus ranged from 75° to 88° Fahrenheit. Frequently I have observed the thermometer standing at 80° at eleven o'clock at night, and the same on various occasions at one and two o'clock in the morning. When there occurred a shower of rain accompanied by a north wind, the thermometer went down to 74° for one or two hours, but this was the lowest point to which it fell. I have not been able to ascertain to what altitude the tree grows as no high hills exist on the Isthmus, but I am pretty confident, from observations made while travelling on the Pacific Coast, that it ascends at most to an elevation of about 1,500 feet. At this height the lowest temperature experienced at any time throughout the year would be 62° or 60° Fahrenheit. As regards moisture I happen to have lived and travelled in various rubber districts where the rainfall varied considerably. On the Pacific Coast the tree grows near the Gulf of Guayaquil on flat or gently sloping land in deep deposits of a very sandy loam. The vegetation is moistened by humid fogs, but showers of rain very rarely occur. On the whole the atmosphere is unusually dry. At Esmeraldas the soil is a heavy loam or clay. There are about five months of dry or summer weather, and the remaining months are rainy.

In the neighborhood of Buenaventura the tree is found dispersed over a broken and dislocated region of narrow ridges of nearly naked conglomerate with steep shelving ravines more than 1,000 feet in depth. Where there is soil it is loam or a kind of clay or made up of vast heaps of decomposing *débris*. The rains here are almost unceasing day and night throughout the year. This part of the coast and on as far as the river San Juan have been considered by intelligent travellers as the most unhealthy tract of country in the world.

The region proper of the Isthmus of Darien lying farther northward and including Portobello, Colon, Chagres, and Panama is very wet with an excessively damp atmosphere, although the weather is generally better, with some sunshine, during the months of January, February, March, and April. The deposit of the low flat hills is more or less of a clay character, but along the banks of streams or rivers the deposit is mostly of rich but deep sandy loam. Many of the localities bordering on the Magdalena possess deep beds of sand and loam resting on a stratum of yellow gravel. The climate is often parched and dry. Rain falls in May, June, July, and August. It will thus be seen that this rubber-producing tree is subjected to a variety of climatic conditions which might have been expected from the wide extent of country over which the species extends. These circumstances appear to me to present a favorable prospect for its successful cultivation in India.

A completely distinct species of tree whence rubber is likewise obtained was seen by me in a locality near the Gulf of Guayaquil. My attention was called to it by the native Collectors, who spoke of the large size to which it grew. It has no branches, but simply pinnate leaves from three to five feet in length which form a large tuft on the top of the trunk like a gigantic grass tree. It seemed to be circumscribed to a limited extent of country.

The tree grows so rapidly that, once it is above the usual growth of weeds and shrubs, it is not likely to lie overtopped. The natives told me that in about four years young plants grew up to be trees. However, I think six years might be allowed for the development of a tree 16 or 18 inches in diameter. The produce of such a tree would then be 25 pounds. For a tree of this species, 18 inches in diameter, Collins gives a yield of 50 pounds of India rubber.

As a tree becomes older its produce would increase; but, taking a plantation generally, it appears to me a safe calculation that each tree on an average would produce 25 pounds of rubber per annum.

A fairly-grown plantation, six years old, would be worth, at the lowest computation, £6 sterling per tree. I have made these remarks to show that, if the tree succeeds as I fully expect it will, no other tree or plant yet introduced into India will compare with it in the rapid and ample return it is likely to make to the planter.

*Proceedings of the Madras Government, Revenue Department,
3rd May 1876.*

No. 21. ORDER THEREON, 3rd May 1876, No. 568.

Forests, No. 2.

COMMUNICATED to the Commissioner
of the Nilgiris, who will ascertain and
report the number of plants he would
propose to plant at Burliar, and when and how they should be obtained from England.

(True Extract.)

(Signed) D. F. CARMICHAEL,
Secretary to Government.

To the Commissioner of the Nilgiris.
" the Conservator of Forests.
" the Board of Revenue.
" the Resident in Travancore and Cochin.

Exd. J. W. Fischer.

FROM

A. O. HUME, ESQUIRE, C. B.,
Secretary to the Government of India,
Department of Revenue, Agriculture
and Commerce,

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To The Secretary to the Government of
Madras,
Calcutta dated 17th April 1876.

SIR,

Forests.

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of the 23rd December last and of its
enclosure and to request, in case the
Government of Madras desire that the
Castilleja should be cultivated in the
garden on the Coonoor Estate, that the
Secretary of State may be addressed
direct as regards the number of plants
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their

Obt. of 1876 Madras.

REVENUE.

To

THE COMM. OF THE NILGIRIS,

Do, Do, Do.

Dated May, 3rd.

Recd.

Encl.

MAY.

Nos. 20-21.

Castilleja.—Communicating to the Commissioner
of the Nilgiris letter from the Government of
India regarding the cultivation of the — on the
Coonoor Estate, and requesting him to report the
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2. I am to add that the Castilleja being a purely tropical tree regarding which it is doubtful whether it will stand the long dry and hot season of the greater part of the Peninsula of India, it may perhaps be found that Travancore offers the only locality in the Peninsula suitable for its cultivation on a large scale; but that perhaps a commencement may usefully be made in the garden below the Coonor Chat.

I have the honour to be,
Sir,
Your most Obedient Servant,

As Hume

Secretary to the Government of India.
H.W.

India Office, London

23rd December 1875.

To

His Excellency

The Right Honorable

The Governor General of India
in Council

Revenue Forests

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(As Hume)
Secretary to the Government of India.
M.W.

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My Lord
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Edw. Salisbury.

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Extracts from Report on the Collecting of seeds and plants of the India rubber tree (Castilloa elastica) in the forests of the Isthmus of Darien. 568/1

By Robert Cross.

The tree is found growing from 1° South Latitude to 20° or more north of the Equator, but in such a wide expanse of Country there are probably various varieties most of which however may bear a close resemblance to each other, although some may be of more robust habit than the rest, and attain to a greater size.

A few years ago a good deal of India rubber has been brought from the forests on the Pacific Coast South of Panama near to a scattered village called Darien.

The Indians in this region have been rather hostile to the Collectors, and the export has in consequence been much reduced. The greater portion of the interior of the Isthmus has been explored and the largest trees have been cut down. North of Panama, in the district of Chorrera, there were once considerable numbers of trees, but these have been, to a great extent, demolished by the natives, who usually cut down the trees in order

to tap or bleed them more easily.

The rubber saplings always appeared to grow most freely on the banks of little Cool Clear Streams, the roots often running down to the edge of the water. They abounded also in deep rich soil along the base of the hills, and in both deep and shallow ravines. Plants were likewise met with on the summits of the ridges, and in fact in all localities where there was no swamp or marsh land. Some plants were observed growing among masses of volcanic rock, where there was not much soil, but plenty of decaying leaves, and particles of débris. Prostrate trunks were observed on the way, some of which had attained to a great size.

Shortly after my first arrival I collected a few plants which with some stout pieces of the stems of saplings cut into lengths, I planted to experiment with. The greater number prospered wonderfully, and some natives were surprised at the quickness of the result. I put the most advanced of these plants into a small box, and although some lost a few leaves yet I brought the best portion home alive.

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The temperature of the forests in the interior of the Isthmus ranged from 75° to 88° Fahrenheit. Frequently I have observed the thermometer stand at 80° at eleven o'clock at night, and the same on various occasions - at one and two o'clock in the morning. When there occurred a shower of rain accompanied by a north wind, the thermometer went down to 74° for one or two hours, but this was the lowest point to which it fell. I have not been able to ascertain to what altitude the tree grows as no high hills exist.

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Revenue 1876 Department

From

The Secy. to the Govt of India
Dept of R. A. & Com

Dated 27 } April 1876
Recd 28 }

N^o 328.

No 568

Communicated
to the Commisariat of
the Nilgiris, who will
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3 May 1876

- 3 To the Commisariat of the Nilgiris
- 21 The Conservator of Forests
- 111 The Ode, of Odevenne
- 11 The Resident Travancore & Cochin

Transmitting copy of
dispatch from the Secy of State
regarding the cultivation of
Castilleja and intimating
that, should the Madras
Govt desire its cultivation
in the Crown of plant afflu
cation may be made direct
to the Secy of State for the
plants -

No 568 3 May 1876

With order

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