

PRESS SERIES.

G.O., No. 25353 A

Dated 5th May

[Despatch Abstract.]

Cara Rubber Trees

Agreeing with the Bd. in considering that the planting of — in the Mudumalai and Beni forests in the Nilgiris would not pay, and stating that the proposed experiments in growing them at Mount Stuart should be begun at an early date.

BACK PAPERS.

[illegible]

FOURTEEN PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.
10	10	10	10				

Revenue (1898) Department.

RENT No. 2217.

Department of Revenue, Land Revenue,
Madras

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No. 1041 Reference

03

16th March-1898

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SUBJECT

submitting with remarks to Governor
in continuation of B.P.F.No.4
and 7-10-97 with reference to para
G.O No.914 Rev,dated 5-11-97
pertaining regarding the growth of -
a rubber in the Southern Circle
tree.

BACK PAPERS.

G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.

Reference on Forest Regr.No.467 of 1898

Board of Revenue
(Land Revenue)
Forests.

Read again B.P.F.No.500,d/ 19-11-97.

Read letter from the Conservator of Forests C.C,
dated 25th February 1898, No.1421 submitting to the Board report
regarding the growth of Ceara Rubber.

Reference No.110 dated 16th March 1898

Submitted to Government in continuation of B.P.
P.No.456,dated 7th October 1897 and with reference to para 3 of
G.O No.914 Rev.,dated 5th November 1897.

2 In reviewing the Forest Administration Report of this Presi-
dency for 1895-96 the Government of India observed that the
problem of supplying the steadily increasing demand for rubber
was becoming more and more difficult and the possibility of crea-
ting natural rubber-producing forests should not be lost sight
of.For some time previous to this,the Madras Government had had
under its consideration the question of the cultivation of
rubber trees and experiments had been made.The practicability of
the successful growth of the trees having been established and
demonstrated to planters the Government decided that further
experiments in that direction on any large scale were uncalled
for.In deference however to the opinion of the Government of
India referred to above the Government in para 4 of its order No

766,dated 7th September 1897 expressed its willingness to re-
consider its decision in the matter and called on the Board
to report in consultation with the Collector of Nilgiris and
the Conservator of Forests Southern and Central Circles as
to the best way in which the wishes of the Government of
India could be met.

3 The letters read above contain the views of the two
Conservators.It does not appear that the Collector of the
Nilgiris has been consulted as required in para 4 of B.P.F.
No.456,dated 7th October 1897;but it is noted that Mr.Potter

1. The Board understood the views of the Commissioner, Criminal Division, in connection with his opinion that planning in the United States and Canada would not be.

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1. The Government of the United States of America, hereinafter referred to as the Government, has the honor to acknowledge the receipt of the letter of the Government of the Republic of the Philippines, dated the 1st day of January, 1941, in relation to the subject matter of the letter.

g.o. no. 253-k
5.6.98

Para 6 of the G.I.
letter in file 766 A
7-9-97

Re adn Board's Reference
No. 1103 Forest d. 16-13-98 the
G.O. No. 2210/98-1
Note
The Government of India
observed that the problem
of supplying the steadily
increasing demand for
rubber was becoming
more and more difficult,
and that the possibility
of creating natural
rubber-producing forests
should not be lost sight
of. As will be seen from
the papers printed in
G.O. No. 1712 d. 4th October 94,
the question of the advisa-
bility of extending the
cultivation of rubber
trees in the Presidency
had more than once
been carefully considered.
The Fore.

conclusion arrived at was that the practicability of their successful growth having been established by experiments and demonstrated to planters, further experiments in the same direction were called for. In view, however, of the opinion expressed by the Government of India and referred to above, the Government in paragraph 4 of No. 766 dated 7-9-97 expressed its wish to defer its decision, and requested the Board to draw up its conclusions with the Collector of the Nilgiris and the Conservator of Forests, South Western and Central Circles, a report showing how best the wishes of the Supreme Government in the matter of the cultivation of rubber trees could be

Collected and
sent to the
Board

C. No. 2210/98

x Letter d. 24-2-98 D

Paras. 3-4

the current record at the head of this note, the Board of Revenue submit to Govt. the reports received from the two Conservators of Forests. It does not appear that the Collector of the Nilgiris has been consulted by the Conservators as directed by the Board in paragraph 4 of its Proceedings No. 436 Forest dated 11-10-97 (No. 5697 dated 11-9-97) and also that the 2nd Conservator of Forests, South Western Circle, Mr. Cherry, would seem to consider that the Central rubber tree is not worth cultivating, the experiments made in that direction in this Presidency having so far proved not encouraging. He also points out that it was not for the fact that the margin of profit on the production of the Central rubber was less than the Fore...

one, the planters of
Ceylon, and other
capitalists would
doubtless be for
house. But the
cultivation of
3. With regard to the
rubber trees, Mr. Cherry
stated that they are
very large trees or
climbers, and that
although it is
not easy to collect
from them in the
forests where they
grow, but that with
out cost to the
collector, it is quite
a different matter
when the planters
have been paid for
and their country
maturity has to be
waited for years.
Mr. Cherry further
stated that while the
Department is still
able to collect and

Paras 5-6

Paras 8-9.

Paras 10-12.

After the general
while, there are such
matters of primary
importance as the natural
reproduction of valuable
timbers such as teak,
sandalwood, etc. to be
attended to, the time for
taking up reserves and
treating them properly
has not yet arrived.
4. Mr. Cherry goes on to
state that with the
information at present
available it is very
difficult to offer any
advice on the question
under consideration, and
also suggests the deputation
for a period of
two months of a com-
petent officer (preferable
Mr. Lushington) on special
duty for the purpose
of collecting information.
In case this suggestion
is not accepted, and
the Govt. considers that
rubber plantations
the Fore

Further inquiries, Mr. Cherry makes an alternative proposal that rubber planting may be undertaken on certain fixed areas in the following tracts:-

- (i) the B. & N. for Karkholam
- (ii) the Nilambur or Amash
- (iii) the Geddass or Byghur
- (iv) the N. & S. Forests of South Coimbatore,
- (v) the Arabasamedran

Mr. Cherry considers that the direct expenditure of the Government will have, the best result in the above localities, as these possess a diversity of soil and rainfall which will be a great advantage.

Letter d 25-2-98 E

Paras 2+4

Para 3

Africa and Assam, from which the rubber is at present chiefly collected. Mr. Poffert, the Conservator of Forests, Central Circle, points out that although the successful growth of rubber trees in several districts has been fully established, no information is obtainable in regard to the yield of rubber, which is the most important factor. Mr. Poffert is, therefore, of opinion that little would be gained by the deputation of a special officer for collecting information. Mr. Poffert states that of the five localities mentioned by Mr. Cherry as being favourable tracts in which to establish rubber plantations, he is acquainted only with the N. & S. Forests in South Coimbatore.

Mr. Poffert's view on the Forests

with Mr Cherry in thinking
that it will be worth
while to undertake the
these forests of systematic
escape lands by a fairly
large scale. With reference
to the Nilgiri district,
Mr. P. P. Chatterjee stated that the
only forests in the district
rubber planting has not
changed of growing ~~and~~
successful works have
in individual lands, but
Mr. P. P. Chatterjee, who does
not approve of planting
in these forests, as rubber
is scarce, and as the
cost of transport is so
excessive, the forests
being distant from any
Railway and not easily
accessible. He adds that
there are no forests in the
Central Circle in which
it would pay to cultivate
India rubber, as the
rainfall is too scanty
and the heat too dry and

Para 5

Para 10

It will be observed
that at present the
cacao tree is being culti-
vated in South Malabar
in paragraph 2 of G. O. No.
914-4 A d. 5/11/97, the
Government, which noted
that the results of the
tapping of the trees in
the district had not
proved very encouraging,
directed that the matter
should be kept under
consideration. It should be
considered whether the
cultivation could not
be improved. Attention
is also invited to the
fact mentioned by
Mr. Cherry in the course
of his report, that he
had recently ascertained
an estimate for planting
two acres with Ficus
Elastica and two
acres with Hevea Brazi-
lie

27/4/88
 Submitted below
 with in the Forest Revenue with
 enclosed when the that file returned for cure
 28/4/88

see Dept for approval

27/4/88
 28/4/88

5/5/98

Press

28
 4/5/98

Read B.P. For No 110
 7 26th March 1898 A
 (Conservation letters as
 Enclos A)

Forest No. 65

G.O. No. 253 of 5th May 1898

The Govt. agrees with
 the Board. The proposed
 experiments at the nut
 shell should be begun
 instituted at an early
 date.

It is observed, from
 the papers printed with
 G.O. 914 of 5 Nov 97 that
 experiments in growing
 Ceara rubber are
 being continued in
 Malabar.

28/4/88

Depd
 25.5.98

To the Bd L.R. with enclos.
 Encl. No. 253A

Depd
 25.5.98

Copy to the Govt of M
 of P.W. & Agri.
 No 914

Government {1898} of Madras.
REVENUE.

Recd.

Regd.

} 1898.

Enclosures

Spare copies

G.O., Nos. 253, 253A, 5th May 1898.

MAY.

Ceara Rubber Trees.

Agreeing with the Board in considering that the planting of — in the Mudumalai and Beni forests in the Nilgiris would not pay, and stating that the proposed experiments in growing them at Mount Stuart should be begun at an early date.

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

READ—the following Reference from the Board of Revenue (Land Revenue), Forest No. 110, dated 16th March 1898 :—

Read—again Board's Proceedings, Forest No. 500, dated 19th November 1897.

Reference on the above, dated 16th March 1898, No. 110.

Submitted to Government in continuation of Board's Proceedings, Forest No. 436, dated 7th October 1897, and with reference to paragraph 2 of G.O., No. 914, Revenue, dated 5th November 1897.

2. In reviewing the Forest Administration Report of this Presidency for 1895–96 the Government of India observed that the problem of supplying the steadily increasing demand for rubber was becoming more and more difficult and the possibility of creating natural rubber-producing forests should not be lost sight of. For some time previous to this, the Madras Government had, under its consideration, the question of the cultivation of rubber trees and experiments had been made. The practicability of the successful growth of the trees having been established and demonstrated to planters, the Government decided that further experiments in that direction on any large scale were uncalled for. In deference, however, to the opinion of the Government of India referred to above, the Government in paragraph 4 of its order No. 766, dated 7th September 1897, expressed its willingness to reconsider its decision in the matter and called on the Board to report in consultation with the Collector of the Nilgiris and the Conservators of Forests, Southern and Central Circles, as to the best way in which the wishes of the Government of India could be met.

3. The letters read above contain the views of the two Conservators. It does not appear that the Collector of the Nilgiris has been consulted as required in paragraph 4 of Board's Proceedings, Forest No. 436, dated 7th October 1897; but it is noted that Mr. Popert does not advocate planting on the Mudumalai and the Beni forests in this district. The Conservator, Southern Circle, states that, with the information already on record, it is difficult to offer any advice on the subject and suggests that an officer may be specially deputed for the purpose of collecting information not only in regard to the growth, yield, &c., of the rubber trees, but also of black-wood (*Dalbergia Latifolia*) a tree of considerable value and one in great demand. On the other hand the Conservator, Central Circle, states that, although the successful growth of "Ceara" in several districts has been fully established, no information is obtainable in regard to the yield of rubber which is the most important factor. Mr. Popert is of opinion that little would be gained by the deputation of a special officer for collecting information, but he agrees with Mr. Cherry that it would be worth while to try experiments on a fairly large scale in the Mount Stuart forests in South Coimbatore.

4. The Board endorses the views of the Conservator, Central Circle. It concurs also in his opinion that planting in the Mudumalai and Beni forests in the Nilgiris would not pay.

(True Copy and Extract.)

(Signed) R. C. C. CARR,
Secretary.

To the Secretary to Government, Revenue Department,
with Conservator's letter and enclosure,
in original, to be returned.

ENCLOSURES.

From E. P. POPERT, Esq., Conservator of Forests, Central Circle, to the Secretary to the Commissioners of Land Revenue, dated Madras, 25th February 1898, No. 1421.

[Reference.—Board's Resolution, Forest No. 436, dated 7th October 1897.]

I have the honour to subr letter, No. 503, dated 24th instant, from the Conservator of Forests, Southern Circle.

2. I do not think, with the information available, Government would be justified in undertaking large plantations. It has been proved that "Ceara" will grow in several districts, but it has not been shown that the yield of rubber will be sufficient to pay.

3. Mr. Cherry's letter deals with the question as regards the whole of the Southern Circle; of those mentioned by him, I am only acquainted with the Mount Stuart forests in South Coimbatore. I agree with him that it would be worth while in these forests to undertake systematic experiments upon a fairly large scale. The Government in its order makes special reference to the Nilgiri district. The only forests in this district, in my opinion, in which India rubber planting has any chance of proving successful would be Mudumalai and Beni. I do not advocate planting in them. Labour is scarce and difficult to obtain. The forests are not easily accessible and are distant from any railway. The cost of transport would be excessive.

4. I do not think much would be gained by placing Mr. Lushington upon special duty to collate information regarding growth. Yield of rubber is the most important factor, and upon this subject information is unobtainable.

5. In the Central Circle, there are no forests in which it would pay to cultivate India rubber. The rainfall is too scanty and the heat too dry and intense.

From J. W. CHERRY, Esq., Conservator of Forests, Southern Circle, to the Secretary to the Commissioners of Land Revenue (through the Conservator of Forests, Central Circle), dated Coimbatore, 24th February 1898, Dis. N. 503.

[Reference.—Board's Proceedings, Forest No. 436, dated 7th October 1897.]

It was not until the receipt (13th December 1897) of Board's Proceedings, Forest No. 500, dated 19th November 1897, that I was made aware of the reference above quoted.

It appears to have been held over by my predecessor to await communication from the Conservator of Forests, Central Circle.

2. The last previous papers regarding rubber cultivation are recorded in G.O., No. 712, dated 4th October 1894.

In those Proceedings it was suggested—

- (1) that the trees in both North and South Malabar should be tapped and the results reported;
- (2) that the Director of the Ceylon Gardens be asked for information as to the age, size, best season for tapping, yield, and price;
- (3) that a rubber-tapper from Assam be obtained with a view to testing the trees;
- (4) that the yield from the experimental tapping in Malabar be sent Home for an expression of the market opinion on the value of the rubber;
- (5) that the British Consul at Para might be asked for information regarding the cultivation and extraction of rubber generally.

3. The replies to suggestions (1) and (4) only appear (see Boards' Proceedings, Forest No. 1733, dated 15th November 1895, and Forest No. 500, dated 19th November 1897), and they are not encouraging. It is observed that only the Ceara trees were tapped, and the age of the trees is not given.

As regards North Malabar, the quantity was not given, but only estimated to weigh 1½ lb. in each case from 21 trees and from 40 trees.

From these and other papers I gather that the cost of collection alone would be about Re. 1 a lb.

that a well-grown tree will average 4 oz. of rubber after about twenty years' growth, and that the value of the yield in rubber in the English market is from 1s. 6d. to 2s. a lb.

4. With these results we are now asked to report on the view of the Supreme Government that "the possibility of creating natural rubber-producing forests should not be lost sight of." In Ceylon it is shown that the Ceara rubber does best at 15 to 20 feet apart, or say, 175 trees to the acre—the yield at 4 oz. per tree, or say 44 lb. per acre, at an average of 1s. 9d., a lb. would produce £3–17–0 gross per acre, but when the expenses of cultivation, collection and carriage are taken into calculation, the margin of profit would in all probability be a very small one. Had it been otherwise, the planters of Ceylon and other capitalists would doubtless before this have taken up the cultivation.

5. My above remarks refer to Ceara rubber only.

We have very little information regarding the other rubbers, but it appears to me that, with regard to all these exotic rubbers, it must be remembered that, with the exception of Ceara, they are either very large trees or climbers, and although it may pay to collect rubber from them in their native forests, where they have grown to maturity without cost to the collector, it is quite a different matter, when their planting and protection have to be paid for, and their coming to maturity has to be awaited for years.

6. On a previous reference I stated that our operations in rubber planting had not gone beyond the experimental stage, and I must admit that, on the whole, I do not think sufficient interest or note has been taken in these experiments.

It is very difficult to get subordinates to take continuous action in these matters, and District Forest-officers have had their hands so full of work (especially settlement and survey of reserves) that such experiments are apt to be lost sight of.

Moreover, while we are still unable to fully cope with the protection and development of our indigenous growths, and while there are such matters of primary importance as the natural reproduction of valuable timbers as teak, sandalwood, &c., to be attended to, it is felt that the opportunity of treating exotics properly has not yet arrived.

It is therefore possible that the other good classes of rubber, such as—

Hevea Braziliensis,
Castilloa Elastica,

Landolphia Owariensis,
Ficus Elastica,

may succeed better with further trials, and if the demand for the rubber increases more rapidly than the supply from its native forests, it is also possible that the price of rubber generally may rise sufficiently to justify the cost of cultivation.

This last seems, however, somewhat doubtful, as I observe that prices now are very much what they were years ago.

In 1872, for instance, they were given for—

Hevea species, 2 s. 8 d. to 3 s. 1 d. a lb.
Castilloa, 1 s. 11½ d. to 2 s. 3½ d. a lb.
Ficus Elastica, 1 s. 4½ d. to 2 s. 3½ d. a lb.
Ceara, 1 s. 10 d. to 2 s. 1 d. a lb.

7. At present therefore it appears to me that regular plantations would be out of the question.

On the other hand, I believe, that the conclusion arrived at by the Forest Department in Assam is that the cost of collecting the rubber (from the Ficus Elastica) which grows naturally there is so great, owing to the large area of ground to be covered by the collectors, that it is best and more profitable to open and work regular plantations.

8. With the present information before us therefore it is very difficult to advise, but I may make two proposals.

A good deal of information must have been obtained and recorded about rubber growth and extraction, and of the experiments thereon, conducted in this Presidency, and a good deal more might, I think, be secured by an officer devoted for a few weeks entirely to the purpose.

I would desire at the same time that the officer might collect figures as to growth, yield and probable profits of blackwood (Dalbergia Latifolia) planting.

It is a tree of considerable value, and the demand appears to be rising as fast as the supply is diminishing.

9. I know no one better than Mr. P. M. Lushington for the necessary enquiries and report, and I suggest that he may be deputed during the next cold weather to this duty.

He is a careful observer and the work would be congenial to him.

It should probably not take him more than two months, and I consider that his report and advice may save money being wastefully spent.

His report should deal with the subject under headings of, say—

- | | |
|---------------------------|-----------------------------------|
| (1) Description. | (6) Maturity, size, and seeding. |
| (2) Soils and localities. | (7) Yield and method of securing. |
| (3) Propagation. | (8) Prices of produce. |
| (4) Cultivation. | (9) Financial results. |
| (5) Growth. | |

Proposals regarding trial of further rubbers might also be given.

Sir Clements Markham, who was instrumental in getting exotic rubbers introduced into India, in 1870 recommended the Burmese climber "Chavannesia Exulenta" for instance.

In the meantime Mr. Lushington could be now communicating with District Forest-officers so that they may be prepared with such figures and information as they can obtain for him on the subjects to be dealt with.

10. My other proposal is that, if the Government desires that rubber planting be continued without waiting for further enquiries, I suggest a compromise between regular plantations and the mere introduction of rubber into our natural forests.

I consider we might now extend our previous experiments with the view of establishing, as nearly as possible, pure forests of rubber.

This can be done by persistently putting out rubber plants year after year in a small but fixed area,—treating half the area in the open, and half under shade.

The results carefully watched and recorded, and the plants with their self-sown seed, if any, being kept free from choking by weeds, would in time show us whether we have any chance of securing, partly by planting and partly by natural regeneration, areas sufficiently stocked with rubbers to make their working profitable.

In my Nilambúr inspection report of 1895 I advised that the experimental growth of the, Assam rubber "Ficus Elastica" should be extended by acres, and I have recently sanctioned an estimate in North Malabar for planting 2 acres with Ficus Elastica and 2 acres with Hevea Braziliensis.

11. Owing to the difficulty of supervision, it is essential that these experimental areas, besides being suitable as far as possible to the natural habits of the plants, should be chosen in such localities as are within easy reach of, and are constantly visited by the District Forest-officer.

I would limit the areas at present to 10 acres in each district, and the expenditure per annum to 20 rupees an acre, and I propose—

The Begur or Kartikolam forests of North Malabar.
The Nilambúr or Amarampalem forests of South Malabar.
The Geddassal or Bylur forests of North Coimbatore.
The Mount Stuart forests of South Coimbatore.
and the Ambásamudram valley forests of Tinnevely.

12. In these five localities, we have a diversity of climate and rainfall which approaches the circumstances in South America, Africa and Assam (where our trial rubbers at present have chiefly come from), and I consider the more extended experiments now proposed will have their best test in these localities.

13. It will be necessary to impress upon District Forest-officers the importance of giving their particular attention to these further experiments, and their annual reports must contain special reference to the operations carried out, and the results obtained each year.

14. It will also be necessary for each District Forest-officer, in these 10 acre "rubber compartments," to try each and all of the rubbers likely to do, but in those localities where certain kinds have already been successfully established in some quantities (as Ceara at Nilambur), it will be sufficient to give further trial chiefly to the remaining species, and to utilize those already established for supplying seeds and cuttings from them to the other districts where they are still wanted.

As soon as any one 10 acre compartment is considered sufficiently stocked, another compartment may be taken up and so on, and the experiment may then be further extended to other districts.

For the present Rs. 1,000 a year would thus be spent on rubber experiments in this circle, and should be provided for annually in the budget.

15. In the course of going through the older papers on rubber, I have noted the following information chiefly relating to the earlier times, when the rubber experiments were advised and which information, I think, may be usefully added here:—

Hevea Braziliensis—Formerly *Siphonia Elastica*—Para Rubber—Description.—Chiefly from the valleys of the Amazon in South America.

Yields the best and most abundant rubber. A smooth brownish grey bark large Euphorbiaceous tree rising up to 60 feet.

Locality.—In South America grows best on rich alluvial soils, on slopes by river sides with good drainage, and where the locality is densely vaporous, and best where the low lands are annually submerged, the inundations reaching 4 or 5 feet up the stems of the trees.

Requires temperature of 75 to 95 extremes, and the average 75 to 85.

Rainfall in the Amazon valleys rarely absent for ten days at a time.

January to June, wet—harvest, April to June (maximum, April 15 inches).

July to December dry, when very little rain falls.

Cultivation.—Grows from cuttings from the young wood only, as well as from seed, but seeds soon lose their vitality.

Yield.—Yields best at day-break when more milk flows. With trees growing 100 feet above high water-mark, the yield does not pay cost of collecting.

The largest yield is during the annual inundations.

Is a dry rubber, and the milk evaporates down to one-third to half of its quantity in rubber.

Generally tapped during dry months—July to December.

Incisions an inch in breadth and deep to the wood, are made in the evening, and the milk collected in the morning.

The incisions are begun 5 or 6 feet up the stem in long slanting cuts 6 or 8 inches apart feeding into a vertical cut leading to the ground.

The yield is best from the cuts near the roots.

Six ounces of rubber collected in three days from each tree.

General.—Assam reported to be too cold, and the trials of growth there a failure. Not thought in 1881 to be doing well at Nilambur, and further trials advised at 1,000 feet and at 2,000 feet up the Carcoon ghât.

16. *Manihot Gloziorii*.—*Description.*—*Ceara* rubber common in province of Rio Janeiro, South America.

A 30 to 50 feet Euphorbiaceous tree of the same order as the para rubber, and almost next to the para in value.

Locality.—Grows where para and castilloa will not grow.

Prefers rocky, stoney and scrubby areas with temperature 80 to 90 degrees, and hot and dry for the greater part of the year.

Grows as pure forest at times, with a thin canopy and no undergrowth about 200 feet elevation, with rainy season, bursts and breaks from November to May.

In Ceylon grows up to 3,000 feet on moist barren soils.

Cultivation.—Seeds take a year to germinate, unless filed down to the kernel and then soaked, when germinate in 2 or 3 weeks.

Grows also from cuttings.

Roots have tubers on them the size of potatoes, which (together with the seeds) are eaten by wild pigs and other animals.

The trees produce seed early if not shaded.

Trees at Nilambur in 1881 at two years growth were 30 feet high.

In Ceylon four-year old trees planted in the open 12 feet apart were 34 feet high.

In Ceylon shade said to be inimical to the quality of the rubber, and 15 or 20 feet apart advised. When 2½ year old trees grow to 25 and 30 feet high, with 21 inches girth.

Yield.—Rubber next to para in value—collected by slicing off thin outer bark. Juice oozes out and is allowed days to dry and is then rolled off in strings and wound up into balls.

Taking off too much bark injures the tree.

Collect in the dry weather when rain seldom falls.

Best time to tap is after the rains and the flow is greatest before flowering.

Best yield near the roots.

General.—Reported grows well in Assam, but does not promise better yield than the ficus.

17. *Castilloa Elastica*.—*Description.*—Chiefly from the West Coast of Central America.

A lofty artocarpaceous tree of the same order as our Indian jack and wild jack, and ought to grow well in India.

Runs up to 160 to 180 feet with a 3 to 5 feet diameter stem.

Locality.—Found scattered in the dense moist forests of the Rio San Juan, where it rains nine months in the year with a temperature of 75 to 80 degrees, and excessively damp.

Will not grow where temperature falls below 60 degrees.

It has however a very wide range.

Will grow generally where the para rubber grows, but seldom at more than 1,500 feet above sea level.

Requires rich fertile soil near banks of water-courses, but wants good drainage at the roots, and will not grow in swampy ground.

Cultivation.—Usually bears seed when about eight years old and may be grown from cuttings with some difficulty.

Yield.—Is tapped like Henea, but in a spiral form (two spirals crossing in opposite directions down the trunk).

The milk is richest when the new leaves appear, and is usually collected in April.

A tree 20 or 30 feet to first branches and 4 feet diameter will give 20 gallons of milk, and the yield is best low down near the roots. Each gallon gives 2 lb. of rubber.

Generally expected that a tree from 1½ to 2 feet diameter will give 12 lb. of rubber a year.

General.—In March 1881, the trees were said to be 3 to 4 feet high and had found a home at Nilambur.

It was advised to plant out further on the Lower Carcoon ghât.

18. *Ficus Elastica*.—*Description.*—Order Moraceæ grows plentifully in Assam and the rocky valleys of the Himalayas.

Locality.—Hot moist regions, with a temperature up to 100 in the shade, prefers great heat and excessive moisture, but requires good drainage also.

Cultivation.—Grows readily from cuttings.

Tree 36 years old measured 112 feet high, with a circumference of 70 feet and 100 aerial roots, the largest of which were 6 feet in circumference.

Yield.—The lower portions of the trunk and the aerial roots are tapped by gashes 6 to 18 inches long.

Taps best in August when 50 oz. of milk give 15 oz. of rubber, but sometimes the milk only gives 10 per cent. of rubber.

In February to April the milk is more scanty but richer.

Can be tapped at the age of twenty-five years, and between then and fifty years, a tree will yield 40 lb. of rubber, worth £ 3-4-0 every three years.

It is not advisable to tap more frequently.

In the Assam plantations fresh cuts are made, February to April, and then the trees are rested for two years.

The cuts are made 18 inches apart and penetrate the bark only.

General.—In Assam it is considered that plantations are more profitable than the natural forests of rubber.

19. *Landolphia Ovariensis*.—Comes from Central Africa. Said to be an enormous creeper, climbing to the tops of the highest trees and is likely to prove an unmanageable crop. I can get little further information about this last rubber.

ORDER No. 253, Revenue, dated 5th May 1898.

Forest No. 65.

The Government agrees with the Board. The proposed experiments at Mount Stuart should be begun at an early date.

2. It is observed, from the papers printed with G.O., No. 914, dated 5th November 1897, that experiments in growing *Ceara* rubber are being continued in Malabar.

(True Extract.)

(Signed) G. S. FORBES,
Ag. Secretary to Government.

To the Board of Revenue (Land Revenue),
with two enclosures.

Endorsement No. 253A.

Copy to the Government of India, Revenue and Agricultural Department, in continuation of Endorsement No. 914A, Revenue, dated 5th November 1897.

(Signed) N. E. MARJORIBANKS,
Ag. Under Secretary to Government.

Exd. Shaik Karim.

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