M.R.O. 1—77,006—8-6-31.

(1) Number of pages 46

(2) Date of repair

(3) Initials of the Referencer

MADRAS RECORD OFFICE.

Government of Madras.

Revenue **DEPARTMENT.**

G.O. No.	550	Press ~~Mis.~~
Dated	12-5-	18 85.

Not to be folded or roughly handled

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

READ—the following extract from letter from the Director of Government Cinchona Plantations, &c., Nilgiris, dated 1st May 1885, No. 7:—

In continuation of my letter, No. 4, dated 15th April 1885, I have the honor to inform you that Mr. Hooper returned from Madras last Saturday. While there he made a careful inspection of the appliances at the disposal of the Medical Storekeeper's department, and he finds that there would be no difficulty in carrying out the manufacture of the liquid extract of the cinchona alkaloids to the extent of 1,000 lb. of bark, the amount mentioned in G.O., 25th March 1885, No. 366, Revenue.

2. The Medical Storekeeper, however, gave Mr. Hooper to understand that it might be desirable for him to superintend the manufacture of the first batch. Should this be so, there can be no objection to Mr. Hooper's going to Madras again for this purpose.

3. I am extremely glad to find that Government regard the experiments reported upon by Dr. Cornish as being "most valuable," and I believe that, if the suggestions which Dr. Cornish has made respecting the sale of *small quantities* of the liquid extract be carried out, there will result great advantage, not only to the poorer classes of the Indian community, but also to all growers of cinchona.

4. In connection with the above-mentioned suggestion of Dr. Cornish, I will ask that it may be settled, as speedily as possible, by the medical authorities, what will be the most suitable quantities in which the extract ought to be sold. Subject to their approval, I would suggest that it should be sold in 1, 2, 4, 8 and 16 oz. bottles. These would contain respectively 8, 16, 32, 64 and 128 doses of five grains each. The smaller bottles, if elongated, might be graduated. The object of my desiring that this question should be settled soon is that, so far as I am aware, the bottles would have to be ordered from England or Germany, and therefore much time will be required before they can be obtained.

* * * * *

ENCLOSURES.

Extract from letter from Mr. D. HOOPER, Government Quinologist, to the Director of Government Cinchona Plantations, &c., Ootacamund, dated 1st May 1885.

With reference to G.O., No. 366, Revenue, dated 25th March, I have the honor to report that I visited last week the Medical Store Depôt in Madras, and held two interviews with Surgeon-Major Pearse, the Medical Storekeeper.

2. After an inspection of the laboratories, I am of opinion that the appliances they have could be adapted to the manufacture of the liquid cinchona on a large scale.

3. The cost of manufacture was discussed with the Storekeeper, and I am of opinion that the cinchona bark taken at the rate of the recent sales at Madras, and allowing the usual percentage for fuel, labor, &c., a concentrated liquid cinchona could be turned out at about Re. 1 and Pies 9 per fluid pound. I append a note showing the details of the calculation.

* * * * *

NOTE.

The great bulk of our bark is of the *mossed* and *renewed* varieties, which are the richest in alkaloids, containing, as they have been found to do, nearly 6·82 per cent.

We may therefore safely assume an average of 6½ per cent. as the alkaloidal value of the bark which we shall use for the liquid solution.

At this rate 16 lb. exactly of bark are required for 1 lb. of alkaloids.

With 3 lb. of glycerine, ½ lb. of hydrochloric acid and the necessary quantity of water added, the resultant at the required degree of concentration is a liquid solution measuring 10·95 fluid pounds.

This gives about 175 liquid oz., each of which contains 40 grains of alkaloids.

If bottled in 1 oz. bottles, 14 7/12 dozens or 175 bottles will be required.

Mr. Lawson says that 1 oz. bottles may be bought in gross for about 2*d.* a dozen in England.

Adding 1*d.* a dozen for corks and labels, the cost of bottling, corking and labelling 14 7/12 dozens would be about 3*s.* 8*d.* Adding 10 per cent. for freight, the total cost of the bottles, corks and labels would be 4*s.* 4*d.* or at 1*s.* 7½*d.* to the rupee, Rs. 2-7-10.

The total cost would therefore be as follows:—

	Rs.	A.	P.
(1) 16 lb. of red bark at Annas 6·4 a lb., the average price offered for this kind of bark at the recent local sale ..	6	5	4
(2) 3 lb. of glycerine at 6*d* per lb., *plus* 10 per cent. for freight.	1	0	4
(3) ½ lb. acid at 3 annas per lb.	0	1	6
(4) Fuel, labor, wear and tear of apparatus, grinding, evaporating and supervision, estimated at 20 per cent. of the value of the ingredients used	1	7	10
Cost of production ...	8	15	0
Add for bottles, corks, and labels ...	2	7	10
Issue price ...	11	6	10

or, say, Rs. 11-8-0, which is a saving of Rs. 5-8-0, or 32·35 per cent. on our issue price of Rs. 17 for the Bengal febrifuge.

In other words, we can issue this solution at about an anna* an ounce, so that a dose containing 5 grains of alkaloids would cost about 1¼ pies. The issue price of the Bengal febrifuge being Rs. 17 per lb. or Re. 1-1-0 per oz., each dose of 5 grains of it costs 2½ pies or ½ of a pie more than each 5-grain dose of this solution.

* 1 anna = 1 pie.

READ—the following letter from Surgeon-Major R. E. PEARSE, Principal Medical Storekeeper, to the Secretary to the Surgeon-General with the Government of Madras, dated Madras, 23rd April 1885, No. 213, and endorsement of the Surgeon-General thereon:—

[*Reference.*—G.O., No. 366, of 25th March 1885, Revenue, forwarded with your No. 1691 of 8th instant.]

I have the honor, in reference to the above, to submit the following report.

2. Agreeably to the instructions contained in paragraph 2 of the Government Order as above, Mr. Hooper visited this depôt on the 20th instant, and the results of our consultation regarding the preparation of *Cinchona liquida* may be summarised as follows.

3. *Apparatus, &c.*—Machinery and apparatus for the preparation of anything beyond experimental quantities does not appear to exist at Ootacamund, whilst here we have both a steam powdering mill and steam evaporating apparatus. As the process employed contemplates the bark being used in the form of a fine powder, the mill is an important consideration as regards time and cost as compared with manual labor. The evaporating apparatus, as reported in my No. 111 of 11th April 1885, is not at present working satisfactorily, and is in the hands of the Public Works Department for alteration; it may, however, be regarded as almost certain that if the alteration now being carried out prove practically successful, it will answer admirably for the preparation of *Cinchona liquida*. The completion of the work will accordingly be reported in due course.

4. *Manufacture.*—The process of manufacture, as described by Mr. Hooper, is so simple that I do not anticipate any difficulty in carrying it out in this depôt; at the same time there are certain practical details in all processes of this kind which experience alone can teach. I beg to suggest, therefore, that when the apparatus has been put into good working order and adapted, Mr. Hooper be directed to come here and himself supervise the preparation of the first batch.

5. *Cost.*—The estimated ingredients required for the preparation of 90 lb. of *Cinchona liquida* of the strength recommended by Dr. Cornish, viz., 40 grains to the ounce, are (as given by Mr. Hooper)—

	LB.
Cinchona bark finely powdered and containing 7 per cent. of alkaloids	100
Hydrochloric acid (1 in 10)	40
Glycerine	20

6. The exact value of the bark it is not easy to fix, as the market fluctuates greatly, whilst the quantity required will further vary according to the percentage of alkaloids; but as the last two consignments of bark received, containing respectively 6·87 and 6·81 per cent. of alkaloids, are invoiced at Rs. 80 per bale of lb. 100, it will be safe to put the bark at Re. 1 per lb., which would give the following as the value of the ingredients:—

	RS.	A.	P.
Bark	100	0	0
Acid	2	0	0
Glycerine	20	8	0
Total ...	122	8	0

7. Now computing the cost of preparation, *i.e.*, fuel, labor, supervision and wear and tear of machinery, &c., at 20 per cent., we have a total of Rs. 147 for 90 lb. of extract, or Rs. 1-10-2 per lb. to which must be added the cost of bottles, bottling, &c. I think therefore I shall not be far from the mark in saying that *Cinchona liquida* can be made here at a cost which will allow of its being sold at Re. 1-12-0 per lb. or Annas 2 for the ounce bottle.

8. In practice it may hereafter be found possible to reduce the price still further, but that is a point which experience alone can decide; meanwhile the practical result arrived at will be that a valuable substitute or equivalent for quinine will have been placed within reach of the masses at the nominal cost of a quarter of an anna or less per dose.

No. 258.

Forwarded to the Secretary to Government, Revenue Department, with reference to paragraph 2 of G.O., No. 366, dated 25th March 1885.

FORT ST. GEORGE,
5th May 1885.

(Signed) M. C. FURNELL,
Surgn.-Genl. with the Govt. of Madras.

ORDER—dated 12th May 1885, No. 550, Revenue.

Miscellaneous.

Paras. 1 to 4 of Mr. Lawson's letter will be communicated to the Surgeon-General for early remarks.

2. The Government are glad to learn that the existing appliances at the Medical Stores in Madras can, without difficulty, be adapted to the manufacture, on a large scale, of Mr. Hooper's liquid solution of cinchona alkaloids, and that the estimated cost of production will enable it to be issued at a price some 30 per cent. lower than the febrifuge now obtained from the Government factory in Bengal for use in the

hospitals and dispensaries of this Presidency, and that it may be dispensed in 1 oz. bottles containing 40 grains of alkaloids of cinchona at a cost of little over an anna a bottle.

3. In verification of the estimate of cost now arrived at, Mr. Hooper will at once arrange for the manufacture in Madras of 1,000 lb. of the fluid extract at 40 grains to the ounce, and will himself personally superintend the operations. He should, however, arrange, in communication with the Medical Storekeeper, for the association with himself and instruction of a competent person for the immediate superintendence of all future operations in Madras.

4. The matters referred to in the last nine paragraphs of Mr. Lawson's letter d) not immediately concern this question, and will be separately dealt with.

5. The Director's attention is drawn to paragraph 5 of G.O., 25th March 1885, No. 366, in regard to which an early report is requested.

(True Extract.)

(Signed) W. WILSON,
Ag. Secretary to Government.

the Director of Government Cinchona Plantations,
Parks and Gardens, Nilgiris.
the Surgeon-General with the Government of Madras.
the Military Department.
the Public Department.
the Superintendent, Government Central Museum.
the Honorary Secretary, Agri-Horticultural Society.
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V. H. French.

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" the Public Department.
" the Superintendent, Government Central Museum.
" the Honorary Secretary, Agri Horticultural Society.
" the Board of Revenue.
Parks and Gardens, Nilgiris.

Ex. W. H. French.

100 Copies.

REVENUE.

Issued

Recd. Encl.

G.O., 12th May 1885, No. 550.

MAY.

Cinchona Alkaloids.

Report of Director of Government Cinchona Plantations, &c., that existing appliances at the Medical Stores can be adapted to the manufacture of Mr. Hooper's liquid solution of —, communicated to the Surgeon-General, for remarks.

GOVERNMENT OF MADRAS.

REVENUE DEPARTMENT.

READ—the following extract from letter from the Director of Government Cinchona Plantations, &c., Nílgiris, dated 1st May 1885, No. 7:—

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2. The Medical Storekeeper, however, gave Mr. Hooper to understand that it might be desirable for him to superintend the manufacture of the first batch. Should this be so, there can be no objection to Mr. Hooper's going to Madras again for this purpose.

3. I am extremely glad to find that Government regard the experiments reported upon by Dr. Cornish as being "most valuable," and I believe that, if the suggestions which Dr. Cornish has made respecting the sale of *small quantities* of the liquid extract be carried out, there will result great advantage, not only to the poorer classes of the Indian community, but also to all growers of cinchona.

4. In connection with the above-mentioned suggestion of Dr. Cornish, I will ask that it may be settled, as speedily as possible, by the medical authorities, what will be the most suitable quantities in which the extract ought to be sold. Subject to their approval, I would suggest that it should be sold in 1, 2, 4, 8 and 16 oz. bottles. These would contain respectively 8, 16, 32, 64 and 128 doses of five grains each. The smaller bottles, if elongated, might be graduated. The object of my desiring that this question should be settled soon is that, so far as I am aware, the bottles would have to be ordered from England or Germany, and therefore much time will be required before they can be obtained.

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Extract from letter from Mr. D. HOOPER, Government Quinologist, to the Director of Government Cinchona Plantations, &c., Ootacamund, dated 1st May 1885.

With reference to G.O., No. 366, Revenue, dated 25th March, I have the honor to report that I visited last week the Medical Store Depôt in Madras, and held two interviews with Surgeon-Major Pearse, the Medical Storekeeper.

2. After an inspection of the laboratories, I am of opinion that the appliances they have could be adapted to the manufacture of the liquid cinchona on a large scale.

3. The cost of manufacture was discussed with the Storekeeper, and I am of opinion that the cinchona bark taken at the rate of the recent sales at Madras, and allowing the usual percentage for fuel, labor, &c., a concentrated liquid cinchona could be turned out at about Re. 1 and Pies 9 per fluid pound. I append a note showing the details of the calculation.

* * * * *

NOTE.

The great bulk of our bark is of the *mossed* and *renewed* varieties, which are the richest in alkaloids, containing, as they have been found to do, nearly 6·82 per cent.

We may therefore safely assume an average of 6¼ per cent. as the alkaloidal value of the bark which we shall use for the liquid solution.

At this rate 16 lb. exactly of bark are required for 1 lb. of alkaloids.

With 3 lb. of glycerine, ¼ lb. of hydrochloric acid and the necessary quantity of water added, the resultant at the required degree of concentration is a liquid solution measuring 10·96 fluid pounds.

This gives about 175 liquid oz., each of which contains 40 grains of alkaloids.

If bottled in 1 oz. bottles, 14⅔ dozens or 175 bottles will be required.

Mr. Lawson says that 1 oz. bottles may be bought in gross for about 2*l.* a dozen in England.

Adding 1*d.* a dozen for corks and labels, the cost of bottling, corking and labelling 14⅔ dozens would be about 3*s.* 8*d.* Adding 10 per cent. for freight, the total cost of the bottles, corks and labels would be 4*s.* 4*d.* or at 1*s.* 7½*d.* to the rupee, Rs. 2-7-10.

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or, say, Rs. 11-8-0, which is a saving of Rs 5-8-0, or 32·35 per cent. on our issue price of Rs. 17 for the Bengal febrifuge.

In other words, we can issue this solution at about an anna an ounce, so that a dose containing 5 grains of alkaloids would cost about 1¼ pice,* or say half † a farthing.

The issue price of the Bengal febrifuge being Rs 17 per lb. or Re. 1-1-0 per oz., each dose of 5 grains of it costs 2¼ pice or ¾ of a pie more than each 5-grain dose of this solution.

* 1 anna ¾ pie. † 60 of a farthing.

Read—letter from Surgeon-Major R. E. Pearse, Principal Medical Storekeeper, to the Secretary to the Surgeon-General with the Government of Madras, dated Madras, 23rd April 1885, No. 213:—

Abstract.—Reporting the result of his interview with the Government Quinologist regarding the preparation of liquid extract of cinchona alkaloids.

Order—dated 12th May 1885, No. 550, Revenue.

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Paras. 1 to 4 of Mr. Lawson's letter will be communicated to the Surgeon-General for early remarks.

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(True Extract.)

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Ag. Secretary to Government.

To the Director of Government Cinchona Plantations,
Parks and Gardens, Nilgiris.
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„ the Military Department.
„ the Public Department.
„ the Superintendent, Government Central Museum.
„ the Honorary Secretary, Agri-Horticultural Society.
„ the Board of Revenue.

Exd. W. H. French.

100 Copies.

Govt. of Madras. 1885

REVENUE.

Issued

Rec'd.

Encl.

G.O., 12th May 1885, No. 550.

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to the Director of Government Cinchona Plantations &c., Ootacamund dated 1st May 1885

With reference to G.O. No. 366 Rev:, March 25th, I have the honor to report that I visited last week the Medical Store Depôt in Madras and held two interviews with Surgeon-Major Pearse, the Medical Storekeeper.

2. After an inspection of the laboratories, I am of opinion that the appliances they have could be adapted to the manufacture of the liquid Cinchona on a large scale.

3. The cost of manufacture was discussed with the Storekeeper, and I am of opinion that the cinchona bark ~~recommended~~ taken at the rate of the recent sales at Madras and allowing the usual percentage for fuel, labour, &c., concentrated liquid cinchona could be turned out at about Re. 1 annas 0 pies per fluid pound. I append a note showing the details of the calculation.

(True Extract)

W. W. 5.95

Undersecretary to Govt.

Director of [illegible]
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No. 7.

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No. 03121

From The Director of Stores
Cin: Hartt: Parks & Gardens

Dated 1st
Recd. 1st } March

No. 1

Encl.

SUBJECT.

Furnishing list of Stores
& Apparatus for local manufacture
of Quinine & Salts thereof

Madras, 28 April 1885.

From

THE PRINCIPAL MEDICAL STOREKEEPER,

To

THE Secretary to the
Surgeon General
with Govt of Madras.

OFFICE OF SURGEON GENERAL
WITH GOVT: OF MADRAS.

SIR,

Reference
G. O. No: 366 of 25 March 1885 (Revenue)
forwarded with your No: 1691 of 8th
Instt.

I have the honor in reference to the above to submit the following report.

2. Agreeably to the instructions contained in Para 2 of the Government order as above Mr. Rooper visited this Depôt on the 20th Instt. and the results of our consultation regarding the preparation of Cinchona Liquida may be summarized as follows:—

3. Apparatus &c.

Machinery and Apparatus for the preparation of anything beyond experimental quantities does not appear to exist at Ootacamund, whilst here we have

...Cinchona Bark ...ground in
...form of a fine powder, the
...ill is an important consideration
...regard to time and cost, as ...
...unskilled with manual labor.
...he evaporating apparatus
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Manufacture.

The process of Manufacture
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...any difficulty in carrying it out
...this Depot, at the same time
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...which experience alone can teach,
...to...

the preparation of the first batch.

5 Cost.

The estimated ingredients re-
quired for the preparation of 90 ℔s
of Cinchona Liquida of the strength
recommended by Dr. Cornish viz
40 gr. to the ounce are (as given by
Mr. Harper)

Cinchona Bark finely powdered and containing 4 p/c of Alkaloids	℔ 100.
Hydrochloric acid (1 in 10.)	40.
Glycerine	20.

6. The exact value of the Bark
it is not easy to fix, as the market
fluctuates greatly, whilst the
quantity required will further
vary according to the percentage
of Alkaloids, but as the last two
consignments of Bark received,
containing respectively 6.87 and 6.81
p/c of alkaloids, are invoiced at
℔s 80/. per Bale of ℔ 100. it will be
safe to put the Bark at ℔s 1/-.
per ℔ which would give the following
as the value of the ingredients.

Bark	℔s 100.
Acid	℔s 2.
Glycerine	℔s 20-8.
	℔s 122-8.

7 Now computing the cost of preparation
i.e. Fuel, Labor, Superviseion, and wear

…ment be annexed to the cost of Batte…
…tilling in Schools Therefore I …
…shall not be for from the mark …
…saying that Carbonic Liquid can …
…manure less as a cost which will …
…tion of its being valued at the 1-12 …
…th or No: 2 for the same battle. …
…In practice it may however be …
…und possible to reduce the price …
…ill further, but that is a point …
…hich experience alone can decide, …
…meanwhile the practicability seems …
…will be, I think, a valuable substitute …
…quivalent for Guano will have …
…stand without regard of the …
…ces at the nominal cost of a …
…ter of an anna or less per acre …

I have the honor to be
Sir
Your most obedient Servant

Lieutenant
Bengal Engineers

To
The Secretary
Public Works Department
Fort William

1852
No 279

Forwarded to the
Secretary to Government
Revenue Department, with
reference to para 2 of G.O.
No. 366 dated 25th March
1885.

M. C. Tumell.

Accn General with Govt
Fort St George, 5th May 1885.

N.N.
7-5-85

Registered and
(in the usual file
[illegible]
N.
7-5-85

No.

From the Surgeon General with Govt

Dated 5th Dec 1885.
Recd. 9th

No. 258.

SUBJECT.

Forwarding letter from the Principal Medical Officer Leeward Islands reporting on the result of his Experiments with the Stoppered bottles for Cinchona liquids

is of the Mossed and Renewed varieties, which are the richest in alkaloids, containing as they have been found to do, nearly 6.82 %.

We may, therefore, safely assume an average of 6½ % as the alkaloidal value of the bark which we shall use for the liquid solution.

At this rate, 16 lb exactly of bark are required for 1 lb of alkaloids -

With 3 lb of glycerine, and ½ lb of hydrochloric acid, at the required degree of concentration in a liquid solution measuring and the necessary quantity of water added, the result will be 10.96 # fluid pounds. about 175 This gives 176 liquid oz each of which contains 40 grs of alkaloids -

If bottled in 1 oz bottles, 14 7/12 dozen or 176 175 bottles will be required -

Mr Lawson says that 1 oz bottles may be bought in gross for about 2d a dozen

…ter freight, the total cost
… bottles, corks & labels
… be 4ˢ. ½d or at 1/7½d
… rupee, Rs 2.7.10.

The total cost would
…ore. be as follows:—

…tte of Red bark at …6. 4 a lb, the …e offered for this …d of bark at the …nt local sale	}	Rs. A. P. 6. 5. 4
…f Glycerine at …lb <u>blue</u> is 0/0 …or freight	}	1. 0. 4
… acid at 3 annas … per lb	}	0. 1. 6
…r, wear & tear of …ties, grinding, coa …g & supervision, …ed at 20 0/0 of the …the ingredients used	}	1. 7. 10.
…of production.		8. 15. 4
…bottles, Corks & labels.		2. 7. 10.
Issue price.		11. 6. 10.
…f . . .		11. 8. 4

…is a saving of Rs 5½
…=0/0 on our issue price
…for the Bengal Febrifuge.
In other words, we
…ue this solution at
an anna an ounce + 1 anna 9/16 pie

dose of 5 grains of it costs
2⅓ pies or ⅝ of a pie more than
each 5 grain dose of this solution.
(True Copy).
H. A. Lawson

Read the following extracts of
letter from the Director
of Govt. Cin: Plants.
d/- 1st May 1885, Nos: of
Read also Cir. 3273.

Cir. No. 3121/85

Order No. 550 of 12. 5. 85.

Paras 1 to 4 of
Mr. Lawson's letter will
be communicated
to the Surgeon General
for early remarks.

2. The Govt. are
glad to learn that
the existing appliances
at the Medical Stores
in Madras can, without
difficulty, be adapted
to the manufacture,
on a large scale, of

estimated cost
will enable it to be mined at a price
o be shown is only some 30 per cent lower
— a point to than the febrifuge now
ie that contracts obtained from the Govt.
favourably with Factory in Bengal
t (Rs 16/2 a pound) for use in the hospitals
febrifuge supplied & dispensaries of this
Bengal Govt Presy and that it may
now largely used be dispensed in 1 oz
hospitals and bottles containing 40
aries of this grains of alkaloids
leiney. of cinchona at a cost
of little over an anna
a bottle.

In verification
Estimate of cost
entioned at, Rs
er will at once
ge for the ma-
ture in Madras
lbs of the fluid
t at 40 grains

the Medical Storekeeper,
for the association
with himself and
instruction of a com-
petent person for the
immediate superin-
tendence of all future
operations in Madras.

4. The matters referred
to in the last nine
paragraphs of Mr.
Lawson's letter do
not immediately concern
this question and
will be separately
dealt with.

5. The Director attention
is drawn to paragraph
5 of G.O., 25th March
no. 366, in regard

Re manufacture

W. In
2-5-05

Minister of Govt Cie Planta
Bunks & Gardens, Wéstin
Govt Quit with the Govt of Ceylon
Secretary Dept
Public Dept
Govt Central Museum
Library Survey Dept Botl Garden
Govt Engineer

Copy to Govt