

Law (1925) Department.
Education ①

Adm. SERIES.

G.O. No.	665
DATED	1/5/25

①5

[Despatch Abstract.]

S.O. No. Department Date.

C.F. 20-18, 1928 3-01-28.

DEPARTMENT.

Received



Registered

L. Cu 1528C
25/6/29

Subject.

2/665

Preservation of Bronzes - Submitting
Archaeological Chemist's report of his
work done in Museum.

ENCLOSURES.

No. One Report

No. 770-1

by Arch. Chemist.

24

Spare copies

Station MADRAS, Dated the 25th June 1929

From (Name) F.H. Cravely Esqr. D.Sc.

(Designation) Superintendent, Government
Museum,

To The Secretary to the Government of Madras,

Law (Education) Department.

Sir,

In accordance with verbal instructions
from Mr. Ramachandra Rao, I have the honour to submit
a report by the Archaeological Chemist, temporarily
appointed to attend to the preservation of our valua-
ble collection of South Indian bronzes. As will be
seen from the first paragraph of the report, the majo-
rity of these bronzes are suffering from a contagious
chemical disease as a result of which they are being
steadily more and more disfigured. The only known
means of preventing this continuous deterioration is
chemical treatment such as he is carrying out, with
subsequent coating of paraffin wax to prevent access
of

பாதுகாப்பு பிரிவு-1

செப்பனிருபவர் பெயர் : வி. கெஜபட்சாமி
செப்பனிருவதற்காக எடுத்துக் - 1/2010 to 3/2010
கொடுக்கப்பட்ட நாள்.

25/3/10 -
சரிபார்க்கும்
முதல் முதிபாள
கையொப்பம்

சரிபார்க்கும்
2ம் முதிபாள
கையொப்பம்

சுராய்ச்சி
உதவியாளர்
கையொப்பம்

15- தாழ்நர்.

of air. The process is a highly technical one and can only be carried out with good prospects of success by some one like Mr. Ram Singh Ahuja who has been specially trained for the purpose.

The period of his present appointment ends on the 30th September 1924, by which time he expects to have completed the treatment of about eighty bronzes of small and medium size at a cost of Rs 500/- for chemicals, apparatus etc. which has been provided for in this year's budget. In view of the exceptional value of this, the finest collection of examples of South Indian metal work in existence, I have to urge most strongly that Government will arrange for him to complete the preservation work. He is doing the work most carefully and seems ^{to be} thoroughly competent to complete it. As it is estimated that the work on the small and medium sized bronzes will take about a year and a half, and the work of preserving the big and heavy bronzes at Dehra Dun will occupy another eight months, I have to request that Government will be pleased to sanction the extension of the appointment for the remaining period of one year and eight months required from the 1st April 1925. The total additional cost involved will be as follows:-

For chemicals and apparatus required in the year 1925-26 for the work on small and medium sized bronzes.	Rs. 700/-
The Archaeological Chemist's pay for one year (1925-26)	3,000/-
	3,700
For chemicals and apparatus required in the year 1926-27 for the work at Dehra Dun on the 40 big bronzes.	1,200/-
Railway freight and packing charges to and from Dehra Dun	3,000/-
The Archaeological Chemist's pay for eight months in 1926-27.	2,000/-
	6,200/-

Provision

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Provision should also be made for the necessary travelling expenses. In this connection I have the honour to invite a reference to my letter No. 452 - 1 dated 11th April 1924 regarding the Archaeological Chemist's travelling allowance for the journey to Madras. I have also to request that necessary provision should ~~also~~ be made for the return journey to Rawalpindi after the termination of his six month's appointment here. I understand that he is not free to remain here after the end of September even if Government were able to provide the necessary funds to retain him for the rest of this financial year.

I have the honour to be,

Sir,

Your most obedient servant,

F. H. Gravelly

Superintendent.

SR

To

The Superintendent,

Government Museum, Madras.

Sir,

I have the honour to submit a report in connection with the question of cleaning and preservation of a collection of bronzes in the Museum. After a close examination of bronzes, I have found that all of them with the exception of few are deteriorating for want of proper treatment. The total number of bronze images which require preservation is 297, out of which 40 are big and heavy and 91 of medium size and 166 small. With the exception of 35 both big and small, all the bronzes are suffering from contagious disease which goes on spreading by degrees, destroying all the surface and converting the interior of the bronze into amorphous whitish green powder. The destruction which proceeds varies with the amount of injurious salts such as sodium chloride, potassium chloride, and moisture deposited in the pores of bronze objects. ^{Here} ~~Denox~~ destruction is proceeding rapidly on account of the atmosphere surcharged with sea salts and moisture. Some of the bronzes are so badly affected with creeping and or malignant patina, ~~in~~ that in some places it has penetrated three or five millimetres deep which in course of time may cause complete destruction of the sound metal.

There are also other bronzes about 35 in number not ~~affix~~ affected, but covered with "noble" patina (Edel Patina). This patina is not too thick, but of moderate hardness and above all having an enamel like surface. It seems desirable to preserve this highly esteemed, ^{glossy} ~~glossy~~, stable or noble green patina, and this can only be accomplished by removing adhering earthy and sandy material by preliminary washing in distilled water, and brushing gently with soft fibre brush or any other suitable instrument, and then coating it with hard

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patina contaminated with injurious salts are preserved by the decomposition of incrustations in five per cent ^{used} dil. sulphuric acid or by reduction of copper compounds and coating with ~~hard~~ hard paraffin wax after necessary washing with distilled water. Sulphuric acid method has given very conspicuous and promising results, especially in the direction of removing the injurious compounds from the metallic core without attacking it. There are two methods which ~~effect~~ reduction, viz. that of Finkner & and that of Kreftings. The principle of both is the same, and both bring out the complete removal of malignant patina and restore the clean metallic surface. When finally removed from the reducing bath after the metallic powder has been thoroughly cleaned off with water and soft brush, the object is suspended in warm water, and warm water is changed three or four times a day for the first week, then once only in 24 hours, and finally at larger intervals, using only distilled water throughout for small objects, but for larger specimens for final washings only.

The length of time required for cleaning and preservation depends on the nature, size, and porosity of the object. It is found by experience that one object requires at least three weeks for complete preservation. Starting the treatment of 4 or five at a time, I have been able to preserve only 12 bronzes varying in sizes from 3" to 12" in length during the period of one month. As the preservation process is slow and laborious, it is rather difficult to preserve more than 10 or 12 antiquities in a month. Although the Kreftings method of cleaning and preservation process of objects of copper, bronzes, brass and other alloys of copper is slow and laborious, yet I can say with confidence from my three years experience in this branch of science that it has shown surprising results. At the most during a period of six months of my stay here I will be able to preserve 70 to 80 objects in all. If I go on at this rate I believe that the overhauling of the collection of antiquities in the Museum

6
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with the exception of 40 big and heavy bronzes will take a little more than one and a half year and cost about Rs 1,200 for chemicals and a few apparatuses.

There are also about 40 big and heavy bronze images which cannot be safely handled by one or two persons. A different sort of treatment is required for their cleaning and restoration. I have been in correspondence with Mr. Muhammad Sana Ullah, the Archaeological Chemist in India on this subject, and he reports that the want of necessary equipment is the chief obstruction at Madras, and he does not consider it advisable to spend a large sum of money to establish a well equipped laboratory for the temporary work. He accordingly recommends that the 40 big bronzes should be sent to him, if the Superintendent is willing to do so, as he has got other means and necessary facilities for the preservation of big bronzes at Dehra Dun and that I may be deputed to assist him in dealing with them. I agree with him that it is scarcely necessary to equip a laboratory for the purpose here, and I consider it preferable to send them over to him, as there is no other means of preserving them here.

Mr. Sana Ullah reports that the 40 big bronzes will take about eight months and cost about Rs 1,200 for chemicals and apparatus. ~~24.~~ Extra expenditure that will have to be incurred in sending the bronzes to Dehra Dun would come to about Rs 2,500 being the approximate cost of railway freight to and fro and packing charges. It is estimated that the work on big bronzes will take not less than eight months and as the preservation of the small and medium sized bronzes that are to be attended to here will take not less than one and a half year, as already explained above, the whole work is estimated to last about two years and two months.

Kam Singh Dandia

(C.No.1528-C) From the Superintendent, Govt. Museum, Madras No.770-1/24 dated 25th June 1924.

Subject:-Extension of the special duty in the Museum for the chemical treatment of the Bronze images.

The papers regarding the appointment of Mr. Ram Singh Ahuja as temporary Archaeological Chemist in the Madras Museum for a period of six months for the preservation of the bronzes in the museum are put up in the file re: his travelling allowance and the latter is in the Finance Department. The current is submitted for orders without waiting for the papers.

2. It will be seen from Mr. Ahuja's report at pp.4-6 c.f. that there are in all 297 bronze images of different sizes to be preserved and of these 35 objects do not require to be treated chemically. Of the remaining idols, it is stated that forty are very big and heavy and that for want of adequate facilities for applying the processes to them here, they have to be sent to Dehra Dun to be treated in the laboratory of the Archaeological chemist in India. The report further shows that of the residue of the images (222) Mr. Ram Singh Ahuja may not be able to finish the treatment of more than 70 or 80 objects for all the six months for which he has now been appointed and that at this rate the treatment of the 222 objects will occupy roughly a period of 18 months. In other words, besides the six months' period of the officer's present engagement which terminates on the 30th September 1924

(This has since returned & is linked)
As per & separately

p.6, c.f.

pp 5 & 6, c.f.

he will have to be employed for one more year at the Museum and for another eight months at Dehra Dun to work on the 40 big and heavy idols -- referred to above under the supervision of the Archaeological chemist in India. It is stated that Mr. Ahuja is not free to stay in Madras after the end of September 1924. The Supdt., Govt. Museum, accordingly proposes to re-employ him with effect from the 1st ^{April} 1925 and on this basis has given the following estimate of cost. -

	Rs.
For chemicals and apparatus required in the year 1925-26 for the work on small and medium sized bronzes.	700
The Archaeological Chemist's pay for one year (1925-26) @ Rs 250 a month	3,000 3,700
For chemicals and apparatus required in the year 1926-27 for the work at Dehra Dun on the 40 big bronzes	1,200
Railway freight and packing charges to and fro.	3,000
The Archaeological Chemist's pay for eight months in 1926-27 @ Rs 250 a month	2,000 6,200
Total	9,900

3. It will be observed that the above estimate does not take into account Mr. Ahuja's t.a. for his return journey to Madras and his journey to Dehra Dun. But the Superintendent says that provision should be made for the necessary travelling expenses. This may roughly be reckoned at about Rs. 800 so that the extra expenditure to be provided for in the budgets of 1925-26 and 1926-27 on account of the job comes to Rs. ^{10,700} ~~9,900~~ in round figures.

4. Except for Mr. Ahuja's own statement as to the enduring character of the operations he is conducting, there is no assurance before Government

p. 3, 5 +

Rs. 10,700 + 800 = 11,500

p. 3, 5 +

9,900 + 800 = 10,700



that the results will justify the expenditure. Seeing that ~~in any case~~ Mr. Ahuja is not in any case free to stop here after September and continue the work without break it is perhaps for consideration whether before Govt. are committed to a further expenditure of Rs. ^{10,700} ~~9,900~~ they may not wait and see how far the experiment on the 70 or 80 idols that Mr. Ahuja hopes to ^{complete} ~~do~~ during the six months he has now been employed really helps to prevent the deterioration of the idols.

10.7.24

11.7.24



The first thing is to get Mr. Erlam Smith to inspect the work done and say whether the process is a suitable one and carried out well. Will the D.P.I kindly arrange for this? VIK

1528C-1 18.7.24

L. E. 2267C 4/9/24

D.P.I u.o

U.O. Reply.

Returned as requested.

3.9.24

10/10 9/665

At first I thought that it would be desirable to obtain some independent opinion on the suitability of the process which Mr. Ahuja is carrying out. But I find that it is not possible to get anybody here, with the requisite technical knowledge to pronounce on this. I understand however that this process has been tried by the Archaeological Chemist in India with great success. In fact Mr. Ahuja was specially trained in this kind of work at Dehra Dun.

2. Mr. Ahuja cannot stay on here till after the 30th September. The work will have, therefore, to be resumed on the 1st of ~~April~~ ^{March} 1925. It would be a pity not to proceed with it as the collection in the Museum is a particularly valuable one. The estimate on page 2 of the note file may be accepted and the necessary provision inserted in the Budget for 1925-26.

VTK
6-9-24.

* Including T.A. the amount to be provided in 1925-26 is Rs. 1000 and in 1926-27 Rs. 6000. VTK

15280-4 Finance U.O.
8.9.24.

ST
ASSISTANT SECRETARY
9 SEP 1924
FINANCE
7m 1303 E.T.
9.9.24

Finance (E.T.)

In Co No 14192.E. 26.10.23, a temporary post of Archaeological Chemist was created for work connected with the Chemical treatment and preservation of bronzes in the Museum. It was stipulated that the work should be completed within a period of 6 months.

And (H)

The report in the C.T. shows that the treatment of images will take and their year's work in the Museum besides a period of 8 months at Dehra Dun. ~~to complete the 222 images still remaining to be treated~~

pages 51

2. The present engagement of Mr. Ram Singh Ahuja, the Archaeological Chemist expires on 30.9.24. The Supdt. Govt. Museum proposes to reemploy him for a further period of 1 year and 8 months from 1.4.1925 when he will be free to resume his work. The extra cost on account of his appointment is estimated at Rs 10,700, of which a sum of about Rs 3800 will be incurred (for 11 months) in 1925-26.

p 207

p 207

3. Law Secretary considers that the work should be proceeded with, as the collections in the Museum are particularly valuable. Finance may, therefore, agree to the proposal. As the proposal involves large expenditure, it is for consideration whether it should not go before the Finance Committee. If so, Law may be requested to prepare the necessary note for the Committee.

para 3, page 2 ante.

For chemicals & apparatus	Rs 642
Archaeological chemist's pay	2750
T.A. roughly	400
	<u>3792</u>
	or Rs 3800

p 4 ante

or also portion on page 4 of 40693228
17.5.23
(A)



RWD
16/9

L. K. W. S. C.
Law.

Fin no. 1203 E.T-1
16.9.24

PVP
15.9.24
16.9.24

Law (Education) Department

please see para 2 of the Finance Department note on p.5 ante. Though the Archaeological Chemist will work only for 11 months in 1925-26, the chemicals and apparatus required for the work for one full year will be purchased at the outset. The full amount of Rs.700 required for this purpose may be provided for 1925-26 instead of Rs.642 suggested by Finance. The total extra expenditure of Rs.10,700 will be distributed as Rs.3850 in 1925-26 and Rs.6850 in 1926-27. A draft note for the Finance Committee is submitted. It may be sent to Finance for incorporating their remarks in the note. Retype the note as revised

29.9.24

Cfr 30.9.24

S VTK 1.10

Retyped and submitted.

2.10.24

VTK 2.10

Finance U.O.

16/9

Finance (ET)

The Finance portion of the note may be -
"The proposal may be placed before the Finance Committee."

one 4.10.24

RWD
5/10



Fin 1492 E.T
3.10.24



Law (Edn)

May be incorporated to M2 & C for approval. VTK 8.10.24
Cfr 8.10.24
7.10.24

Law & Edu. 15280-5
3.10.24

13 7
My only doubt is whether, for the Rs3000 which it is proposed to spend on sending the large bronzes to Dehra Dun, it would not be possible to arrange the materials for treatment here. For one single definite object it ought not to be necessary to set up a "well equipped laboratory"

RSC

9/10/24

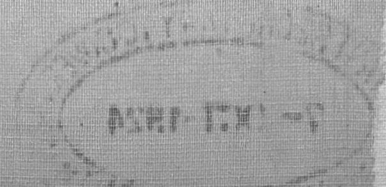
The treatment of the big bronzes at Dehra Dun as proposed to be done in 1926-27. ~~As it is eventually decided to continue to~~ furnish the treatment of the bronzes and to make the requisite provision for the work to be attended to at Madras in 1925-26, we may in passing orders in the file ask the Super: of the Museum to ascertain definitely from the Archaeological Chemist, Dehra Dun, whether some means cannot be found for the treatment of the big bronzes also here. In this view copies of the note may be furnished to Finagov for circulation to members of the Finance Committee.

9.10.24

10.10.24

yes VTK 11.10.

A. at p. 6, c



Note for the Finance Committee.

Subject:-- Government Museum - Preservation of Bronze images.

Proposals of the Superintendent, Government Museum.

We have a very valuable collection of bronze images in the Museum. Sometime ago it was observed that most of these were affected with a 'disease' which went on spreading by degrees, destroying all the surface and converting the interior of the bronze into amorphous whitish green ^{powder} ~~powder~~. The process of destruction is accelerated by the presence of sea salts in the atmosphere of Madras. The need for the ~~pre~~ ^{of the bronze images} preservation by chemical treatment, therefore, became urgent and the Government sanctioned the creation of a temporary post of Archaeological Chemist on Rs. 250 a month for a period of six months. Mr. Ram Singh Ahuja, an Archaeological Chemist specially trained at Dehra Dun, was appointed to the post on the recommendation of the Archaeological Chemist for India. He joined his appointment on the 1st April '24.

2. Mr. Ram Singh Ahuja reports that, of the 297 bronzes in the Museum, 262 are suffering from the ~~dis~~ ^{disease} referred to. Of these, 40 are of a large size and will have to be sent to Dehra Dun to be treated in the laboratory of the Archaeological Chemist for India as there are no facilities in Madras for their treatment. The remaining 222 images, which are of small and medium size, may be treated here.

3. As the process of chemical treatment is slow and laborious, about 10 or 12 bronzes can be treated in a month. Mr. Ahuja has finished the treatment of 77 images during the six months he has been engaged on the work. The treatment of the remaining images is ^{work on} expected to take another year and the ~~treatment~~ ^{work on} of the

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forty big images which have to be sent to Dehra Dun is likely to take a further period of eight months. Mr. Ahuja is not free to stay in Madras after 30-9-1924. Sanction may, therefore, be accorded to his re-employment for a period of twenty months from the 1st April 1925. He will work in Madras for one year from 1-4-1925 and at Dehra Dun for the remaining eight months.

Note by the Law (Education) Dept.

Provision was made for the preservation of the bronzes in the budget estimate for 1923-24. It was first proposed to entrust the work to the Professor of Chemistry in the Presidency College, Madras, and to grant him an honorarium of Rs. 1,750. During the budget debates in March 1923, certain members of the Legislative Council suggested that the work should be entrusted to Indian Silpis or sthapathis. The services of such silpis were widely advertised for by the Superintendent, Government Museum. The few silpis or sthapathis who ^{had} applied were found to have no experience of the kind of work required. The Superintendent, (Mr. Barnes of the Madras Christian College, then acting as Superintendent), himself a specialist in Chemistry, considered that "the preservation of antiquities is a highly specialised subject and it is most dangerous for one who is not an expert in the work to tamper with old bronzes". For the same reason he did not press the proposal to get the work done by the Professor of Chemistry of the Presidency College. As the bronze images in our Museum are considered to be the finest collection of examples of South Indian metal work in existence and as Mr. Ahuja has the ^{requisite} ~~necessary~~ training, it is considered necessary that he should complete the work.

2. The extra cost involved in the proposal is shown below:--

Chemicals and apparatus required in 1925-26 for the work on small and medium-sized bronzes.	RS. 700	12 665	RS. 12
Pay of archaeological chemist for 11 months at Rs.250 per mensem.	2,750		3,850 in 1925-1926.
Travelling allowance of archaeological chemist.	400		
Chemicals and apparatus required in the year 1926-27 for the work at Dehra Dun on the 40 big bronzes.	1,200		
Railway freight and packing charges to and fro.	3,000		6,350 in 1926-1927.
Pay of archaeological Chemist for 9 months in 1926-27	2,250		
Travelling allowance.	400		
Total.	10,700		

A provision of Rs. 3,850 is recommended for inclusion in the budget estimate for 1925-26.

C.G.N.
30-9-24.

V.K.
2.10

Note by the Finance Department.

The proposal may be placed before the Finance Committee.

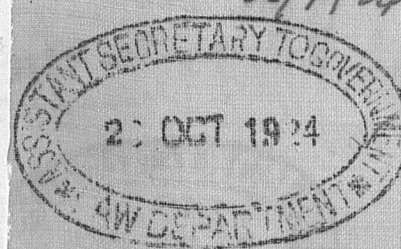
R.W.D. 5.10.24

Finance Department.

Extract of proceedings of the Finance Committee at their fifth meeting 1924-25, dated 17-10-24.

The Committee desired that the question should be adjourned for further consideration at their next meeting.

18-10-24.



PR

Law.

17

Finance Department.

Extract of proceedings of the Finance Committee

1924-25, at their sixth meeting, dated 23-10-24.



The Committee placed the scheme in class II.

Very urgently needed
L. Cu 2820C
29/10/24

28-10-24.

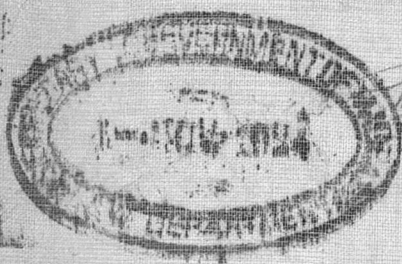
Law.

Law (Ed. 2)

AS

PR

Submitted.



9.10.24

for 29/10/24

VTK 30.10.24

M2

3/11/24

Provision has been entered in the budget for the proposal set forth on 8.10 anti. A draft order is subd. It may be sent to Finance for acceptance.

plaid e.B.E.

(The S. L. M. has estimated that the time required for the appointment of all the remaining...

Sanction the temporary appointment for one year in the first instance)

VTK 8/4

Finance 11.0



Law (Ed) no 1528C/4-6
9.4.25

Fin 13861ET
9.4.25

7/4.

8.4.25

12 18

13 665

Finance (ET)

(Please see previous Finance note on pages 4-5 anti + C2's note on page 7 anti.)

The draft order may be accepted. The necessary provision has been included in the budget - p. 191 C.R.E.

this C.R.
(from 39 Sept)

16.4.25

Finance (BSR)

U.S.

Please see G.O. No. 1808 Law

(Edn) 21/11/24. On a prior occasion Mr. Ram Singh Ahuja was given as a special case a single second class fare for his journey to Madras and back.

The post is ^{temporary} unquarantined. The question

p. 15 of No. 739A of I.A. is governed by I.A. sub 62, if not by

(1) 1.9.22 I.A. sub 64. The sanction of Govt. is not required under either of the two rules. The A.S. has admitted I.A. at tour rate without halting allowance in a case falling under I.A. sub 62. With these remarks the file may be returned to Law (Edn)

L. Cu 1319C
28/4/25



Fin no. 13861ET-1
28.4.25

No. 21/4/25

Law (Edn)

Law (Edn)

Paragraph 2 of Finance note where noted how far that the S. L. M.

19 ~~13~~

$\frac{28.4}{28.4}$

1. MAY 1925

When received for Fair-	
copying.	
When copied	..
When examined	..
When signed	..
When despatched	..

20/14
L & W (Education) 665 DEPARTMENT.

Museum - Preservation of bronzes -
Archeological Chemist - Temporary
Post - Created.

READ AGAIN G.O. No. 1419 L. E., dated 6 - 10 - 1923. (H)

READ ALSO:—

READ ALSO:-
C. No. 1528 C From the S. G. M. No. 770-1, dated 25- 6- 1924.

ORDER.

Misc.

No. 665, dated 1-5-1925

The Government sanction the crea-
tion for a period of one year of a tem-
porary post of ^{Archaeological} ~~Archaeological~~ Chemist on
Rs. 250 a month in the Government Museum,
Madras, for the completion of the work
connected with the chemical treatment
and preservation of the bronze images in
the Government Museum. Mr. Ram Singh
Ahuja will be appointed to the post.

2. Sanction is also accorded to the incurring in the current year of an expenditure of Rs. 700 for chemicals and apparatus.

3. Mr. Ram Singh Ahuja will be permitted to draw travelling allowance according to the prescribed rates for joining his appointment in the Museum.

4. In his letter read above the S.G.M. ^{states} ~~suggests~~ that it will be necessary

✓ 0.10 of notes

$\frac{1}{p-2}, e, f$

21

to send about forty images which are of
 big size to Dehra Dun to be treated in
 the laboratory of the ~~Archaeological~~ Archaeological
 Chemist for India. The transport of the
 images will entail heavy ~~image~~ expenditure
 which the Government desire to avoid, if
 possible. The Superintendent is there-
 fore requested to report whether it will
 not be possible to arrange for the treat-
 ment of the images here, ~~by getting the~~ ^{borrowing from}
~~required apparatus from Dehra Dun~~

RM
 7/4-8
 8.4.25

VTK
 8/4

4: page 7 of notes file

^{the apparatus require}
 being borrowed from Dehra Dun
 To

The S.C.M. (a & o)
 " A.G. thro' Finance. | para-
 " Finance Deptt. | graphs
 | 1-3 of
 | order
 | only.

DESPATCHED
 1 MAY 1925

15 15