

1. Number of copies 24
2. Date of receipt 28-3-31
3. Initial of Reference
M.R.O. 1-29,000-15-10-28

MADRAS RECORD OFFICE.

Government of Madras.

Public Health DEPARTMENT

G.O. No. 1780	Press Mis.
Dated 28-3-31	19

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Department,
23rd November 1871.*

No. 90. Read the following letter from N. R. POGSON, Esq., Government Astronomer and Meteorological Superintendent, to the Chief Secretary to Government, Fort St. George, dated Madras Observatory, 20th November 1871:—

I have the honour to submit to the consideration of Government my final arrangements and requirements for the observation of the total eclipse of the sun at Avenashi, in the Coimbatore District, on the morning of Tuesday, December 12th.

My arrangements are as follow:—

1. *Spectroscopy*.—To search about the corona for any stratum giving bright lines in its spectrum, and to form the best estimate of the extent of different layers surrounding the sun, attention being paid to the height of the green line. These are the suggestions of my esteemed friend Dr. Huggins, the universally-acknowledged chief of Spectroscopists; and the instrument with which the work is to be done is a registering spectroscope, by Mr. Grubb of Dublin, made expressly for the occasion under Dr. Huggins' directions, and just arrived by the P. and O. Steamer *China*. This will find me ample employment during the two brief minutes of totality.

A second spectroscope—the one used at Masulipatam in August 1868, also made under Dr. Huggins' superintendence, will be available; and I am not without hopes of finding an observer capable of using it on the spot.

2. *Polarization*.—The complete polarization of the light of the corona in a plane passing through the sun's centre has been clearly established on former occasions. Relative measures of the intensity of polarization of the corona at different distances from the sun are now wanted, and this duty has been undertaken by Mr. G. K. Winter, Telegraph Engineer to the Madras Railway.

3. *Photography*.—Two totally distinct operations are to be attempted under this head—the one, by means of a large silver-glass reflector, furnished by the Eclipse Committee of the Royal Astronomical Society, the same instrument which was used by Major Tennant at Guntoor in 1868, but with its heavy equatoreal mounting completely altered and improved by the maker, Mr. J. Browning of London. This instrument is to be worked by the Assistant Government Astronomer, who was recently sent to England on duty to learn celestial photography for the occasion. It will not be possible for one person alone to manipulate this large instrument with any chance of success, but Lieutenant-Colonel A. Ritherdon, who is an experienced amateur photographer, has kindly consented to co-operate with my son, and it may even be necessary to secure further aid to carry out the instructions he is expected to bring out from the Astronomer Royal, Mr. Dela Rue, and the Eclipse Committee of the Royal Astronomical Society.

The other photographic process is with an ordinary camera of large size, with a view to obtain pictures of the corona itself, to a distance of at least five degrees from the sun; Dr. Huggins urges this as being very important, and I have accordingly arranged with Mr. H. R. Curths, of the well-known Photographic firm of Messrs. Nicholas and Curths, to undertake this portion of the work professionally. He will require a private assistant, and will provide his own apparatus and chemicals; but, past sharing the use of the same dark room, his operations will

be perfectly independent of those before named, under the joint co-operation of Mr. Everard Pogson and Lieutenant-Colonel Ritherdon.

4. *General Observations.*—Micrometrical measurements of the cusps during the partial phases, before and after totality, will be attempted independently by myself, and also by C. Ragoonatha Chary, the 1st Assistant of the Madras Observatory. It will be the duty of the latter observer to record and describe all the conspicuous points of the eclipse; number, position, and height of red prominences; figure and extent of the corona, and its long arms; visibility of the stars, &c., &c. On these points he will be sure to receive important corroboration and assistance from the many scientific gentlemen who will be present with the Avenashi expedition, and for whose use as many small telescopes will be provided as can be made available in time for the eclipse.

5. *Artistic Sketches.*—The task of representing the peculiar tints and terrestrial and celestial effects of the totality in oil or water colour paintings has been allotted to Mr. R. F. Chisholm, the Government Architect, who will have to prepare previous sketches of the surrounding view, to be filled in immediately after the eclipse, while the strange and wondrous features of the scene are fresh in his recollection.

6. *Accommodation at Avenashi.*—Permission is requisite from the Agent and Manager of the Madras Railway Company to make use of whatever accommodation can be placed at our disposal at the Avenashi Station, from the present time until two or three days after the eclipse. The most important demand is for some small close apartment, which can be used as a dark photographic room; but in case of such not being available, the loan of a luggage van placed on a siding might be found very convenient for the purpose. I have seen Mr. Elwin upon the subject, and feel sure of every reasonable aid being most liberally and promptly conceded immediately the application is made.

7. *Tents.*—Tent accommodation for the seven or eight observers and their attendants, besides certain other square tents with moveable roofs, as shelter for the instruments, must be provided. The number and particular kind and size required would be best decided by inspection of the instruments now erected at the Observatory, all of which had to be removed to Avenashi in time for the eclipse. These will, I presume, be supplied from the Quartermaster-General's Department, Fort St. George, upon a requisition from Government to furnish the expedition therewith.

8. *Encampment Ground and Peons.*—The permission of the Collector of Coimbatore will, I suppose, be necessary for our occupation of the ground adjoining the Avenashi Railway Station. It will be advisable also that four peons, two for day and two for night watches, should be attached to the expedition, for the protection of the valuable instruments and other property in the camp.

9. *Masonry piers.*—Three masonry piers; one for the silver-glass reflector which cannot be much under a ton in weight; another for the small transit instrument, to be used for determination of local time and of geographical position; and a third for the polarization equatoreal, should be erected at the earliest possible date. Other small arrangements for placing the spectroscopes and measuring telescopes

in position will also be required a few days before the eclipse. The prompt assistance of the Executive Engineer for the Coimbatore Range will be necessary to supply these wants.

10. *Funds.*—A cash advance of Rupees three thousand (3,000), to be accounted for on the return of the expedition, will, it is believed, suffice for all current charges. This estimate includes railway fares to and from Avenashi; maintenance of the observers and all necessary camp attendants during their stay; Mr. Carthe's charges for photographic materials and services rendered; costs of workmen, viz., one skilled apprentice from the Public Works Workshops, one carpenter, and one lascar; hire of camp furniture and requisites; and all other expenses incidental to the undertaking.

11. *Leave of absence for Observers.*—It is desirable that Lieutenant-Colonel Ritherdon and the Assistant Government Astronomer should commence their preliminary photographic trials at least a week before the 12th December, the day of the eclipse, and Mr. Winter should be at his post about the same time. Permission of the Military authorities for the former, and of the Madras Railway Company for the latter, to join the expedition, not later than Monday the 4th December, should be early obtained.

12. *Attendance of other members of the expedition.*—Immediately that the requisite funds for action have been placed at my disposal, and the Collector of Coimbatore and the Executive Engineer have been instructed to aid me as suggested, I propose to proceed to Avenashi and Coimbatore, to commence operations by selecting the sites for the various instruments and tents, and giving instructions as to the erection of the piers. If it could be managed for me to leave Madras for this purpose on Friday the 24th instant, and for Mr. Chisholm to accompany me, we might both manage to accomplish our first arrangements, and return to Madras on the following Monday or Tuesday with little interruption of current duties. The Assistant Government Astronomer is expected, *via* Brindisi and Bombay, on the 3rd or 4th December, and must at once proceed to his destination together with the other observers. Little or nothing beyond camp and masonry preparations can be done until his arrival, as all the English repairs and alterations of instruments, photographic chemicals, and Home instructions, are to come in his care, and may or may not require opening at Madras, which can only be decided after his arrival. Messrs. Troughton and Simms were unable to get our demands completed at an earlier date; and I may here mention that he informed me by the last mail of his receiving instructions from Miss Beekley, the lady who superintends all the photographic arrangements at the Kew Observatory; of his invitation to spend the following week with Mr. Dela Rue at his Observatory at Crawford; of the valuable advice of the Astronomer Royal; and of the kind aid of Mr. Crake, late of Messrs. Parry and Co.'s House in Madras, in undertaking to see to his passports and safe travelling arrangements to Brindisi, so as to guard against any risk of delay. His arrival at Madras will then determine the precise day of our departure, and as soon as I have seen all in order and every instrument in position at the camp, if time permits, I shall pay a flying visit to the Observatory to see that nothing has gone wrong during my absence, and return immediately, with Mr. Chisholm and C. Ragoonatha Chary, ready for the great

*Proceedings of the Madras Government, Public Department,
23rd November 1871.*

event. Mr. Curths, who now resides at Bangalore, proposes to join the camp at least by the 10th December.

13. *Delay unavoidable and general.*—It is much to be regretted that all the final arrangements have been driven so late, but it could not be otherwise. The large silver-glass reflector from the Royal Astronomical Society only arrived on the 28th ultimo, the registering spectroscope is still undelivered; an equatorial mounting, which Mr. Doderet is supplying, has not yet arrived; and the polariscopes, micrometers, chemicals, and a variety of other indispensable appliances, have to come with my son *via* Brindisi on 4th December. The Bengal expedition does not, however, seem to have been much more fortunate; for Colonel Tennant, when announcing to me his intended departure from Calcutta on the 21st instant, complained that so far he had heard nothing of his instruments, his letter being dated 30th ultimo. Dr. Huggins will probably join the Bengal party at Dodabetta, and hopes to visit Madras after the eclipse.

14. *Early orders indispensable.*—The time for preparation is so short that not an hour should be lost, and I, therefore, most respectfully solicit the earliest possible sanction of my arrangements, especially in regard to paragraphs 6, 8, 9, and 10.

No. 91. ORDER THEREON, 23rd November 1871, No. 1750.

The Government approve generally of the final arrangements detailed, in the letter above recorded, by the Government Astronomer for the observation on the 12th December next of the total eclipse of the sun.

2. The permission of the Commander-in-Chief will be requested to enable the Government Astronomer to select from the Camp Equipage Depot such tents as may be required, and for supplying some square tents with moveable roofs as described in paragraph 7 of Mr. Pogson's letter. It will probably be necessary to alter some tents for this purpose, and His Excellency the Governor in Council requests that the services of the Camp Equipage Establishment may be placed at Mr. Pogson's disposal.

3. Mr. Pogson's letter will be communicated to the Public Works Department, with a view to the necessary instructions being issued to the Executive Engineer Officer in the Coimbatore District.

4. Mr. Pogson is authorized to place himself in direct communication with the Collector of the Coimbatore District, who is requested to afford him all the assistance he may require.

5. The Accountant-General is authorized to place a sum of Rupees 3,000 at Mr. Pogson's disposal.

6. The Government request that leave may be granted in the Military Department to Colonel Ritherdon so as to enable that Officer to proceed to Avenashi not later than the 4th proximo.

*Proceedings of the Madras Government, Public Department,
23rd November 1871.*

7. The Agent to the Madras Railway is requested to give Mr. Winter the necessary leave to enable him to take part in the observation operations, and to afford generally such aid as may be possible to the party at Avenashi.

(True Extract.)

R. S. ELLIS,
Chief Secretary.

To the Government Astronomer.

- „ Military Department.
- „ Public Works Department.
- „ Collector of Coimbatore.
- „ Inspector-General of Police.
- „ Agent and Manager of the Madras Railway.]
- „ Accountant-General.

Exd. J. Wright

Madras Observatory, November 20th 1871.

From

N. R. Pogson, Esq.,

Government Astronomer and Meteorological Superintendent.

To

The Honorable R. F. Ellis Esq. B.

Chief Secretary to Government
Fort St. George.

Sir,

I have the honor to submit to the consideration of Government my final arrangements and requirements for the observation of the Total Eclipse of the Sun, at Avanashi, in the Coimbatore District, on the morning of Tuesday December 12th. —

My arrangements are as follows:

1. Spectroscopy. — To search about the corona for any stratum giving bright lines in its spectrum, and to form the best estimate of the extent of different layers surrounding the sun, attention being paid to the height of the green line. — These are the suggestions of my esteemed friend Dr. Huggins, the universally acknowledged chief of Spectroscopists; and the instrument with which the work is to be done is a Registering Spectroscope, by Mr. Grubb of Dublin, made expressly for the occasion under Dr. Huggins' directions, and just arrived by the P. & O. Steamer "China". This will find me ample employment during the two brief minutes of totality. —

A second Spectroscope — the one used at Masulipatam in August 1868, also made under Dr. Huggins' superintendence, will be available; and I am not without hopes of finding an observer capable of using it on the spot. —

Nov. 21 1871

PUBLIC.

To THE GOVERNMENT ASTRONOMER.

By

Dated November 20th.

Recd.

File.

G. O. 23rd November 1871. No. 1750.

RECEIVED
NOV. 20-01.

A copy of the final arrangements
submitted by the Government Astronomer, for the
observation of the Total Eclipse of the Sun, on the
morning of the 12th December next, of the
total eclipse of the sun, and issuing certain instructions
therein in connection with the subject.

2. Polarization:— The complete polarization of the light of the Corona in a plane passing through the Sun's centre has been clearly established on former occasions.

Relative measures of the intensity of polarizations of the Corona at different distances from the Sun are now wanted, and this duty has been undertaken by Mr. J. K. Winter, Telegraph Engineer to the Madras Railway.

3. — Photography:— Two totally distinct operations are to be attempted under this head. — The one, by means of a large Silver-Glass Reflector, furnished by the Eclipse Committee of the Royal Astronomical Society; the same instrument which was used by Major Tennant at Guntur in 1868, but with its heavy equatorial mounting completely altered and improved by the maker, Mr. A. Browning of London. — This instrument is to be worked by the Assistant Government Astronomer, who was recently sent to England on duty to learn celestial photography for the occasion. It will not be possible for one person alone to manipulate this large instrument with any chance of success, but Lieut. Col. A. Retherdon, who is an experienced amateur photographer, has kindly consented to co-operate with my son, and it may even be necessary to secure further aid to carry out the instructions he is expected to bring out from the Astronomer Royal, Mr. De La Rue and the Eclipse Committee of the R. A. S. —

The other photographic process is with an ordinary camera of large size, with a view to obtain pictures of the Corona itself, to a distance of at least five

degrees from the Sun, Dr. Suggins urges this as being very important, and I have accordingly arranged with Mr. H. R. Burth, of the well known photographic firm of Messrs. Nicholas & Burth, to undertake this portion of the work professionally. He will require a private assistant, and will provide his own apparatus and chemicals; but ~~not~~ sharing the use of the same dark room his operations will be perfectly independent of those before named, under the joint cooperation of Mr. Everard Pagson and ^{Lieut.} Col. Retherdon. —

4. — General Observations:— Micrometrical measurements of the cusps during the partial phases, before and after totality, will be attempted independently, by myself, and also by C. Ragoonatha Chary, the first assistant of the Madras Observatory. It will be the duty of the latter observer to record and describe all the conspicuous points of the Eclipse, number, position, and height of red prominences, figure and extent of the Corona, and its long arms, visibility of the stars, &c. &c. — On these points he will be sure to receive important collaboration and assistance from the many scientific gentlemen who will be present with the Avanashi expedition, and for whose use as many small telescopes will be provided as can be made available in time for the Eclipse. —

5. — Artistic Sketches. — The task of representing the peculiar tints, and terrestrial and

celestial effects of the totality, in oil or water color paintings has been allotted to Mr R. F. Chisholm, the Government Architect, who will have to prepare previous sketches of the surrounding view, to be filled in immediately after the eclipse, while the strange and wondrous features of the scene are fresh in his recollection. —

6. — Accommodation at Avanashi. — Permission is requisite from the Agent and Manager of the Madras Railway Co. to make use of whatever accommodation can be placed at our disposal at the Avanashi Station, from the present time until two or three days after the eclipse. — The most important demand is for some small close apartment, which can be used as a dark photographic room, but in case of such not being available, the loan of a luggage van placed on a siding might be found very convenient for the purpose. I have seen Mr Edwin upon the subject and feel sure of every reasonable aid being most liberally and promptly accorded immediately the application is made. —

7. — Tents. — Tent accommodations for the seven or eight observers and their attendants, besides certain other square tents with moveable roofs, as shelter for the instruments, must be provided. The number and particular kind and size required

would be best decided by inspection of the instruments now erected at the Observatory, all of which have to be removed to Avanashi in time for the eclipse. — These will I presume be supplied from the Quarter Master General's Department, Fort St. George, upon a requisition from Government to furnish the expedition therewith. —

8. Encampment ground and Peons. — The permission of the Collector of Coimbatore will I suppose be necessary, for our occupation of the ground adjoining the Avanashi Railway Station. — It will be advisable also that four Peons, two for day and two for night watches, should be attached to the expedition, for the protection of the valuable instruments and other property in the camp. —

9. — Masonry Piers. — Three masonry piers + one for the Silver Glass Reflector, which cannot be much under a ton in weight; another for the small Transit Instrument, to be used for determination of local time and of geographical position; and a third for the Polarization equatorial, should be erected at the earliest possible date. — Other small arrangements for placing the Spectroscopes and measuring telescopes in position will also be required a few days before the eclipse. The prompt assistance of the Executive Engineer for the Coimbatore Range will be necessary to supply these wants. —

10. - Funds. - A cash advance of Rupees three thousand (3000), to be accounted for on the return of the expedition, will it is believed suffice for all current charges. - This estimate includes - Railway fares to and from Avasshi; maintenance of the Observers, and all necessary camp attendants during their stay; Mr. Louth's charges for photographic materials and services rendered; costs of workman, viz. one skilled apprentice from the Public Works Workshops, one carpenter, and one lascar; hire of camp furniture and requisites; and all other expenses incidental to the undertaking.

11. - Leave of Absence for Observers. - It is desirable that Lieut. Col. Pittard and the Assistant Government Astronomer should commence their preliminary photographic trials at least a week before the 12th December, the day of the eclipse; and Mr. Winter should be at his post about the same time. - Permission of the Military Authorities for the former, and of the Madras Railway Company for the latter to join the expedition, not later than Monday the 4th December, should be early obtained. -

12. - Attendance of other members of the expedition. - Immediately that the requisite funds for action have been placed at my disposal, and the collector of Coimbatore

and the Executive Engineer have been instructed to aid me as suggested, I propose to proceed to Avasshi and Coimbatore, to commence operations by selecting the sites for the various instruments and tents, and giving instructions as to the erection of the piers. - If it could be managed for me to leave Madras for this purpose on Friday the 24th instant and for Mr. Lisholme to accompany me, we might both manage to accomplish our first arrangements, and return to Madras on the following Monday or Tuesday with little interruption of current duties. - The Assistant Government Astronomer, expected, via Brindisi and Bombay, on the 3rd or 4th December, and must at once proceed to his destination together with the other Observers. - Little or nothing beyond camp and necessary preparations can be done until his arrival, in the English repairs and alterations of instruments, photographic chemicals, and Home Instructions, are to remain in his care, and may or may not require opening at Madras, which can only be decided after his arrival. - Messrs. Proughton & Permin were unable to get our demands completed at an earlier date; and I may here mention that he informed me by the last mail, of his receiving instructions from Miss Beckley, the lady who superintends all the photographic arrangements at the New Observatory; of his invitation to spend

the following week with Mr De La Rue at his Observatory, at Cranford; of the valuable advice of the Astronomer Royal; and of the kind aid of Mr. Serake, late of Messrs. Parry & Co's house in Madras, in undertaking to see to his passports and safe travelling arrangements to Brindisi, so as to guard against any risk of delay. - His arrival at Madras will then determine the precise day of our departure, and as soon as I have seen all in order and every instrument in position at the camp, if time permits, I shall pay a flying visit to the Observatory to see that nothing has gone wrong during my absence, and return immediately, with Mr Chisholm and C. Ragoonatha Chary, ready for the great event. -

Mr. Curtho, who now resides at Bangalore, proposes to join the camp at it by the 10th December. -

13. - Delay unavoidable and general. - It is much to be regretted that all the final arrangements have been driven so late, but it could not be otherwise. The large silver glass reflector from the Royal Astronomical Society only arrived on the 28th ultimo, the Registering Spectroscope is still undelivered, an Equatorial mounting, which Mr Dodderet is supplying, has not yet arrived; and the Polariscopes, Micrometers,

Chemicals, and a variety of other indispensable appliances, have to come with my son via Brindisi on 4th December. - The Bengal expedition does not however seem to have been much more fortunate; for Col. Tennant, when announcing to me his intended departure from Calcutta on the 21st instant, complained that so far he had heard nothing of his instruments, his letter being dated 30th ultimo. - Dr. Huggins will probably join the Bengal party at Dodabetta and hopes to visit Madras after the eclipse. -

14. - Early Orders indispensable. - The time for preparation is so short that not an hour should be lost, and I therefore most respectfully solicit the earliest possible sanction of my arrangements, especially in regard to paragraphs 6, 8, 9, and 10. -

I have the honor to be
Sir

Your most obedient servant

M R Pogson

Government Astronomer

19-
Rock DEPARTMENT.

No. 5882 Dated 25 November 1871.

FROM *Ap.*
THE ACCOUNTANT GENERAL
TO THE GOVERNMENT OF MADRAS,

TO THE *Government Astronomer*

Vide { your } Office Letter No. — dated 25 November 1871.
 { this }

The undersigned has the honor to ~~state~~ return the receipt sent
with the above and to state that you should
apply to Government for a Treasury Order
for Rs. 2,000.

for Ap. Account General.

Camp. A. R.

Public 1871 & 1872.

The Government Astronomer

The Chief Secretary to Government

Govt. of Madras

Madras Observatory, Nov 20th, 1871

Ad. 22

No 2422

*Small arrangements for the
observations of the total eclipse
of the Sun at Srirangapatna on
January the 28th 1872.*

Order 23^d Novr/71 No. 1750.

The Government approve generally, of the final arrangements detailed, in the letter above recorded, by the Govt Astronomer for the observation on the 12 December next of the total eclipse of the Sun.

The permission of the Com^d in Chief will be requested to enable the Govt Astronomer to select from the Camp Equipage depot such tents as may be required & for supplying ^{some} ~~the~~ tents with ^{such as} ~~the~~ described in para 7. of Mr. Pogson's letter. It will probably

I should wish Mr. Pogson to communicate personally with Col. Dyer as the best of attaining tents & his other requirements.

Submitted to Govt. with
instruct that a final
copy order being the
issued.

M. R. Pogson

Govt. Astronomer

Order at Acc^y

11/1

DEPARTMENT,
ACCTY. GENL'S OFFICE, MADRAS.

THE ACCOUNTANT GENERAL,
Fort St. George.

Recd.
Mailed

be necessary to alter some
cents for this purpose and
His Excellency the Govt. in
Council reports that the
remains of the Camp equipage
establishment may be
placed at Mr. Pagson's
disposal.

Mr. Pagson's letter will
be communicated to
the Public Works department
with a view to the necessary
instructions being issued
to the Executive ^{Engineering} Officer
in the Coimbatore District
Mr. Pagson is authorized

to place himself in direct
communication with the
Collector of the Coimbatore
district who is reported
to afford him all the assistance
he may require.

The Accountant General
is authorized to place
a sum of Rs. 3000 at
Mr. Pagson's disposal.

The Govt. request that
leave may be granted
in the Military Dept. to
Col. Rutherford so as to
enable that officer to
proceed to Avenashiri
not later than the
4th Provo.

The Agent to the Madras

Railway is requested to
give Mr. Winter the necessary
leave to enable him to
take part in the observation
operations - & to afford
generally such aid as may
be possible to the party
at Arcanashi

R.E. No. 507 of 1892

90-91.

90-91.

To the Military Dept.
Public Works Dept.
Supt. of Revenue Survey.
Govt. Astronomer
Collector of Tanjore
" Trichinopoly
" Malabar
" South Canara.
Cochin
Inspector General of Police.
Agent & Manager Madras
Railway
Accountant General.

Govt. of Madras.

Public

The Govt. Astronomer

Dated Nov. 23

Recd.

Nov. 23

No. 507 of 1892

90-91.

Approving generally of the
final arrangements detailed
by the Govt. Astronomer
for the observation on the
12 Dec. next of the total
eclipse of the sun, and
issuing certain instructions
in connection with the same.