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MADRAS RECORD OFFICE.

Government of Madras.

Public Works **DEPARTMENT.**

G.O. No. 2298

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1867.

Not to be folded or roughly handled

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*Proceedings of the Madras Government, Public Works Department,
30th July 1867.*

No. 718. Read the following Proceedings of the Madras Government in the
Public Department :—

Passing orders on the proposals submitted by the
Inspector General of the Indian Medical De-
partment and the Government Astronomer for
the commencement of a system of Meteorologi-
cal Observations throughout this Presidency. } (Here enter 20th July 1867, No. 876.)

No. 719. ORDER THEREON, 30th July 1867, No. 2,298.

ESTABLISHMENT, No. 72.

Forwarded to the General Superin-
tendent of the Public Works Workshops
at Madras, with a request that he will
instruct Mr. Doderet to place himself in communication with the Government
Astronomer, and, without interfering with his regular duties in the Mathematical
Instrument Maker's Department, to afford Mr. Pogson every assistance in the
construction of the instruments referred to in paragraph 3.

(True Extract.)

(Signed) J. H. M. SHAW STEWART, Major, R. E.,
Under Secretary to Government.

To the General Superintendent of Public Works Workshops.

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Proceedings of the Madras Government, Public Department
20th July 1867.

No. 214. Read the following letter from the Inspector General, Indian Medical Department, and the Government Astronomer, to the Acting Chief Secretary to Government, Fort Saint George; dated Madras, 11th July 1867.

With reference to the Proceedings of the Madras Government, Public Department, 10th April 1867, No. 379, paragraph 2, we have the honor to submit to your consideration the arrangements which, after due deliberation, we have decided upon, for the speedy commencement of the series of Meteorological Observations at the various stations selected in the Madras Presidency. We have also to request information upon a few points requiring more definite explanation and sanction, to enable us to carry out the scheme in the most effective possible manner.

1. In regard to the instruments, a supply of superior instruments, by Messrs. Negretti and Zambra, having been recently received at the Medical Stores, we have the pleasure to state that we are prepared to equip nine stations with nearly complete sets of Meteorological apparatus, and the entire number with the principal instruments requisite for carrying on the most important records desired. The following statement will exhibit at sight what we have on hand, and what remain to be supplied to render the whole of the eighteen stations (counting the Madras Observatory as one) practically similar in their equipments, a point which we consider of the utmost importance, when the results are to be strictly and immediately comparable, as must be the case in the present instance:—

No.	Instruments.	Ready.	Deficient.	Remarks.
1	1st class Standard Barometers.	9	9	Very superior instruments, but No. 3 might be used instead. Easily supplied by Mr. Doderet.
2	Wall Brackets for ditto...	9	9	
3	2nd class Standard Barometers.	10	.....	Requiring slight alteration throughout by Mr. Doderet.
4	Dry and Wet Bulb Hygrometers.	19	.....	
5	Solar Radiation Thermometers in Vacuo.	19	.....	Desirable, but not of immediate importance. Possibly obtainable at the D. P. W. Stores.
6	Ditto ditto freely exposed.	.....	18	
7	Self-registering Maximum Thermometers.	19	17	Only 18 of each wanted for immediate use, but being easily deranged duplicates are considered necessary at every station. All most probably obtainable at the D. P. W. Stores and Workshops.
8	Ditto Minimum Thermometers.	19	17	
9	Terrestrial Radiation Thermometers.	19	.....	Of Mr. Adie's make. The deficient number should be had out immediately. Two, rather worn, available from the Observatory.
10	Copper Rain Gauges with Glass measures.	19	.....	
11	Wind Vanes.....	10	8	Easily supplied by Mr. Doderet.
12	Robinson's Anemometers...	10	8	
13	Moffatt's Ozonometer with Scale	19	.....	Indispensable, and must be provided for each station.
14	Ozonometer Cages.....	.....	18	
15	Ordinary Clocks (American would suffice).	.....	18	Best constructed by Mr. Doderet expressly for each station.
16	Floating Sun Dials for finding local time.	.....	18	

Eighteen copies of "Drew's Practical Meteorology" should be also obtained, one to be distributed with each set of instruments supplied.

From the above statement, and the remarks appended, it is evident that, with the exception of the eight deficient Robinson's Anemometers, all other demands can be provided for on the spot, if the assistance of Mr. Doderet, the Mathematical Instrument Maker to the Department Public Works, can be granted to the Government Astronomer, for the construction of such items as it is suggested can be readily supplied by him.

A small number of instruments should be retained in store, ready to replace deficiencies which are sure to occur from time to time.

A set of instruments, formerly used at Secunderabad by Dr. Arnold Smith, but now no longer required by that Officer, might be advantageously purchased for this purpose, in addition to the few in the Medical Stores over and above what are required for the immediate starting of the eighteen Meteorological stations, and the Government Astronomer will, if permitted, assign their present value, and submit the total amount thereof (under Rupees 200) for sanction of its payment to their present owner. They have been in the Observatory Store-room for above a year past, and were some of them used for special observations made for the Gun Cotton Committee of the Royal Society in May and June 1866.

2. *Out-door stands for Thermometers, &c.*—One of the chief precautions requisite to render all the observations taken at different stations comparable is, to have all the thermometers fairly exposed, and yet effectively sheltered from direct or reflected sunshine, from radiated heat, draughts and rain.

The form of stand most desirable would be a pent-house or box, supported on four legs, about 4½ feet from the ground, open below, length 4 feet, breadth 3 feet, and height about 3 feet; the sides consisting of venetian flaps, hinged at the top, and the whole covered over by a stout thatched roof or chupper, about 12 by 8 feet, so constructed as to exclude sun and rain, but to admit of free ventilation and perfect exposure to the actual temperature of the surrounding atmosphere. The instruments at the Madras Observatory are fairly placed in a north verandah, freely exposed on a board, but as such an arrangement may not be convenient at the up-country stations, and the middle of a compound is undoubtedly the most satisfactory position for thermometers, some uniform pattern of stand should be agreed upon, and one set up in the Observatory compound for trial before the rest are constructed. The cost of each chupper and pent-house would be about 100 Rupees, but the Astronomer is unable to say without trial whether the pent-house (at least two-thirds of the expense) is really necessary or not. It is proposed, therefore, to erect in the Observatory compound a trial chupper, with a simple board stand, and a pent-house as described, and to test by actual comparison whether thermometers so situated read precisely alike, and also whether they are in agreement with the standards of the Madras Observatory. A single day's trial will settle the question; but whatever form of stand is adopted, it will be desirable that a set of thermometers shall be similarly arranged and recorded at the Observatory, and in all probability it will be found that the temperatures recorded in the new and unquestionable position proposed, will be identical with those in the

north verandah of the Observatory before named, in which all past observations have been made. The five Astronomers, in successive permanent charge, have all considered the position of the thermometers unexceptionable, but it will be satisfactory to find their judgment confirmed by actual comparison with a set perfectly clear of all buildings, and placed as may be deemed best for uniform adoption at the new Meteorological stations.

3. *Observers.*—Seventy-two applications of apparently suitable men, chiefly Natives, all sufficiently acquainted with mental decimal arithmetic—the most imperative demand next to integrity and general good character—have already been registered by the Government Astronomer. The majority of these candidates are youths who have passed either the Uncovenanted Civil Service or Matriculation Examinations, solely with a view of obtaining employment under Government. But as the work is of a peculiar nature, for which no official public examination is any guarantee, and as the Observers employed most certainly cannot be allowed leave of absence agreeably to the ordinary rules of the Uncovenanted Civil Service, it is evident that whenever a man can be found on the spot, with his family connexions around him, possessed of the requisite qualifications and taste, he will make a far better Meteorological Observer for such station, whether a passed man or not, than any stranger who sees fit to apply for the post merely for the sake of the pay it will secure him. Every Observer not previously experienced in the use of such instruments must pass through a brief course of training and instruction at the Madras Observatory, and definite orders from Government upon the following points will facilitate the selection of the most suitable hands, and hasten the starting of the entire scheme:—

I.—Is it compulsory that the persons selected as Observers shall have passed either of the examinations now prescribed, before entering upon their duties?

II.—Will the ordinary Uncovenanted Civil Service pension and gratuity regulations be applicable to the employes in this service?

III.—Will selected candidates be allowed their travelling expenses to and from the Madras Observatory, and salary while undergoing their training for the space of a week or ten days, in that establishment?

IV.—Will Government permit the Astronomer, in communication with the Inspector General, Indian Medical Department, and the Medical Officers in local charge, to appoint the men found to be best qualified as Observers?

A negative reply to Query 1 will enable us to commence operations at Secunderabad, Trichinopoly, Coimbatore, Bangalore, and Rangoon, immediately that the form of stand best adapted for general use has been decided upon, and the instruments prepared for their respective destinations. The candidates recommended for the first two places named have each had several years' experience in keeping the past records thereat: the one for Bangalore has had instrumental practice and training in the Trigonometrical Survey; and the other two are youths of excellent character and possessed of the requisite knowledge for such duties.

An affirmative reply to Query 2 will further enable us to recommend two of the Observatory Assistants for Salem and Negapatam.

*Proceedings of the Madras Government, Public Department,
20th July 1867.*

4. Printed Instructions and Forms should be at once prepared for the guidance and use of the Observers, and the Government Astronomer is now occupying himself with the compilation of these, and of the requisite Reduction Tables. Permission to procure a moderate supply, sufficient for the first twelve months' use, is therefore requested, and the Astronomer suggests that they will be best printed at the Military Male Orphan Asylum Press, which has for many years past been employed for the publication of the Hourly Magnetical Observations taken at the Madras Observatory and for the forms in use at that establishment.

No. 215.

ORDER THEREON, 20th July 1867, No. 876.

In their letter above recorded the Inspector General, Indian Medical Department, and the Government Astronomer report the arrangements which have been made by them for the commencement of a system of Meteorological Observations throughout the Presidency, in accordance with the instructions laid down by Government in April last.

2. Nine stations can be at once equipped completely with instruments, and the most important of these can be supplied to all. The list given in the 1st paragraph of the letter now under consideration shows the instruments for which provision must be made: all of these can be obtained in Madras, with the exception of eight "Robinson's" Anemometers, if the services of Mr. Doderet be placed at the Astronomer's disposal.

3. The purchase of the instruments which are still required is sanctioned, and Mr. Doderet will be requested to place himself in communication with the Government Astronomer, and afford every assistance in the construction of the instruments which can be locally supplied.

The purchase of 18 copies of "Drew's Practical Meteorology" is also sanctioned.

4. The Government approve the purchase of the set of instruments formerly used by Doctor Arnold Smith, at a cost not exceeding Rupees 200.

5. The Government Astronomer is authorized to incur the cost of erecting a stand with thatched roof, and pent-house, with a view to deciding on the cheapest and best form of stand for thermometers to be used at every station.

6. With regard to the questions propounded in the 3rd paragraph of the letter the Government, while fully recognizing the necessity of adhering in any but the most exceptional cases to the Uncovenanted Service Examination Rules, are of opinion that, having regard to the exceptional nature of the duties required of the Observers, duties which necessitate a very considerable acquaintance with arithmetic, and more than average intelligence, and to the fact that each Observer will have to undergo a short course of instruction at Madras, the rule requiring that no candidates who have not passed the prescribed Special Test shall be employed in posts, the salaries of which exceed Rupees 20, may, as a special case, be relaxed: the Government desire, however, that whenever practicable preference may be given, *ceteris paribus*, to passed candidates. The Government will leave the selection of the best qualified Observers entirely in the hands of the Inspector General, Indian Medical Department, and the Government Astronomer.

7. In answer to the second query, it is observed that the establishment being a permanent one, the ordinary rules relating to pensions will be applicable to all Uncovenanted Servants employed therein.

*Proceedings of the Madras Government, Public Department,
20th July 1867.*

8. As regards the last question, travelling expenses cannot be granted under the rules to selected candidates for expenses incurred in transit to and from Madras, nor can salary be paid until a public servant has been actually appointed.

9. The Government think, however, that payment of their salaries may fairly commence from the date on which the Observers may, by order of the Astronomer, join their appointments at Madras.

(True Extract).

W. Miller
Acting Chief Secretary.

To the Inspector General, Medical Department.

- „ Government Astronomer.
- „ Public Works Department.
- „ Accountant General.
- „ Examiner of Claims.

Ed. J. Tulloch.

