

# REPORT

OF THE

TWENTY-THIRD MEETING

OF THE



# BRITISH ASSOCIATION

FOR THE

## ADVANCEMENT OF SCIENCE;

HELD AT HULL IN SEPTEMBER 1853.

LONDON:

JOHN MURRAY, ALBEMARLE STREET.

1854.

*“ Report of the Kew Committee of the British Association for 1852-53.*

“ Since the last meeting of the British Association, the Kew Committee have completed the series of balloon ascents which they had contemplated—four ascents in all having been made, viz. on Aug. 17, Aug. 26, Oct. 21, and Nov. 10, 1852. A Report of these ascents was communicated by the Kew Committee to the Council of the British Association, on the 29th Nov. 1852. *A detailed account* of the experiments, with a discussion of the general results, having been prepared by Mr. Welsh, was communicated in April last, by the Council of the British Association, to the Royal Society, and has since been printed in the *Philosophical Transactions*. At the request of the Council of the British Association, the Royal Society have granted to them 500 copies of the paper for distribution among their members; 50 copies have been presented to those gentlemen who took a part in the experiments, by making contemporaneous meteorological observations or otherwise. The remaining copies will be distributed to the purchasers of Dovè's Isothermal Lines. The sum of 261*l.* 2*s.* 5*d.* was granted by the Royal Society, from their Wollaston Fund, to defray the expense of these ascents.

“ Of this sum 243*l.* 2*s.* 5*d.* was expended, leaving a balance of 18*l.*, which has been repaid to the Treasurer of the Royal Society.

“ The Committee have, up to this time, been enabled to supply seventy thermometers, graduated under their superintendence by Mr. Welsh.

“ All the applications yet received have now been complied with, except three or four for instruments of unusual construction or extent of graduation.

“ On the 30th of May, 1853, the Committee passed the following resolutions:—

“ 1st. That in order to facilitate the comparisons of thermometers with the standard at Kew, the Committee are prepared to furnish such instrument-makers as may apply to them with a standard thermometer at the charge of 1*l.*

“ 2nd. The Committee are prepared to receive thermometers and to furnish a table of their errors, provided such thermometers are forwarded to Kew free of expense.—It was subsequently resolved that the charge for the verification of such thermometers should be 3*s.* 6*d.* for each instrument.

“ 3rd. That as there are many very carefully recorded series of observations made with thermometers that have not been previously verified, the Committee will also be prepared (on receiving applications from the observers) to furnish the results of a comparison with the Kew standard. Such instruments to be forwarded to the Observatory free of expense.’

“ The above resolutions having been forwarded to the editors of the *Athenæum* and the *Literary Gazette*, were kindly noticed by them in their respective journals, but with one exception (by an optician for a thermometer) no further application has been received by the Committee. It is, however, very probable that when such facilities for the correction of observations made with imperfect thermometers are more generally known, further applications will be received. Except to those who have been actually engaged in reducing such observations, it is almost impossible to conceive the amount of comparatively useless observations that have been and are now daily recorded, owing to the imperfect instruments employed.

“ During the past year a very considerable portion of the time of Mr. Welsh has been occupied in the arrangement for and the discussions of the results of the balloon experiments, and as he has no one to assist him in the carrying out of any meteorological observations, the amount of general work in the Observatory during the past year has necessarily been much less than in

previous years; at the same time it will be seen that the expenditure has been proportionately diminished. The total amount is 159*l.* 11*s.* 1*d.*, exclusive of the sum expended in the ascents, which, as has already been stated, was wholly defrayed by the Royal Society.

“The Committee suggest that, with regard to the balance in hand, the same principle as that hitherto adopted should be continued, viz. that the balance from former years should be still held at the disposal of the Kew Committee (in the event of its being re-appointed), in addition to the usual annual grant of 200*l.* The strict œconomy with which the funds have been hitherto used is a sufficient guarantee that no unnecessary expenditure will be incurred.

“The Committee recommend that an application should be made to the Commissioners of Woods and Forests for the temporary use of a small portion of the ground near the Observatory for the erection of suitable places for observing; the expense would be very trifling, while the position of the Observatory, in the centre of 450 acres of a level field, combined with its near proximity to the metropolis, renders it in every respect a most suitable place for the carrying on those scientific researches which are so intimately connected with the objects of the British Association.

“During the past year, an application has been received by the Council of the Association for a portion of the electrical apparatus belonging to the Association for the use of the Observatory at Toronto. This application was referred by the Council to the Committee. The following is an extract from their Minutes, 4th August, 1853:—‘Read a letter from Capt. Lefroy to Dr. Royle, dated Woolwich, 21st July, 1853. Resolved, that as the electrical apparatus referred to in Capt. Lefroy’s letter is a portion of that constructed by Mr. Ronalds for the carrying out of his original experiments in atmospheric electricity, and in which the British Association has always taken so much interest, the Committee cannot recommend that any portion of it should be withdrawn from the Observatory, more particularly as Mr. Newman could supply a more perfect apparatus under the superintendence of Mr. Ronalds at a comparatively trifling cost.’

“Part of the Government Grant placed at the disposal of the Royal Society having been entrusted to the Meteorological Sub-Committee, they have been enabled to prosecute their experiments for the improvement of meteorological instruments, and have, in furtherance of this object, obtained from M. Certling a set of standard weights, made under the direction of Dr. Miller, with especial reference to facility of intercomparison. They are now in the hands of Prof. Miller, of Cambridge, for verification, and he expects in the course of about a month to have the trials of them complete. These weights consist of the following—a standard pound of gun-metal thickly electro-gilt; a set of weights for ordinary use made of the same material, viz.

1 of 7000 grains.	1 of 700 grains.
1 „ 4000 „	1 „ 400 „
1 „ 2000 „	1 „ 200 „
2 „ 1000 „	2 „ 100 „

A set of platinum wire weights for the smaller subdivision—

1 of 70 grs.	1 of 7 grs.	1 of .7 gr.	1 of .07 gr.
1 „ 40 „	1 „ 4 „	1 „ .4 „	1 „ .04 „
1 „ 20 „	1 „ 2 „	1 „ .2 „	1 „ .02 „
2 „ 10 „	2 „ 1 „	2 „ .1 „	1 „ .01 „

The standard scale, prepared by Messrs. Troughton and Simms, is awaiting Mr. Sheepshanks’ leisure for comparison with the bars in his possession. This

scale is composed of a brass rolled bar, about 41 inches long,  $1\frac{1}{2}$  inch wide, and half an inch thick—the standard yard is laid down between two gold pins, inserted for the purpose, and the interval of 36 inches is marked off on them by two fine lines; near an edge of the bar, 40 inches subdivided into tenths, have been marked off, and one-tenth has further been divided into hundredths of an inch.

“Application having been made from the Hydrographer to the Admiralty for advice as to the thermometers to be supplied to Her Majesty’s Navy for meteorological observations to be made at sea, the Committee have undertaken to recommend and provide a specimen of the form of instrument they consider best adapted for the purpose, and experiments are now being made by Mr. Welsh, with this object in view.

“Lieut. Maury, of the United States Navy, has also requested the opinion of the Committee upon the best form of a Marine Barometer, and the subject is now under their consideration.

“The Standard Barometer is not as yet mounted, but two tubes of an inch in internal diameter, have been boiled at the Observatory, by Messrs. Negretti and Zambra, under the inspection of the Committee, and the mounting is shortly expected to be completed.

“The Committee cannot close their report without expressing their high estimation of Mr. Welsh’s services. The constant and unremitting attention to his duties, combined with the ability he has always evinced in their discharge, entitle him to the warmest thanks and individual support of every member of the British Association.

“JOHN P. GASSIOT,

“*Chairman.*”

#### REPORT OF THE PARLIAMENTARY COMMITTEE OF THE BRITISH ASSOCIATION, TO THE MEETING HELD AT HULL, IN SEPTEMBER 1853.

“The Parliamentary Committee have the honour to report as follows:—

“The subjects to which the attention of the Committee has been directed, since the date of their last Report, are—

“1. The extravagant rates of postage charged on the transmission of presentation copies of scientific works to correspondents in foreign parts; and

“2. Lieut. Maury’s Scheme for the improvement of Navigation.

“As to the first, Mr. Heywood moved, in the House of Commons, for a copy of the return, which has been already printed by order of the House of Lords, on the motion of Lord Wrottesley, showing the great amount of the rates now levied on the postage of letters to foreign countries (and such communications as those above alluded to can only be sent as *letters* by the existing regulation), and the same return was produced and printed accordingly. This return is No. 32 of the sessional papers of the House of Lords, and No. 142 of those of the House of Commons.

“Your Committee likewise solicited and obtained an interview with the Postmaster-General, on the 13th of July, and directed his attention to the statements contained in the letter to Lord Malmesbury, of last year, on this subject, and to the facts disclosed by the above-mentioned returns; and a letter was subsequently written at Lord Canning’s request, embodying in writing the observations which had been already addressed to him orally in this behalf. Lord Canning seemed to admit the hardship of the case, and the following letter, which was afterwards received from Colonel Maberly, contains the substance of the answer given by him to the Deputation:—