PHILOSOPHICAL

TRANSACTIONS

OF THE

ROYAL SOCIETY

OF

LONDON.

FOR THE YEAR MDCCXXXIV.

PART I.

LONDON:
PRINTED BY RICHARD TAYLOR, RED LION COURT, FLEET STREET.

MDCCXXXIV.
ADVERTISEMENT.

The Committee appointed by the Royal Society to direct the publication of the Philosophical Transactions, take this opportunity to acquaint the Public, that it fully appears, as well from the council-books and journals of the Society, as from repeated declarations which have been made in several former Transactions, that the printing of them was always, from time to time, the single act of the respective Secretaries, till the Forty-seventh Volume: the Society, as a Body, never interesting themselves any further in their publication, than by occasionally recommending the revival of them to some of their Secretaries, when, from the particular circumstances of their affairs, the Transactions had happened for any length of time to be intermitted. And this seems principally to have been done with a view to satisfy the Public, that their usual meetings were then continued, for the improvement of knowledge, and benefit of mankind, the great ends of their first institution by the Royal Charters, and which they have ever since steadily pursued.

But the Society being of late years greatly enlarged, and their communications more numerous, it was thought advisable that a Committee of their members should be appointed, to reconsider the papers read before them, and select out of them such as they should judge most proper for publication in the future Transactions; which was accordingly done upon the 26th of March 1752. And the grounds of their choice are, and will continue to be, the importance and singularity of the subjects, or the advantageous manner of treating them; without pretending to answer for the certainty of the facts, or propriety of the reasonings, contained in the several papers so published, which must still rest on the credit or judgement of their respective authors.

It is likewise necessary on this occasion to remark, that it is an established rule of the Society, to which they will always adhere, never to give their opinion, as a Body,
upon any subject, either of Nature or Art, that comes before them. And therefore the thanks, which are frequently proposed from the Chair, to be given to the authors of such papers as are read at their accustomed meetings, or to the persons through whose hands they received them, are to be considered in no other light than as a matter of civility, in return for the respect shown to the Society by those communications. The like also is to be said with regard to the several projects, inventions, and curiosities of various kinds, which are often exhibited to the Society; the authors whereof, or those who exhibit them, frequently take the liberty to report and even to certify in the public newspapers, that they have met with the highest applause and approbation. And therefore it is hoped that no regard will hereafter be paid to such reports and public notices; which in some instances have been too lightly credited, to the dishonour of the Society.
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A List of Public Institutions and Individuals, entitled to receive a copy of the Philosophical Transactions of each year, on making application for the same directly or through their respective agents, within five years of the date of publication.

In the British Dominions.
The King's Library.
The British Museum.
Sion College Library.
The Bodleian Library, Oxford.
The Radcliffe Library, Oxford.
The Cambridge University Library.
The Edinburgh College Library.
Advocates' Library, Edinburgh.
The University of Glasgow.
The University of Aberdeen.
The University of St. Andrews.
The University of Trinity College, Dublin.
The Library of King's Inn, Dublin.
The Royal College of Physicians.
The Society of Antiquaries.
The Linnean Society.
The Royal Institution of Great Britain.
The Society for the Encouragement of Arts.
The Geological Society.
The Horticultural Society.
The Royal Asiatic Society.
The Medical and Chirurgical Society.
The London Institution.
The Cambridge University Philosophical Society.
The Royal Society of Edinburgh.
The Royal Irish Academy.
The Royal Dublin Society.
The Asiatic Society at Calcutta.
The Royal Artillery Library at Woolwich.
The Royal Observatory at Greenwich.
The Observatory at Dublin.
The Observatory at Armagh.
The Observatory at the Cape of Good Hope.
The Observatory at Madras.
The Observatory at St. Helena.
The Observatory at Paramatta.

Denmark.
The Royal Society of Sciences at Copenhagen.
The Royal Observatory at Altona.

France.
The Royal Academy of Sciences at Paris.
The Royal Academy of Sciences at Toulouse.
The E'cole des Mines at Paris.
The Entomological Society of France.

Germany.
The University at Göttingen.
The Caesarean Academy of Naturalists at Bonn.
The Observatory at Mannheim.

Italy.
The Italian Society of Sciences at Modena.
The Royal Academy of Sciences at Turin.

Switzerland.

Belgium.
The Royal Academy of Sciences at Brussels.

Spain.
The Royal Observatory at Cadiz.

Portugal.
The Royal Academy of Sciences at Lisbon.

Prussia.
The Royal Academy of Sciences at Berlin.

Russia.
The Imperial Academy of Sciences at St. Petersburg.

Sweden and Norway.
The Royal Academy of Sciences at Stockholm.
The Royal Society of Sciences at Drontheim.

United States.
The American Philosophical Society at Philadelphia.
The New York Philosophical Society.
The American Academy of Sciences at Boston.
The fifty Foreign Members of the Royal Society.
A List of Public Institutions and Individuals, entitled to receive a copy of the Astronomical Observations made at the Royal Observatory at Greenwich, on making application for the same directly or through their respective agents, within five years of the date of publication.

In the British Dominions.
The King's Library.
The Board of Ordnance.
The British Museum.
The Royal Society.
The Bodleian Library, Oxford.
The Savilian Library, Oxford.
The Library of Trinity College, Cambridge.
The King's Observatory at Richmond.
The Royal Observatory at Greenwich.
The University of Aberdeen.
The University of St. Andrews.
The University of Dublin.
The University of Edinburgh.
The University of Glasgow.
The Observatory at Oxford.
The Observatory at Cambridge.
The Observatory at Dublin.
The Observatory at Armagh.
The Observatory at the Cape of Good Hope.
The Observatory at Paramatta.
The Observatory at Madras.
The Observatory at St. Helena.
The Royal Institution of Great Britain.
The Royal Society, Edinburgh.
The Astronomical Institution, Edinburgh.
The President of the Royal Society.
The Lowndes's Professor of Astronomy, Cambridge.
The Plumian Professor of Astronomy, Cambridge.
The Lord Bishop of Cloyne.
Francis Baily, Esq.
Thomas Henderson, Esq. of Edinburgh.
John William Lubbock, Esq. V.P. and Treas. R.S.
Captain W. H. Smyth, R.N. of Bedford.
Sir James South, Observatory, Kensington.

Lieutenant Stratford, R.N.
Mr. Thomas Taylor, Greenwich.
Edward Troughton, Esq.

In Foreign Countries.
The Royal Academy of Sciences at Berlin.
The Royal Academy of Sciences at Paris.
The Imperial Academy of Sciences at St. Petersburg.
The Royal Academy of Sciences at Stockholm.
The Royal Society of Sciences at Upsal.
The Board of Longitude of France.
The University of Göttingen.
The University of Leyden.
The Academy of Bologna.
The American Academy of Sciences at Boston.
The American Philosophical Society at Philadelphia.
The Observatory at Åbo.
The Observatory at Altona.
The Observatory at Berlin.
The Observatory at Brussels.
The Observatory at Cadiz.
The Observatory at Coimbra.
The Observatory at Copenhagen.
The Observatory at Dorpat.
The Observatory at Königsberg.
The Observatory at Mannheim.
The Observatory at Marseilles.
The Observatory at Milan.
The Observatory at Palermo.
The Observatory at Paris.
The Observatory at Seeburg.
The Observatory at Vienna.
The Observatory at Wilna.
Professor Bessel, of Königsberg.
Dr. William Olbers, of Bremen.
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PART II.

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MDCCCXXXIV.
ROYAL MEDALS.

HIS MAJESTY KING WILLIAM THE FOURTH, in restoring the Foundation of the Royal Medals, graciously Commanded a Letter, of which the following is an extract, to be addressed to the Royal Society, through His Royal Highness the Duke of Sussex, K.G., President:

"Windsor Castle, March 25, 1833.

"It is His Majesty's wish,—
"First, That the Two Gold Medals, value of Fifty Guineas each, shall henceforth be awarded on the day of the Anniversary Meeting of the Royal Society, on each ensuing year, for the most important discoveries in any one principal subject or branch of knowledge.
"Secondly, That the subject matter of inquiry shall be previously settled and propounded by the Council of the Royal Society, three years preceding the day of such award.
"Thirdly, That Literary Men of all nations shall be invited to afford the aid of their talents and research: and,
"Fourthly, That for the ensuing three successive years, the said Two Medals shall be awarded to such important discoveries, or series of investigations, as shall be sufficiently established, or completed to the satisfaction of the Council, within the last five years of the days of award, for the years 1834 and 1835, including the present year, and for which the Author shall not have previously received an honorary reward."

(Signed) "H. TAYLOR."

The Council propose to give one of the Royal Medals in the year 1836, to the most important unpublished paper in Astronomy, communicated to the Royal Society for
insertion in their Transactions, after the present date and prior to the month of June
in the year 1836.

The Council also propose to give one of the Royal Medals in the year 1836 to the
most important unpublished paper in Animal Physiology, communicated to the Royal
Society for insertion in their Transactions, after the present date and prior to the
month of June in the year 1836.

The Royal Medals for the year 1833 were awarded to

Sir JOHN FREDERICK WILLIAM HERSCHEL, K.H. F.R.S.,
for his Paper on the Investigation of the Orbits of Revolving Double Stars; and to
Professor AUGUSTE PYRAME DE CANDOLLE, of Geneva, Foreign Member
of the Royal Society,

for his Discoveries and Investigations in Vegetable Physiology.

Those for 1834 were awarded to

JOHN WILLIAM LUBBOCK, Esq., V.P. & TREAS. R.S.,
for his Papers on the Tides published in the Philosophical Transactions; and to

CHARLES LYELL, Esq.,

for his Work entitled "Principles of Geology."

The Council propose to give one of the Royal Medals in the year 1837 to the most
important unpublished paper in Physics, communicated to the Royal Society for
insertion in their Transactions, after the present date and prior to the month of June in that year.

The Council also propose to give one of the Royal Medals in the year 1837 to the
author of the best paper, to be entitled "Contributions towards a System of Geo-
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ERRATA.

Phil. Trans. 1833.—page 756, line 6, for excreting read secreting

page 759, line 25, for (Plate XXI.) read (Plate XXIII.)