

As (n) increases without limit, this equation may be written

$$\alpha u_{n-2} + \beta u_{n-1} + \gamma u_n = 0,$$

or

$$\alpha + \beta \cdot \frac{u_{n-1}}{u_{n-2}} + \gamma \cdot \frac{u_{n-1}}{u_{n-2}} \cdot \frac{u_n}{u_{n-1}} = 0.$$

Let $\frac{u_n}{u_{n-1}}$ converge to a certain quantity ρ , then ρ will be given by the equation

$$\alpha + \beta\rho + \gamma\rho^2 = 0.$$

Let ρ_1 be the greatest root of this equation; then the series will be convergent if $\frac{u_n}{u_{n-1}x}$ is less than unity, or if x be greater than ρ_1 .

It appears from my last paper that in certain cases a quantity of the form

$$\sqrt[n]{a+bx+\sqrt{c+ex}}$$

may be regarded as a solution of a differential equation of the form here considered. Hence we are able, by means of the principles given in this paper, to represent, under these circumstances,

$$\int dx \sqrt[n]{a+bx+\sqrt{c+ex}}$$

by a converging series when (x) does not exceed an ascertainable value. This method evidently admits of a great variety of applications.

November 30, 1872.

ANNIVERSARY MEETING.

Sir GEORGE BIDDELL AIRY, K.C.B., President, in the Chair.

Mr. Abel, for the Auditors of the Treasurer's Accounts on the part of the Society, reported that the total receipts during the past year, including a balance of £28 2s. 2d. carried from the preceding year, amount to £4308 14s. 8d., and that the total expenditure in the same period amounts to £3860 17s. 10d., leaving a balance at the Bankers of £424 0s. 3d., and £23 16s. 7d. in the hands of the Treasurer.

The thanks of the Society were voted to the Treasurer and Auditors.

The Secretary read the following Lists :—

Fellows deceased since the last Anniversary.

On the Home List.

William Baird, M.D.	The Rev. Canon Henry Moseley,
Sir John Bowring, LL.D.	M.A., D.C.L.
Major-General Francis Rawdon	Robert Patterson.
Chésney, R.A., D.C.L.	Sir Thomas Phillips, Bart., M.A.
George E. Day, M.D.	The Venerable Archdeacon John
James Alexander Gordon, M.D.	Henry Pratt, M.A.
Augustus Bozzi Granville, M.D.	Edward Ayshford Sanford.
George Robert Gray, F.L.S.	Frederic Carpenter Skey, F.R.C.S.
Major Robert Wolseley Haig, R.A.	Sir Andrew Smith, K.C.B., M.D.
James Heygate, M.D.	Colonel William Henry Sykes.
Henry Beaumont Leeson, M.A.,	Richard Westmacott, R.A.
M.D.	Robert Wight, M.D.
William Lowther, Earl of Lonsdale,	Lieut.-General Thomas Wood.
M.A.	

On the Foreign List.

Charles Eugène Delaunay.

Defaulter.

Robert Gordon Latham, M.D.

Change of Name and Title.

James Orchard Halliwell	to	James Orchard Phillipps.
Sir Roundell Palmer	to	Lord Selborne.

Fellows elected since the last Anniversary.

The Right Hon. George Joachim	Rev. Thomas Hincks, B.A.
Goschen.	Prof. William Stanley Jevons, M.A.
Prof. William Grylls Adams, M.A.	Prof. George Johnson, M.D.
Andrew Leith Adams, M.B.	Prof. Thomas Rupert Jones.
Frederick Le Gros Clark, F.R.C.S.	Major Thomas George Montgo-
Prof. John Cleland, M.D.	merie, R.E.
Prof. Michael Foster, M.D.	Edward Latham Ormerod, M.D.
Prof. Wilson Fox, M.D.	Edward John Routh, M.A.
Arthur Gamgee, M.D.	William James Russell, Ph.D.

The President then addressed the Society as follows :—

GENTLEMEN,

IN commencing the Annual Address which is customary at the Society's Anniversary Meeting, I will first allude to our local position. The Society's Officers have reason to believe that, before the next Anniversary Meeting, we may be established in the new apartments now in preparation for us in this Palace. We hope to find in them rooms for our Meetings and for our Books more convenient than those which we at present occupy, and to be placed in advantageous proximity to the other Scientific Societies of the Metropolis.

On the *personnel* of the Society, the proper accounts will soon be placed before you, drawn up under the superintendence of your Secretaries. But I must allude to one loss, the accidental death of our Foreign Member, M. Delaunay. Science has, I fear, sustained a serious injury by this calamity. It is known to all who have given attention to the progress of Gravitational Astronomy, that M. Delaunay had, with incredible labour (well exhibited in several ponderous volumes), produced a work on the lunar motions which was never surpassed in order, and, I believe, never equalled in exactitude. We were looking for the completion of this undertaking, by careful investigations of the secular equations and equations of very long period on which Chronology in particular depends, and also by the formation of Lunar Tables in a convenient form. There is reason to hope that these works have been far advanced and may yet be recovered ; but I have no positive information to that effect. M. Delaunay, adopting and extending in the Paris Observatory all the labours of his distinguished predecessor, had advanced far with an admirable series of systematic records of topographical meteorology and other local measures in France.

I regret to announce that Dr. Sharpey finds it necessary, in justice not only to his own health, but also to his estimate of the powers which he is able to devote to the service of the Society, to resign the office of Secretary which he has long held with so much advantage to the Society. Every Fellow of the Society, but more especially those who have had the pleasure of serving on Council with Dr. Sharpey, will, I am sure, sympathize with me in regret that we lose his services, and still more that it is from the cause which I have mentioned. If, however, the Society should see fit to confirm the Council's recommendation of appointment of Professor Huxley in his place, I am confident that Dr. Sharpey will be one of the first to acknowledge that he transmits his office to no unworthy successor.

Among the labours distributed among Fellows of the Society of which the results do not appear in the Philosophical Transactions are the

following :—The Government-Grant Committee, the Library Committee, the Donation Committee, and the Scientific Relief Committee have all been active in their several functions. The Catalogue of Scientific Papers to the year 1863 is completed, and will long remain as a testimonial to the judgment and care of those who have superintended and completed it. So strong is the sense of the Council on its value (a value to which I can personally testify), that they have determined to carry it on to 1873.

Of the subjects which have been referred by the Government to the Royal Society, and on which the President and Council, assisted by Committees of the Society, have made Reports, the first in importance is undoubtedly the course and employment of the Expedition which is now leaving our shores, for an almost complete circumnavigation of the globe, and for a very extensive series of observations, bearing principally upon natural history, but partly also on ocean-currents, ocean-depths, and progressive geology. It is not too much to anticipate that the series of suggestions offered by the Committee which has given its attention to these subjects will long be studied by the promoters of future expeditions as guides for their own conduct.—Next is to be mentioned the consideration of an application, from the German Scientific Bodies, for the establishment of a self-registering tide-gauge on the island of Heligoland, to serve for the definition of a zero of elevation for the continent of Europe with supposed greater accuracy than any that can be obtained on the continental shores. The President and Council offer their tribute of respect to the long-sighted view, and the breadth of the considerations, which, as might be expected, have distinguished the enterprise desired by their German brethren. At the same time they have felt it their duty to indicate a point of tidal theory on which their opinions do not harmonize with those that suggested the observations in question ; and they have also alluded to the very great practical difficulties in carrying out the proposed construction. In this state they have submitted the question to the British Government.—It is known that an International Commission has been sitting in Paris, for the purpose of establishing with accuracy the length of the Mètre, and for the distribution of accurate copies ; and, with the concurrence of the British Government, your Foreign Secretary and the Warden of Standards have taken an active part in the deliberations ; and your President would probably have joined them if his official employments had permitted it. I think it imperative on me to state that the British Government gave their assent only on the express understanding that they could take no part in the Commission if it displayed any propagandist intention. Speaking as the representative of the body who had best considered this subject, namely the Standards' Commission now dormant, I can say, as their unanimous opinion, that they deprecate the slightest interference with national usages ; but they

recognize the great importance of an accurate international system which, like the Latin of the middle ages, enables men of science in all countries to speak the same language; and for this international character they think the Metrical system singularly well adapted.—In connexion with this subject I may state that the “Parliamentary Copy” of the National Standard of Length, which is intrusted to the care of the Royal Society, has been examined and found to be in excellent condition: a very small modification has been made in its supports, to meet the suggestion of a possible cause of minute injury in the contacts of the bar with its bearing-rollers.—As connected with the general science of the country, I ought not to omit to remind you that your Home Secretaries hold important posts in the Official Scientific Commission which has not yet terminated its labours.

I would next allude to the scientific subjects which within the last year have been introduced at your public meetings, and of which the greater part will be further published in your ‘Transactions’ or your ‘Proceedings.’ And as demanding my first notice in every point of view, whether as referring to the name of the writer or to the subject of which he treats, I cite the paper by Sir Edward Sabine on the measures of the Magnetic Elements in the northern regions of our globe; a worthy termination to an unequalled series of arranged results of observation, which must be adopted as the foundation for all future theoretical investigations of terrestrial magnetism. In connexion with this, I mention Captain Evans’s collection of the values of magnetic declination on numerous points of the British coasts, the magnetic survey of the eastern districts of France by Messrs. Perry and Sidgreaves, and Mr. Chambers’s determination of the magnetic elements and their changes, and of the lunar inequalities of magnetic declination, at Bombay. At the last Anniversary of the Society attention was called by my predecessor to a paper by Dr. Hornstein on the existence of a magnetical inequality whose period is sensibly the same as the length of the sun’s synodical revolution, and which therefore seems to show that different parts of the sun’s surface produce different effects on the magnet. The examinations of observations and the discussions of them within this Society have confirmed Dr. Hornstein’s observations for the year in which he observed; and they have added this remarkable result, that in each year a species of inequality appears to have been sufficiently recurrent with the sun’s revolution to show itself clearly through accidental irregularities, but that the law of the inequality varies greatly from year to year.—In Chemistry we have various communications, rather on details than on principles. Mr. Schuster’s paper on the spectrum of nitrogen points out a cause of occasional errors in spectroscopic inferences. A late communication from Sir B. C. Brodie appears to prove that ozone is an allotropic form of oxygen in which three volumes of oxygen are condensed

into two, and which may exhibit three forms of action.—In Palæontology we have Professor Owen's paper on the earlier Australian traces of that wonderful class of animals (the marsupials) which connect ancient Oxfordshire with modern Australia; Professor Williamson on the organization of certain fossil plants; and the Report by Mr. Prestwich on the exploration of Brixham Cave, referring in some measure to the habits of former man as well as former wild beasts.—In Oceanic science, the Report by Dr. Carpenter on the currents in the neighbourhood of the Straits of Gibraltar (in sequence of preceding papers) embodies important facts, and has raised some discussions. Alluding only by a word to the discoveries of deep channels in the bottom of the sea and of water of different temperatures in them, I think it right to state, as my opinion, that the flow of surface-water from the places of high temperature, and the return of deep water to the same, are certain in theory and are supported by observation.—Mr. Stone's determination of the velocity of sound is free from the effects of a long-prevailing error (the combination of two senses), and is probably one of the best yet made.—In Astronomy our communications are rich: Mr. De La Rue and his fellow labourers have continued their researches upon the influence of Planets on the Sun; Mr. Huggins has employed the telescope, wisely provided by a former Council of the Society, and the spectroscope, on the spectra of Encke's Comet and of the nebula of Orion (leading us more and more distinctly to the idea that these bodies are gaseous and in some measure self-luminous), and on that astonishing result of modern science, the measure of the approach or recess of the "fixed" stars. It is a striking thing to see the stars of a constellation so well known to every one as is "Charles's Wain" separated into two classes, of approaching and receding; and also to find that the same separation is indicated by the characters of their proper motions. An investigation of the value of the coefficient of aberration, when the star is viewed through a telescope whose tube is filled with water, may have served to remove some doubts on the optical theory of aberration, and to allay some anxieties on the reduction of astronomical observations.

I think that the opinion of the scientific world would be, that the proceedings of the Society during the past year will bear comparison with those of any other year.

Before closing my Address, I think that I may employ a few sentences in noticing some of the steps which have been made in science in the world exterior to the Society. In Geography, the most exciting of all is Mr. Stanley's discovery of Livingstone, and the intelligence of the explorations made by him and other travellers in South Africa. But they tend greatly to sharpen our curiosity on other points. Are the lakes which have been visited so many independent lakes, or are several of them portions of one great lake? Do these mighty waters reach the

sea by the Nile or by the Congo? Opinion is advancing fast in the direction that they are tributaries of the Congo; that we have, in fact, "rounded" the basin of the Nile-heads, and perhaps those of some other rivers. The observations of Dr. Schweinfurth in a more northerly district appear to support this idea. But, however strong may be the reasons for this conclusion, the world will scarcely be satisfied without local verification.—Some additions have been made to our knowledge of the coasts and seas of Novai Zemlai and other polar regions by American and other expeditions, especially that of Rosenthal; but nothing of striking character has been discovered.—The German Association for the Europäische Gradmessung continues its labours actively; its last Reports contain details of Geodesy from Norway to Italy, and exhibit the comparison of various standards of length.—French geodetists have proposed the extension of the great French meridional arc to Algeria, employing a triangulation with sides of about 200 miles.—In the progress of our great Indian Survey, Major Montgomerie (charged with the superintendence in Colonel Walker's absence) proposed to himself the problem of surveying "the triangular space lying between the Indus and its great Caubul tributary, which is bounded on the north by the Hindoo-Koosh and Mustagh ranges." This has been generally accomplished, and appears to have opened up the geography of an almost unknown and difficult country. It is understood that Russian surveys, though yet distant, are advancing from the opposite side.—The melancholy account of the death of Captain Basevi, while engaged in pendulum-experiments among the Himalaya Mountains, was given by my predecessor to the last Annual Meeting. An officer has been named to continue the observations, but the actual work is not yet begun.—Much attention has been called to a strange error in the measure of the elevation above the sea assigned to the centre of gravity of continents and islands. Colonel Sir Henry James has given probably the first accurate measure of surface-height (from which that of the centre of gravity may be inferred) on a portion of Scotland.—Perhaps I may consider it not wholly unconnected with this subject to state that the galvanic telegraph now extends (accidents only excepted) to the south of Australia. I have some pleasure in remarking that the gentleman who has attached the last and most difficult link to this chain was Supernumerary Computer and Junior Assistant at the Observatory of Greenwich, and was nominated by me for construction of the first telegraph at Adelaide.

The year's progress in Geology has consisted principally, I believe, in increasing the number and the accuracy of the observations of special facts, and in giving careful attention to the details of palæontology.

Magnetism continues to advance with slow but, I believe, certain steps. Twice in this year it has happened that unusual outbursts on the sun's

surface have been observed (by Father Secchi in Italy, and by Professor Young in America), and that on each occasion there has been a sudden magnetic disturbance registered on the Greenwich photographic sheets, suspiciously near in time. It may ultimately be necessary to establish the proper means for sun-observations in Australia or New Zealand, in order to ascertain whether similar agreements of time occur during the hours of European night.

Meteorology, if we could judge only from the number of observatories and the activity with which their observations are carried on, is making prodigious strides. But I doubt greatly whether science really gains any thing from millions of observations which are published with very few steps of reduction.

The principal works of the Meteorological Office, the examination of ships' logs and the deduction of inferences from them, are incessantly continued; the results are classified by degree-squares, and a specimen of a ten-degree square has been circulated for public opinion; also a detailed exhibition of the state of the North Atlantic for eleven days. Much light is thrown on the shift of the trade-wind zones. Daily weather-charts are issued, exchanged, and sold to a considerable number, and the "drum" signals are exhibited at 128 stations.

Astronomy has made great advances. Adverting, first, to the instruments.—It appears to be certain that in the Great Melbourne Telescope the principal difficulties are overcome, and the instrument is actually well and successfully employed on the objects for which it is especially intended.—The 25-inch refractor at Gateshead, the property of Mr. R. S. Newall, has been examined carefully by the most distinguished of northern astronomers, and its definition has been pronounced to be perfect.—The spectroscope has undergone various changes of form, all in the direction of increasing its prismatic separation without injuring its practical application in other respects.—Adverting, secondly, to the observations and reductions, such as preceded the introduction of the spectroscope.—The too long-delayed reduction of observations at the Cape of Good Hope has been urged vigorously by the present Astronomer, Mr. Stone; those for 1858 have lately appeared, and others will probably follow soon, the current work of the present time being still maintained. In the mean time observations have been actively made and reduced by Mr. Ellery at Melbourne. There is now good prospect of the promotion of accurate astronomy in the Southern Hemisphere.—But it is principally in the results of spectroscopic observations that the great steps have been made. Much has been done in the examination of Nebulæ, Comets, and Auroral and Zodiacal light; but the greatest share of attention has been directed to the constitution of the Sun, chiefly as revealed by the observations made in total eclipses. (It would be wrong to omit to mention that Mr.

Pogson has shown that an annular eclipse is equally available.) I cannot pretend now to describe all the characteristics of the four strata of the Sun's atmosphere, or the evidence of their containing various terrestrial components, or the proofs that they are in different states of temperature; nor can I describe the phenomena of the corona, or those in the neighbourhood of the solar maculæ. Much also has been done by spectroscopic examination of the sun without eclipse; and a spectroscopic society in Italy has employed itself principally on that object. The Lords Commissioners of the Treasury have sanctioned the establishment, at the Royal Observatory of Greenwich, of photoheliographic observations (to be made, during the Transit-of-Venus Expedition, with the Kew Instrument, by permission of your Council) and of spectroscopic observations: the former system, it may be expected, will be in regular action within a few months; the latter scarcely admits of being carried on in official routine, but will be occasionally active.—Preparations are far advanced for publishing a nearly complete report of the Eclipse of 1870; the observations of that of 1871 are not yet entirely collected.—Nearly all the Governments of the civilized world are engaged in arrangements for observation of the Transit of Venus in 1874. As regards the British preparations, the original scheme of observations was confined to eye-observation of the entry and the departure of Venus at the sun's limb, which I regard as the most accurate of all; but, considering especially the risk of weather or accident, it appeared desirable to be prepared with a method for utilizing the whole duration of Transit; and, at the instance of the Board of Visitors of the Greenwich Observatory, the Treasury have sanctioned the fitting up of a photoheliograph of the best class at each of the five British stations. We are indebted to Mr. De La Rue for the superintendence of the construction and verification of these instruments. Several foreign astronomers have turned their attention to the employment of the heliometer for the same purpose.

In Chemistry, there has been much work on details, but scarcely leading to any great principle. The theories which have mainly guided the observations appear to be those of isomerism, chemical structure, thermochemical research, and physiological chemistry.

The attention given to Botany has been in some measure differently apportioned to different states. In those which contain within their own limits no very great variety of terrestrial or climatic circumstances, accurate examination and classification have been studied; but in the more extended countries, and most of all in our own territory, with its enormous colonial extension, the questions of plant-distribution and general biology have been examined, and attention to the structure of fossil plants has increased. The theory of fertilization of plants by insects has gained some assent, and the necessity of observing entomology in connexion with plant-distribution is partially recognized.

In Medicine, I learn that researches on the injurious effects of abnormal temperature of the body (as in fevers), and on the way of neutralizing them, have been prosecuted with favourable results. The Sphygmograph has, I believe, been successfully employed as an instrument of diagnosis. The alteration of the form of blood-corpuscles under special circumstances appears to have attracted attention.

I may well appeal to the enumeration which I have made for proof of the assertion that science is not standing still.

For convenience, I will take the present opportunity of making a statement, of personal character, which in strictness ought to be offered at a later stage of this day's proceedings.

The Council of the Society, in their circulated house-list of Officers proposed for the Session now commencing, have done me the honour again to offer my name as President. Should this be confirmed, Gentlemen, by your votes, I will, to the best of my powers, endeavour to discharge for a period the duties of the office. But experience has convinced me that it was no unfounded fear which I expressed to the deputation of the Council who first conveyed to me the flattering invitation to the Presidency, that official and other circumstances might make it difficult for me to give proper attention to the interests of the Society. I will therefore ask you, Gentlemen, to permit me in any case to lay down my office at the next Anniversary Meeting. It may be possible, if business threatens to press me with the same severity in the autumn of 1873 as in 1872, that I may desire to be liberated from my engagement at an earlier date; this, however, I shall not contemplate so long as I can avoid doing so. Meantime I will express to the Society my feeling that the position in which they have placed me is the proudest which a man of science in this country can occupy; and that the labour which accompanies it, so far as I am able to support it, is only a just debt from me to the Society.

I proceed now to announce the award of the Medals.

The Copley Medal has been awarded to Professor Friedrich Wöhler, of Göttingen, For. Memb. R.S., for his numerous contributions to the Science of Chemistry; and more especially for his researches on the products of the decomposition of Cyanogen by Ammonia; on the Derivatives of Uric Acid; on the Benzoyl Series; on Aluminium (discovered by him), Yttrium, and Beryllium; on Boron, Silicon, and their compounds; on Titanium; and on Meteoric Stones.

PROFESSOR MILLER,

In the name of the Council, I request that you will transmit this

Medal to Professor Wöhler, and that you will assure him that his long-continued services to the science of Chemistry command our deep respect.

A Royal Medal has been awarded to Mr. Henry John Carter, F.R.S., for his researches in Palæontology and Zoology, on the Infusoria and Rhizopoda, and the root-cell of the *Chara*; but more particularly for his inquiries into the Natural History of the Spongiadæ.

PROFESSOR STOKES,

In the absence of Mr. Carter, I have much pleasure in delivering to you, for transmission to him, the Medal awarded to him by the Council of the Royal Society, in acknowledgment of his long-continued and valuable services to Physiology, and more particularly of his creating an almost new science as regards the Spongiadæ.

A Royal Medal has been awarded to Professor Thomas Anderson, M.D., for his investigations on the Organic Bases of Dippel's Animal Oil; on Codeine; on the Crystallized Constituents of Opium; on Piperin and on Papaverin; and for his researches in Physiological and Agricultural Chemistry.

PROFESSOR STOKES,

In Dr. Anderson's absence, I request you to state to him that I am happy to deliver to him, through your hands, the Medal which the Council has awarded to him, in recognition of his numerous and valuable contributions to Physiological Chemistry.

The Rumford Medal has been awarded to Anders Jonas Ångström, For. Memb. R.S., for his researches on Spectral Analysis. The limitation in time attached to the adjudication of the Rumford Medal compels the Council to connect this award with the latest of M. Ångström's published memoirs; but they are not insensible to the circumstance that this is but the termination of a long and valuable series.

M. Ångström's researches generally are described with great clearness in the late President's Address at the Anniversary Meeting of 1870. To the subjects there mentioned I have only to add a mathematical theory of the Conduction of Heat.

PROFESSOR MILLER,

Have the goodness to transmit this Medal to M. Ångström, with the assurance of our regard for himself and of the great value which we place on his researches.

On the motion of General Smythe, seconded by Colonel Yorke, it was resolved,—“That the thanks of the Society be returned to the President for his Address, and that he be requested to allow it to be printed.”

The Statutes relating to the election of the Council and Officers having been read, and Dr. Gladstone and Dr. George Harley having been, with the consent of the Society, nominated Scrutators, the votes of the Fellows present were collected, and the following were declared duly elected as Council and Officers for the ensuing year :—

President.—Sir George Biddell Airy, K.C.B., M.A., D.C.L., LL.D. (Astronomer Royal).

Treasurer.—William Spottiswoode, M.A.

Secretaries.— { Prof. George Gabriel Stokes, M.A., D.C.L., LL.D.
 { Prof. Thomas Henry Huxley, LL.D.

Foreign Secretary.—Prof. William Hallowes Miller, M.A., LL.D.

Other Members of the Council.—George James Allman, M.D. ; Sir B. C. Brodie, Bart., M.A., D.C.L. ; George Busk, F.R.C.S. ; Prof. Robert Belamy Clifton, M.A. ; James Fergusson, D.C.L. ; Thomas Archer Hirst, Ph.D. ; J. Dalton Hooker, C.B., D.C.L., LL.D. ; Joseph Prestwich, F.G.S. ; Rear-Admiral G. H. Richards, C.B. ; Prof. H. Enfield Roscoe, B.A., Ph.D. ; Philip Lutley Sclater, M.A. ; William Sharpey, M.D., LL.D. ; Francis Sibson, M.D. ; Major-Gen. R. Strachey, R.E., C.S.I. ; Isaac Todhunter, M.A. ; Sir Charles Wheatstone, D.C.L.

The thanks of the Society were given to the Scrutators.

The following Table shows the progress and present state of the Society with respect to the number of Fellows :—

	Patron and Royal.	Foreign.	Com- pounders.	£4 yearly.	Total.
November 30, 1871.	4	49	278	264	595
Since elected			+ 6	+ 10	+ 16
Since compounded . .			+ 2	— 2	
Since deceased		— 1	— 8	— 14	— 23
Defaulter				— 1	— 1
November 30, 1872.	4	48	278	257	587

Receipts and Payments of the Royal Society from December 1, 1871, to November 30, 1872.

	£	s.	d.
Balance on hand	28	2	2
Annual Contributions, Admission Fees, and Compositions .	1616	0	0
Rents	262	2	8
Dividends	1494	14	6
Ditto, Trust Funds	314	2	2
Sale of Transactions, Proceedings, &c.	542	14	2
Miscellaneous	50	19	0

	£	s.	d.
Balance due to Bankers	101	19	9
Salaries, Wages, and Pension	1060	11	4
The Scientific Catalogue	183	5	0
Spectroscopes	124	9	0
Books for the Library and Binding	269	9	5
Printing, Transactions and Proceedings, Paper, Binding, Engraving, and Lithography	1626	9	1
General Expenses (as per Table subjoined)	362	16	3
Soirée Expenses	56	9	2
Donation Fund	25	0	0
Winttingham Fund	35	5	0
Copley Medal Fund	4	15	7
Davy Medal Fund	0	10	6
W. K. Parker, Bakerian Lecture	4	0	0
Dr. Stebbing, Farchild Lecture	2	18	9
Croonian Lecture, Poor of St. James Parish	2	19	0

Balance at Bank	424	0	3
Balance of Catalogue Account	23	1	9
" Petty Cash Account	0	14	10
	<hr/>		
W. SPOTTISWOODE, <i>Treasurer.</i>	£4308	14	8

Estates and Property of the Royal Society, including Trust Funds.

Estate at Mablethorpe, Lincolnshire (55 A. 2 R. 2 P.), £136 per annum.
 Estate at Acton, Middlesex (34 A. 2 R. 27½ P.), £109 10s. per annum.
 Free Farm near Lewes, Sussex, rent £19 4s. per annum.
 One-fifth of the clear rent of an estate at Lambeth Hill, from the College of Physicians, £3 per annum.
 £74,000 Reduced 3 per Cent. Annuities.
 £29,569 15s. 7d. Consolidated Bank Annuities.
 £513 9s. 8d. New 2½ per Cent. Stock—Bakerian and Copley Medal Fund.
 £680 Madras Guaranteed 5 per Cent. Railway Stock—Davy Medal Fund.
 £10,000 Italian Irrigation Bonds—The Gassiot Trust.

Scientific Relief Fund.

Investments up to July 1872, New 3 per Cent. Annuities	£	s.	d.
" " Metropolitan 3½ Consols	6328	11	2
	100	0	0

<i>Dr.</i>	£	s.	d.	<i>Cr.</i>	£	s.	d.
Balance	281	7	6		225	0	0
Dividends	191	18	8		115	16	6
Donation	10	0	0		142	9	8
	£483	6	2		£483	6	2
By Grants							
Stock bought and Expenses							
Balance							

Statement of Income and Expenditure (apart from Trust Funds) during the Year ending November 30, 1872.

	£	s.	d.		£	s.	d.
Annual Contributions	1076	0	0	Balance due to Bankers	101	19	9
Admission Fees	160	0	0	Salaries, Wages, and Pension	1060	11	4
Compositions	380	0	0	Spectroscopes	124	9	0
Rents	262	2	8	The Scientific Catalogue	183	5	0
Dividends (exclusive of Trust Funds)	1494	14	6	Books for the Library	138	10	4
Sale of Transactions, Proceedings, &c.	542	14	2	Binding ditto	130	19	1
Miscellaneous	50	19	0	Printing Transactions, Part II. 1871 and Part I. 1872	382	0	6
				Ditto Proceedings, Nos. 130-137	317	1	10
Income available for the Year ending Nov. 30, 1872	3986	10	4	Ditto Miscellaneous	92	7	3
Expenditure in the Year ending Nov. 30, 1872	3785	9	0	Paper for Transactions and Proceedings	173	3	6
				Binding and Stitching ditto	84	6	3
Excess of Income over Expenditure in the Year ending Nov. 30, 1872	£181	1	4	Engraving and Lithography	577	9	9
				Soirée Expenses			
				Fittings, Cleaning, and Repairs	33	13	1
				Miscellaneous Expenses	45	14	1
				Coal, Lighting, and Gas Repairs	72	9	0
				Law Expenses	45	1	1
				Tea Expenses	20	5	5
				Fire Insurance	20	1	6
				Taxes	18	16	6
				Advertising	14	9	0
				Surveyor's Charges	18	7	6
				Postage, Parcels, and Petty Charges	46	17	1
				Acton Church, Donation	25	0	0
				Mablethorpe Schools, Donation	2	2	0
					362	16	3
					£3785	9	0

W. SPOTTISWOODE, *Treasurer.*

Account of the appropriation of the sum of £1000 annually voted by Parliament to the Royal Society (the Government Grant), to be employed in aiding the advancement of Science (continued from Vol. XX. p. 60).

1872.

1. T. R. Fraser, for an Investigation of the Antagonism between Physostigma and Atropia	£50
2. H. E. Armstrong, for Investigation of the Nitro-derivatives of Sulphuric Anhydride	50
3. Prof. W. C. Williamson, for continuation of Researches on the Organization of the Fossil Plants of the Coal-measures	20
4. Prof. Duncan, for a Research on the Minute Anatomy and Physiology of the Actinozoa	25
5. R. H. Scott, for Experiments on various forms of Anemometers	50
6. M. Hall, for Apparatus for Deep-sea Dredging	50
7. C. Greville Williams, for an Investigation of Beryls and Emeralds	100
8. J. H. Collins, for a Microscopic and Physical Examination of Cornish Rocks	25
9. G. Gore, for further Researches into the Fluorides, and for Electrodynamic, Magnetic, and Chemical Experiments	150
10. Dr. C. R. A. Wright, for continuation of Researches into the History of the Opium Alkaloids, and an Investigation of Narcine and Papaverine	50
11. R. J. Friswell, for an Investigation of the Compounds of the Platinocyanides	20
12. H. J. Carter, for aid in prosecuting Researches on the Spongiadæ, on which he has been long engaged	50
13. Treasurer R. S., on behalf of the Circumnavigation Committee to meet possible outlay for Instruments for the Circumnavigation Expedition	250
14. H. Willett, for Instruments to ascertain the Temperature of the Rocks traversed in the Exploratory Boring in the Sub-Wealden Formations near Battle	20
15. Sir William Thomson, for the reduction of Tidal Observations	100
16. J. N. Lockyer, for the payment of an Assistant in Solar Observations, and for expenses incident upon the application of photography to that object	150
	<hr/> £1160

Dr.				Cr.			
	£	s.	d.		£	s.	d.
To balance on hand,				By appropriations as			
Nov. 30, 1871 ..	1031	8	8	above	1160	0	0
To Grant from Treas-				Balance on hand, Nov.			
ury (1872).....	1000	0	0	30, 1872	1140	0	1
Repayments:—							
Prof. Stokes £175	0	0					
Dr. Andrews 73	17	4					
		248	17				
Interest		19	14				
	£2300	0	1		£2300	0	1

Account of Grant from the Donation Fund in 1872.

Prof. P. G. Tait, towards the expense of Investigations in Thermo-electricity	£25
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Presents received November 21, 1872.

Transactions.

- Berlin:—Physikalische Gesellschaft. Die Fortschritte der Physik im Jahre 1868. Jahrgang 24. 8vo. 1872. Namen- und Sach-Register, Band I. bis XX. 8vo. 1872. The Society.
- Bologna:—Accademia delle Scienze dell' Istituto. Memorie. Serie Terza. Tomo I., II. fasc. 1. Indici Generali dei dieci tomi della seconda serie. 4to. 1871–72. Rendiconti delle Sessioni. Anno Accademico 1871–72. 8vo. *Bologna* 1872. The Academy.
- Cherbourg:—Société Nationale des Sciences Naturelles. Mémoires. Tome XVI. 8vo. *Paris* 1871–72. The Society.
- Devonshire Association for the Advancement of Science, Literature, and Art. Report and Transactions. Exeter, July 1872. Vol. V. Part 1. 8vo. *Plymouth* 1872. The Association.
- Edinburgh:—Geological Society. Transactions. Vol. II. Part 1. 8vo. *Edinburgh* 1872. The Society.
- Kiel:—Universität. Schriften aus dem Jahre 1871. Band XVIII. 4to. *Kiel* 1872. The University.
- London:—Institution of Civil Engineers. Minutes of Proceedings, Session 1871–72. Vol. XXXIII., XXXIV. 8vo. *London* 1872. The Institution.