PROCEEDINGS

OF THE

ROYAL SOCIETY OF LONDON.

From February 16 to May 18, 1893.

VOL. LIII.

LONDON:
HARRISON AND SONS, ST. MARTIN'S LANE,
Printers in Ordinary to Her Majesty.
MDCCXCIII.
LONDON:
HARRISON AND SONS, PRINTERS IN ORDINARY TO HER MAJESTY,
ST. MARTIN'S LANE.
CONTENTS.

VOL. LIII.

No. 321.—February 16, 1893.

On a Portable Ophthalmometer. By Thomas Reid, M.D. .................................. 1

The Value of the Mechanical Equivalent of Heat, deduced from some
Experiments performed with the view of establishing the Relation
between the Electrical and Mechanical Units, together with an In-
vestigation into the Capacity for Heat of Water at Different Tempe-
ratures. By E. H. Griffiths, M.A., Assistant Lecturer, Sidney Sussex
College, Cambridge ........................................................................................................ 6

Studies in the Morphology of Spore-producing Members. Preliminary
Statement on the Equisetaceae and Psilotaceae. By F. O. Bower,
D.Sc., F.R.S., Regius Professor of Botany in the University of
Glasgow .......................................................................................................................... 19

Further Experiments on the Action of Light on Bacillus anthracis.
By H. Marshall Ward, D.Sc., F.R.S., Professor of Botany, Royal
Indian Engineering College ......................................................................................... 23

List of Presents ........................................................................................................... 45

February 23, 1893.

On the Mimetic Forms of Certain Butterflies of the Genus Hypolimnas.
By Colonel C. Swinhoe, M.A. ...................................................................................... 47

Upon the Action of Gravity on Bacterium Zopfii. By Rupert Boyce,
M.B., Assistant Professor of Pathology, University College, London,
and A. Ernest Evans, M.B., C.M., Glasgow .............................................................. 48

On Dischidia Rajilisiana. By Percy Groom, M.A. ....................................................... 51

The Har Dalam Cavern, Malta, and its Fossiliferous Contents. By
Arthur Smith Woodward, F.L.S., F.G.S., F.Z.S. [Title only] ......................... 52

List of Presents ........................................................................................................... 52

On a Meteoric Stone found at Makariwa, near Invercargill, New
Zealand. By Professor G. H. F. Ulrich, F.G.S., of the University,
Dunedin, New Zealand ............................................................................................... 54

No. 322.—March 2, 1893.

List of Candidates ....................................................................................................... 65

Harmonic Analysis of Hourly Observations of Air Temperature and
Pressure at British Observatories. Part I. Temperature. By Lieut.-
General R. Strachey, R.E., F.R.S. ........................................................................ 66

The Effects of Mechanical Stress on the Electrical Resistance of
Metals. By James H. Gray, M.A., B.Sc., and James B. Henderson,
B.Sc., International Exhibition Scholars, Glasgow University ....................... 76

a 2
A New Hypothesis concerning Vision. By John Berry Haycraft, M.D., D.Sc. [Title only] ............................................................... 78

List of Presents ............................................................................. 78

March 9, 1893.

On the Evidences of a Submergence of Western Europe, and of the Mediterranean Coasts at the close of the Glacial or so-called Post-Glacial Period, and immediately preceding the Neolithic or Recent Period. By Joseph Prestwich, D.C.L., F.R.S., F.G.S., Corr. Inst. France, &c. ............................................................... 80

The Electrolysis of Steam. By J. J. Thomson, M.A., F.R.S., Cavendish Professor of Experimental Physics in the University of Cambridge ............................................................... 90


Upon the Existence of more than one Fungus in Madura Disease (Mycetoma). By Rupert Boyce, M.B., M.R.C.S., Assistant Professor of Pathology, University College, London, and Nusserwangi Fakirgi Surveyor, M.D., M.R.C.P. ............................................................... 110

List of Presents ............................................................................. 112

March 16, 1893.


March 23, 1893.

On the Composition of Water by Volume. By Alexander Scott, M.A., D.Sc., Jacksonian Demonstrator in the University of Cambridge.... 130

On the Densities of the Principal Gases. By Lord Rayleigh, Sec. R.S. 134

On the Variation of Surface Energy with Temperature. By William Ramsay, Ph.D., F.R.S., and John Shields, B.Sc., Ph.D. .............. 150

The Absolute Thermal Conductivities of Copper and Iron. By R. Wallace Stewart, B.Sc. (Loud.), Assistant Lecturer and Demonstrator in Physics, University College, Bangor ............................................ 151

Preliminary Notice on the Arrow Poison of the Wa Nyika and other Tribes of East Equatorial Africa, with special reference to the Chemical Properties and Pharmacological Action of the Wood from which it is prepared. By Thomas R. Fraser, M.D., F.R.S., Professor of Materia Medica in the University of Edinburgh, and Joseph Tillie, M.D. (Edin.) ............................................................... 153

List of Presents ............................................................................. 160

No. 323.

Account of the appropriation of the sum of £4,000 (the Government Grant) annually voted by Parliament to the Royal Society, to be employed in aiding the Advancement of Science (continued from vol. 1, p. 246). November 30, 1891, to March 31, 1893 

Report of the Kew Committee for the Year ending December 31, 1892

April 20, 1893.

Magnetic Viscosity. By J. Hopkinson, D.Sc., F.R.S., E. Wilson, and F. Lydall

On the Spectrum of Thallium, and its Relation to the Homologous Spectra of Indium and Gallium. By Henry Wilde, F.R.S.

The Potential of an Anchor Ring. By F. W. Dyson, M.A., Fellow of Trinity College, Cambridge, Isaac Newton Student in the University of Cambridge

Analogy of Sound and Colour.—Comparison of the Seven Colours of the Rainbow with the Seven Notes of the Musical Scale, as determined by the Monochord, and of the Wave-lengths of Colour and Sound. By J. D. Macdonald, M.D., F.R.S.

List of Presents

April 27, 1893.

On the Results of an Examination of the Orientation of a number of Greek Temples, with a view to connect these Angles with the Amplitudes of certain Stars at the times these Temples were founded, and an endeavour to derive therefrom the Dates of their Foundation by consideration of the Changes produced upon the Right Ascension and Declination of the Stars arising from the Precession of the Equinoxes. By F. C. Penrose, F.R.A.S.


The Electric Organ of the Skate: Note on an Electric Centre in the Spinal Cord. By J. C. Ewart, M.D., Regius Professor of Natural History, University of Edinburgh

List of Presents

No. 325.—May 4, 1893.

List of Candidates recommended for Election

On the Thickness and Electrical Resistance of Thin Liquid Films. By A. W. Reinold, M.A., F.R.S., Professor of Physics in the Royal Naval College, Greenwich, and A. W. Rücker, M.A., F.R.S., Professor of Physics in the Royal College of Science, London

Organic Oxyimides: a Research on their Pharmacology. By H. W. Pomfret, M.D., F.R.C.S., late Berkeley Fellow at the Owens College


Further Experimental Note on the Correlation of Action of Antagonistic Muscles. By C. S. Sherrington, M.A., M.D.
On the Differential Covariants of Plane Curves, and the Operators employed in their Development. By R. F. Gwyther, M.A., Fielden Lecturer in Mathematics, Owens College, Manchester ........................................ 420
List of Presents .................................................................................................................. 427

May 18, 1893.

On some Circumstances under which the Normal State of the Knee Jerk is altered. By J. S. Risien Russell, M.B., M.R.C.P., Assistant Physician to the Metropolitan Hospital.................................................. 430
An Experimental Investigation of the Nerve Roots which enter into the Formation of the Lumbo-sacral Plexus of Macacus rhesus. By J. S. Risien Russell, M.B., M.R.C.P., Assistant Physician to the Metropolitan Hospital .................................................. 459
A Further Minute Analysis by Electric Stimulation of the so-called Motor Region (Facial Area) of the Cortex Cerebri in the Monkey (Macacus sinicus). By Charles E. Beevor, M.D., M.R.C.P., and Victor Horsley, M.B., F.R.C.S., F.R.S. .................................................. 463
On the Influence exercised by the Central Nervous System on the Cardiac Rhythm, with an Inquiry into the Action of Chloroform on that Rhythm. By John A. MacWilliam, M.D., Professor of the Institutes of Medicine in the University of Aberdeen .................. 464
On the presence of Urea in the Blood of Birds, and its bearing upon the Formation of Uric Acid in the Animal Body. By Sir Alfred Garrod, M.D., F.R.S. ................................................................. 478
List of Presents .................................................................................................................. 485

Obituary Notice:—

James Thomson .................................................................................................................. i

Index ................................................................................................................................. xi
Transactions.
Royal Society. List of Members. 1892. 4to. [Edinburgh.] The Society.
Transactions (continued).


The Society.


Smith-Delacour (E. W.) A Shironga Vocabulary. 8vo. London 1893. [The Author.]

Todd (D. P.) Data (chiefly Meteorological) bearing upon the Selection of Stations for Observing the Total Eclipse of 1893. 8vo. [Amherst, Mass.] 1892. The Author.

roots, or only feebly developed on the dorsal side. The cortical layer
next to the exodermis constitutes itself into a cork-cambium; and in
the pitcher-roots a secondary cork-cambium arises within the bands
of sclerenchyma. Cork is not formed on the distal parts of the
pitcher-roots, nor within the most ventral portion of the climbing
roots. Sometimes there is a group of large wood-vessels in the
ventral portion of the vascular cylinder.

The points especially worthy of note in the roots of Dischidia
Rafflesiana are—

1. The early cuticularisation of the root-hairs, and the long persist-
ence of these structures, which, in climbing roots, remain to
function as anchoring threads.
2. The curious passage-cells of the exodermis, which do not possess
thin cellulose-walls.
3. The precocious development of cork to prevent excessive loss of
water.
4. The radial structure and large sclerenchyma-bands of the
pitcher-roots.
5. The dorsi-ventral structure of the climbing roots, as revealed in
the formation of root-hairs and cork; also as seen in the
structure of the cortex and even of the vascular cylinder.

IV. "The Har Dalam Cavern, Malta, and its Fossiliferous
Contents." By John H. Cooke, F.G.S. With a Report on
the Organic Remains, by Arthur Smith Woodward,
F.L.S., F.G.S., F.Z.S. Communicated by Henry Woodward,
LL.D., F.R.S., V.P.G.S. Received February 2, 1893.

[Publication deferred.]

Presents, February 23, 1893.

Transactions.
1892. The Museum.
No. 73. 8vo. London 1893. The Director.
XXV. No. 3. 8vo. London 1893. The Society.
Transactions (continued).


Observations and Reports.


“On a Meteoric Stone found at Makariwa, near Invercargill, New Zealand.” By Professor G. H. F. Ulrich, F.G.S., of the University, Dunedin, New Zealand. Communicated by Professor J. W. Judd, F.R.S. Received December 14, 1892,—Read February 2, 1893.

Introductory.

The stone under notice was not seen to fall, but the following description regarding the site of its discovery, its mineral character, and structure can leave no doubt of its being of meteoric origin.

Towards the end of the year 1886, when a large party of mining prospectors were preparing, with Government aid, for departure to the Big Bay district, west coast of Middle Island, Mr. Th. Fenton, a student of the Dunedin University School of Mines, was sent to Invercargill, where the party assembled, to instruct those of the men who desired it in rough assaying for gold and the use of the blowpipe. On the occasion of one of his lectures, he received from a Mr. Arch. Marshall, for examination, a piece of stone which, from its weight and appearance, was supposed to be something out of the common. Mr. Fenton made a rough qualitative analysis of a sample of the stone, and on finding strong reactions for nickel, thought it of sufficient interest to preserve the several small fragments remaining of the piece received from Marshall and to bring them with him to Dunedin, where he placed them at my free disposal. One of these fragments I devoted to the preparation of a number of thin sections
found, as in the copper wire, that there was no permanent alteration unless there was permanent stretching.

Hitherto the results on specific resistance have been given by all investigators on this subject, except Lord Kelvin, in volume units, but, as the alteration in density is in every case very small, the results obtained in the present investigation are in very good agreement with those of former experimenters.

The conclusions arrived at are that for practical purposes any mechanical treatment, however severe, does not affect the electrical properties of the metals tested. As contrasted with this, it is interesting to note that the smallest impurity in the metal produces a greater change than the most severe mechanical treatment. For example, an impurity of \( \frac{1}{3} \) per cent. lowers the electrical conductivity by 13.5 per cent. while an impurity of \( \frac{1}{8} \) per cent. lowers it as much as 30 per cent.

III. "A New Hypothesis concerning Vision." By JOHN BERRY HAYCRAFT, M.D., D.Sc. Communicated by E. A. SCHÄFER, F.R.S. Received February 16, 1893.

[Publication deferred.]

*Transactions, March 2, 1893.*


Transactions (continued).
Leipsic:—Astronomische Gesellschaft. Publication. No. 20. 4to. Leipzig 1892.

Königl. Preuss. Akademie der Wissenschaften.
Jackson (J.) Tableau de Diverses Vitesses exprimées en mètres par seconde. 8vo. Nice 1893.
San Germán y Malet (L. de) Problemas Geométricos: Division Exacta de Circunferencias y Arco particulares sin tanteo. 8vo. Barcelona 1892.
March 9, 1893.

Sir JOHN EVANS, K.C.B., D.C.L., LL.D., Vice-President and Treasurer, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

Professor Dewar made an oral statement to the effect that he had succeeded in freezing liquefied atmospheric air into a clear transparent solid. Whether this solid is a jelly of solid nitrogen containing liquid oxygen, or a true ice of liquid air, in which both oxygen and nitrogen exist in the solid form, was, however, stated to be a question for further research.

The following Papers were read:—

I. "On the Evidences of a Submergence of Western Europe and of the Mediterranean Coasts at the close of the Glacial or so-called Post-Glacial Period, and immediately preceding the Neolithic or Recent Period." By JOSEPH PRESTWICH, D.C.L., F.R.S., F.G.S., Corr. Inst. France, &c. Received December 15, 1892.

(Abstract.)

In a communication made early this year (1892) to the Geological Society, the author showed that in the South of England, besides the superficial drift deposits of river, sea, and glacial origin, there was yet another which could not be referred to any of these agencies, and which he was led to conclude was the result of a submergence of not less than 1000 feet at the close of the so-called Post-Glacial Period. This drift, unlike the others, does not contain either fluviatile or
hyphae remain for the most part unstained. The fungus undergoes very early degeneration. Tissue reaction.—The particles are surrounded by leucocytes and are either embedded in granulation tissue or lie free in the abscess cavities or sinuses.

In both varieties the spread of the particles and inflammation goes hand in hand, and a recurrence of the particles and of the inflammation has been observed by one of us in the scar left after amputation for the black variety of fungus foot.

Present, March 9, 1893.

Transactions.


Bergen:—Museum. Aarsberetning. 1891. 8vo. Bergen 1892.


Pisa:—Società Toscana di Scienze Naturali. Processi Verbali. Dicembre, 1892. 8vo. [Pisa.]
Transactions (continued).


Schück (A.) Magnetische Beobachtungen auf der Nordsee, ange-

stellt in den Jahren 1884 bis 1886, 1890 und 1891. 4to. Hamburg 1893. The Author

Winthrop (R. C.) [Reprint, from the Proceedings of the Massachu-

setts Historical Society, of a Communication on Jupiter’s Satellites.] 8vo. 1892. The Author.


Medal struck in commemoration of the Columbian Celebration.

Sent by the Delegate-General of the Historico-American Exhibition, through Foreign Office.

Original and enlarged Drawings of a portion of the Solar Spectrum.

Prof. A. S. Herschel, F.R.S.
ouabain, arrived at conclusions which are not in accordance with those of the French observers, viz.:—that the cardio-respiratory centres in the medulla are not primarily affected, that the lethal action of the poison is exercised directly upon the heart, and that the asphyxia is a secondary phenomenon.

The Society then adjourned over the Easter Recess to Thursday, April 20.

Present, March 23, 1893.

Transactions.
The University.

The Society.

The College.

The Museum.

The Society.

The Society.

The Society.

Kharkoff:—Section Médicale de la Société des Sciences Expérimentales. Travaux. 1892. 8vo. Kharkoff 1892.
The Society.

The Museum.

Königsberg:—Physikalisch-Oekonomische Gesellschaft. Führer durch die Geologischen Sammlungen des Provinzialmuseums. 8vo. Königsberg in Pr. 1892.
The Society.

Lille:—Université. Travaux et Mémoires. Tome II. Nos. 7–9. 8vo. Lille 1892.
The University.
Transactions (continued).
The Association.
8vo. London 1893.
The Association.
Odontological Society. Transactions. Vol. XXV. No. 4. 8vo.
London 1893.
The Society.
Pharmaceutical Society. Chemical Papers from the Research
Prof. W. R. Dunstan.
No. 5. 8vo. London 1893.
The Society.
Royal College of Physicians. List of Fellows, Members, Extra-
Licentiates, and Licentiates. 8vo. London 1893.
The College.
London 1893.
The Institution.
8vo. London 1893.
The Society.
Parts 4—5. 8vo. Manchester 1893.
The Society.
Mexico:—Sociedad Científica "Antonio Alzate." Memorias y
The Society.
Milan:—Società Italiana di Scienze Naturali. Atti. Vol. XXXIII.
8vo. Milano 1890—91.
The Society.
1892. No. 3. Moscou 1893.
The Society.
Munich:—K.B. Akademie der Wissenschaften. Sitzungsberichte.
The Academy.
Naples:—Accademia delle Scienze Fisiche e Matematiche. Rendi-
conto. Scr. 2. Vol. VI. Fasc. 2. 4to. Napoli 1893.
The Academy.
XXIV. No. 4. Part 1. 8vo. New York 1892.
The Society.
The Museum.
Rome:—R. Accademia dei Lincei. Annuario. 1893. 8vo. Roma
1893.
The Academy.
XLIX. No. 10. 8vo. Stockholm 1893.
The Academy.
Vienna:—K. Akademie der Wissenschaften. Anzeiger. 1893.
Nos. 5—7. 8vo. Wien.
The Academy.
Transactions (continued).


Journals.


The Department of Agriculture, Sydney Archives Néerlandaises des Sciences Exactes et Naturelles. Tome XXVI. Livr. 4—5. 8vo. Harlem 1893.


Escuela Especial de Ingenieros, Lima.

Canadian Record of Science. Vol. V. No. 4. 8vo. Montreal 1892.

The Department of Agriculture, Sydney Archives Néerlandaises des Sciences Exactes et Naturelles. Tome XXVI. Livr. 4—5. 8vo. Harlem 1893.


The Editor.


Selborne Society.

Rassegna delle Scienze Geologiche in Italia. 8vo. Roma 1892.

The Editors.


The Editor.


The Rédaction.


R. Stazione Agraria, Modena.

Year-Book of Science. 1892. 8vo. London 1893.

Prof. Bonney, F.R.S.
Burdett (H. C.) Burdett's Hospital Annual for 1893. 8vo. London; Burdett's Official Intelligence for 1893. 4to. London 1893.
The Editor
The Author.
The Author.
The Author.

Fifteen Carte de Visite Photographs of Fellows of the Royal Society.
Messrs. Mauull and Fox.

Gold Lavoisier Medal.
Prof. W. F. R. Weldon, F.R.S.
Account of the appropriation of the sum of £4,000 (the Government Grant) annually voted by Parliament to the Royal Society, to be employed in aiding the Advancement of Science (continued from vol. l, p. 246).

November 30, 1891, to March 31, 1893.

**General Fund.**

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<td>Prof. C. G. Knott, for an Investigation of the Effect of Magnetism upon the Internal Volume of Iron, Steel, and Nickel Tubes of various Bores</td>
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<td>Prof. Poynting, for aid in Experimenting on the Construction of a Portable Differential Gravity Meter with Temperature Compensation</td>
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<td>Prof. W. Ramsay, for a Verification of the Law ( pV = RT ), for Gases under Low Pressures (£25); and for an Investigation of the Capillary Constants of Liquids up to their Critical Points (£25)</td>
<td>50</td>
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<td>Profs. Rücker and Thorpe, for the Completion of the Magnetic Survey of the British Isles</td>
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<td>Prof. Worthington, for Measurement of the Relations between Tensile Stress and Strain in Liquids at Different Temperatures</td>
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<td>H. L. Callendar, for a Comparison of Platinum and Air Thermometers</td>
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Carried forward ...... £1,141 10 6
## Appropriation of the Government Grant.

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Prof. W. N. Hartley, for the Investigation of High Temperature Flame-spectra by the aid of Photography  
100 0 0

Prof. Dewar, for a Research on the Physical Properties of Liquid and Solid Oxygen, Nitrogen, and Air  
300 0 0

Prof. Dunstan, for Further Research on the Action of Alkalis on Nitro-compounds, &c.  
50 0 0

Research Committee, Pharmaceutical Society (per Prof. Dunstan), for Continuation of the Chemical Investigation of the Aconite Alkaloids (£100), and the Isolation and Chemical Examination of the Substance to which Croton Oil owes its vesicating property.  
150 0 0

J. A. Gardner, for Further Investigation of the Terpenes and more especially of Camphene  
30 0 0

W. P. Wynne, for Payment of an Assistant to aid in a Research on the Action of Sulphuric Acid on Quinoline.  
50 0 0

Prof. W. H. Perkin, jun., for Experiments on the Constitution of Camphoric and Camphoronic Acid and other Allied Acids  
75 0 0

W. A. Shenstone, for Further Investigation (1) of the Action of the Silent Discharge in Oxygen and other Gases; (2) of the Production of Haloid Salts from Pure Materials  
20 0 0

Drs. G. Dyson and A. Harden, for the Investigation of the Combination of Carbon Monoxide and Chlorine under the Influence of Light  
10 0 0

R. Irvine, for Continuation of Investigations on Oceanographic Chemistry  
100 0 0

W. T. Thiselton Dyer, to enable the Botanist accompanying the Sierra Leone Delimitation Commission to prolong his Expedition if necessary  
100 0 0

J. G. Grenfell, for a Research on the Diatoms with Protoplasmic Pseudopodia  
25 0 0

G. Brebner, for one year's study at Cumbrae of the Life-history of Local Species of certain Genera of the Florideae  
100 0 0

Prof. W. C. Williamson, for a Research on the Microscopic Structure of Coal and Carboniferous Plants  
25 0 0

H. Wager, for a Research on the Minute Structure of the Cells of Fungi and Bacteria, and the Processes of Fertilisation in the Fungi  
38 5 0

Carried forward  
£2,314 15 6
### Appropriation of the Government Grant.

Brought forward .................................. £2,314 15 6

Dr. Selater, for Expense of sending an Ornithologist to Uruguay to collect Birds with a view to publication of a Monograph ...................................................... 100 0 0

West India Committee (per G. Murray), for further aid in collecting and describing Fauna and Flora in the less known West Indian Islands ........................................ 100 0 0

Sandwich Islands Committee (per D. Sharp), for the Investigation of the Fauna of the Sandwich Islands ... 200 0 0

Prof. Weldon, for the Measurement of various Organs in Statistically Large Examples of various Local Races of Common Animals ................................................. 50 0 0

E. J. Bles, for a Research on the Marine Floating Organisms of the British Seas, and the Effect of Changes in Environment on their Distribution ..................................... 100 0 0

T. Scott, for Completion of the Study and Description of the Marine Entomostraca obtained by Mr. John Rattray in 1886 ................................................................. 20 0 0

F. E. Beddard, for Procuring Oligochaeta from East Tropical Africa ....................................................... 100 0 0

C. D. Marshall, for a Research on the Transmission of Nerve Impulses from the Cortex Cerebri by the Channels of the Spinal Cord .................................................. 50 0 0

W. G. Spencer, for a Research on the Central Innervation of the Respiration and Circulation in connexion with Increased Intracranial Pressure .................................................. 100 0 0

Dr. Starling, for an Investigation of some points in the Physiology of the Mammalian Heart ............................... 40 0 0

Dr. J. R. Bradford, for the further Investigation of the Disturbance of Nutrition producible in Dogs by Removal of Portions of the Kidney ................................................. 150 0 0

J. H. Parsons, for a Research on the Functions of the Thyroid Gland .............................................................. 20 0 0

Dr. W. H. Thompson, for a Research on the Course and Cerebral Connexions of Cranial Nerves ............................. 40 0 0

Prof. P. F. Frankland, for Continuation of Researches on the Chemical Changes brought about by Specific Micro-organisms .................................................. 75 0 0

C. S. Sherrington, for the Examination of the Actions and the Topography of Reflex and Automatic Centres in the Lower Half of the Spinal Cord ........................................ 75 0 0

Carried forward ........... £3,534 15 6
### Appropriation of the Government Grant.

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Dr. Gaskell, for a Research to be carried out by Mr. F. Edgeworth on the Distribution and Function of the Large Fibres in the Sympathetic System | 30 | 0 | 0 |
Dr. Copeman, for Researches on the Bacteriology of Vaccine Lymph | 60 | 0 | 0 |

**£3,624 15 6**

### Reserve Fund.

Eclipse (1893) Committee, for the Expenses of the Eclipse Expedition | £ | s. | d. |
---|---|----|----|
Treasurer, Royal Society, for an Inquiry (in conjunction with the London County Council) on the Vitality of Microscopic Pathogenic Organisms in Large Bodies of Water | 600 | 0 | 0 |

**£1,100 0 0**

### General Fund.

**Dr.**

<table>
<thead>
<tr>
<th>£</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>To Balance, November 30, 1891</td>
<td>373</td>
<td>14</td>
</tr>
<tr>
<td>,, Grant from Treasury</td>
<td>4,000</td>
<td>0</td>
</tr>
<tr>
<td>,, Repayments</td>
<td>204</td>
<td>5</td>
</tr>
<tr>
<td>,, Interest on Deposit</td>
<td>34</td>
<td>12</td>
</tr>
</tbody>
</table>

**£4,612 12 5**

**Cr.**

By Appropriations, as above | £ | s. | d. |
---|---|----|----|
Salaries, Printing, Postage, Advertising, and other Administrative Expenses | 3,624 | 15 | 6 |
Balance, Mar. 31, 1893 | 142 | 9 | 2 |

**£4,612 12 5**

### Reserve Fund.

**Dr.**

<table>
<thead>
<tr>
<th>£</th>
<th>s.</th>
<th>d.</th>
</tr>
</thead>
<tbody>
<tr>
<td>To placed to Reserve Fund in 1890</td>
<td>1,576</td>
<td>12</td>
</tr>
<tr>
<td>,, ditto in 1891</td>
<td>423</td>
<td>7</td>
</tr>
</tbody>
</table>

**£2,000 0 0**

**Cr.**

By Appropriations, as above and Balance, Mar. 31, 1893 | £ | s. | d. |
---|---|----|----|
1,100 | 0 | 0 |
900 | 0 | 0 |

**£2,000 0 0**
Presents, April 20, 1893.

Transactions.


The Academy.


Journals.

Archives des Sciences Biologiques. Tome I. No. 5. 4to. St. Pétersbourg 1892. Institut Impérial de Médecine Expérimenterale, St. Petersburg.


Medical Register (The) 1893. 8vo. London; The Dentists' Register. 8vo. London 1893. The General Medical Council.


Revue Médico-Pharmaceutique. 1893. No. 2. 4to. Constantinople. The Editor.


Fritsche (H.) Ueber die Bestimmung der geographischen Länge
und Breite und der drei Elemente des Erdmagnetismus. . . .
an mehr als 1000 Orten. 8vo. *St. Pétersbourg* 1893.
The Author.

Greenhill (A. G.), F.R.S. Notes on Dynamics; for the Senior Class

Lagrange (J. L. de) Œuvres. Publiées par les soins de J. A.

Lemoine (E.) La Géométrographie ou l’Art des Constructions Géo-
métriques. 8vo. *Paris* 1893 [and three other Excerpts].
The Author.

Macfarlane (A.) The Imagery of Algebra. 8vo. *Salem* 1892; The
Fundamental Theorems of Analysis generalized for Space. 8vo.
*Boston* 1893. The Author.

Platania (G.) Contribuzione allo Studio dei Termometri di Pre-
cisione a Mercurio. 4to. *Catania*. The Author.

Prince (C. L.) A Record of the Rainfall at Uckfield, Sussex, from
1843 to 1892 inclusive. 8vo. [Lewes] 1893. The Author.

Zegers (L. L.) La Enerjía Meqánía trasportada por la Elec-
zidad. 8vo. *Santiago de Chile* 1892. The Author.
motor cells is represented in fig. 4. It was drawn from a section of the cord (of the same fish from which fig. 1 was taken), about six inches in front of the electric organ. It closely resembles, except in size, the electric cell (fig. 1), and it also resembles the large motor cells of the Mammalian cord. A motor cell from the spinal cord of a Mammal, drawn to the same scale as the other cells given, is represented in fig. 5.* This cell, smaller than the electric cell of the Skate (1), and still smaller than the cell from Torpedo (3), is about the same size as the electric cell of Gymnotus (2).

With the help of sections through a series of embryo Skate, for most of which I was indebted to Dr. Beard, I have been able to study the development of the cells in the Skate's electric centre. This part of the subject, together with the condition of the electric cells in large fish, will be dealt with in a subsequent communication. It may, however, be stated now: 1. That in R. batis embryos under 5 cm. in length none of the motor cells in the caudal region have undergone enlargement. 2. That in an embryo 5.8 cm. in length, although the muscular fibres seemed still unchanged, certain cells in the anterior horn of the caudal portion of the cord were distinctly larger than similarly shaped cells in their vicinity. 3. That in an embryo 15.5 cm. in length, in which the electrical elements were already well developed, the electric nerve-cells were large and conspicuous, so that sections through the cord in the region of the electric organ presented quite a different appearance from sections through the root of the tail, where no change had taken place in the cells of the anterior horn.

Transactions.


* For the use of the section from which fig. 5 was drawn I am indebted to Sir William Turner, F.R.S.
Transactions (continued).


Transactions (continued).


Observations and Reports.


Observations and Reports (continued).
The Conservancy Commissioners.

May 4, 1893.
The LORD KELVIN, D.C.L., LL.D., President, in the Chair.

A List of the Presents received was laid on the table, and thanks ordered for them.

In pursuance of the Statutes, the names of the Candidates recommended for election into the Society were read from the Chair as follows:—

Burnside, Professor William, M.A.
Dunstan, Professor Wyndham R., M.A.
Ellis, William, F.R.A.S.
Ewart, Professor J. Cossar, M.D.
Gairdner, Professor William Tennant, M.D.
Hobson, Ernest William, D.Sc.
Howorth, Sir Henry Hoyle, K.C.I.E.
Newton, Edwin Tulley, F.G.S.

| Sherrington, Charles Scott, M.B. |
| Stirling, Edward C., M.D. |
| Thornycroft, John Isaac, M.Inst. C.E. |
| Trail, Professor James William Helenus, M.D. |
| Wallace, Alfred Russel, LL.D. |
| Worthington, Professor Arthur Mason, M.A. |
| Young, Professor Sydney, D.Sc. |

The following Papers were read:—

I. “On the Thickness and Electrical Resistance of Thin Liquid Films.” By A. W. REINOLD, M.A., F.R.S., Professor of Physics in the Royal Naval College, Greenwich, and A. W. RÜCKER, M.A., F.R.S., Professor of Physics in the Royal College of Science, London. Received March 10, 1893.

(Abstract.)

The paper gives an account of experiments made for the purpose of determining the thickness of black soap films formed of solutions
i.e., on the common chord of the cubic and the conic of closest contact.

The third tangential of the origin has the coordinates

\[ U_7^2 : -u_5^3U_7 : -(U_7 + u_5^8), \]

which are independent of \( V_8 \). As is known, this is the corresidual of the eight consecutive points at the origin on all the several cubics for which \( V_8 \) is arbitrary.

The line \( V_{3\mu} - U_7' = 0 \), on which the tangential of the origin lies, passes through \((U_7^2 : -U_7V_8 : -V_8^2)\), the sixth point in which the osculating conic meets the cubic again.

The Society adjourned over Ascension Day to Thursday, May 18.

*Transactions.*


The Society.
Transactions (continued).

The Society.

The Association.

The Museum.

The Association.

The Society.

Lund:—Universitet. Års-skrift. Tom. XXVIII. Afd. 2. 4to. Lund 1891—92.
The University.

The Society.

The Faculté.

The Society.

The Institute.

The Academy.

The Society.

The Society.

The Society.

The College.

The Academy.

The Society.

The Museum.

The Society.
Observations and Reports.


Greenwich:—Royal Observatory. Astronomical and Magnetical and Meteorological Observations. 1890. 4to. London 1892. The Observatory.


Stonyhurst College:—Observatory. Results of Meteorological, Magnetical, and Solar Observations, 1892. 8vo. Clitheroe 1893. The Observatory.
Presents, May 18, 1893.

Transactions.
Institution of Mechanical Engineers. Proceedings. 1892. No. 4. 8vo. London [1893]. The Institution.

Carpenter (H. S.) Bourne's Handy Assurance Manual. 1893. 8vo.
London. The Editor.

Cruls (L.) Le Climat de Rio de Janeiro. 4to. Rio de Janeiro
1892. The Author.

Keeler (J. E.) Visual Observations of the Spectrum of β Lyrae.
Note on the Spectrum of P Cygni. 8vo. The Author.

Lemoine (E.) Application de la Géométrie à l'Examen de
diverses Solutions d’un même Problème. 8vo. Paris; Application
d’une Méthode d’Évaluation de la Simplicité des Constructions à
la Comparaison de quelques Solutions du Problème d’Apollonius.
8vo. Paris; Résultats et Théorèmes divers concernant la Géo-
métrie du Triangle, etc. 8vo. Paris. The Author.

Five Photographs of Nebulae and Star Clusters.

Dr. Isaac Roberts, F.R.S.