

PROCEEDINGS
OF
THE ROYAL SOCIETY
OF
EDINBURGH.

VOL. IV.

NOVEMBER 1857 TO APRIL 1862.

EDINBURGH:
PRINTED BY NEILL AND COMPANY.

MDCCCLXII

CONTENTS.

Opening Address, Session 1857-58. By Dr Christison,	Page 2
Excursions in the Troad, with Observations on its Topography and Antiquities. Part I. By Dr William Robertson, F.R.C.P. Communicated by Dr J. Y. Simpson,	17
Biographical Notices of MM. Thénard and Cauchy, two recently deceased Foreign Members of the Society. By Professor Kelland,	30
Excursions in the Troad, with Observations on its Topography and Antiquities. By Dr William Robertson, F.R.C.P. Communicated by Dr J. Y. Simpson,	41
On the Composition of the Building Sandstones of Craigleith, Binnie, Gifnock, and Partick Bridge. By Mr Thomas Bloxam, Assistant Chemist Laboratory of Industrial Museum. With a Preliminary Note by Professor G. Wilson, Director of the Industrial Museum,	42
On the Structure of the Reproductive Organs in some of the Hydroid Polypes. By Dr Allman,	50
On the Focal Adaptation of the Eye in Man and some Animals. By Dr James Black, F.G.S. Illustrated by enlarged Diagrams,	64
Note on the Black Lustrous Varnish of Ancient Pottery. By John Davy, M.D., F.R.SS. Lond. and Edin.,	65
On the Mechanism of the Knee-Joint. By Professor Goodsir,	67
On the Form and Origin of the Symbols on the Ancient Sculptured Stones of Scotland. By Dr Wise,	73
Notes on the Structure of Amphora, a Genus of Diatomaceæ, and the Diagnosis of its Species. By Dr Walker Arnott,	74
Description of the Sulphur Mine near Conil; preceded by a Notice of the Geological Features of the Southern portion of Andalusia. By Dr Traill,	78
Remarks on a Slab of Sandstone, containing numerous Cavities, apparently produced by Marine Animals. By Charles Maclaren, Esq.,	80
Notice respecting some Artificial Sections, illustrating the Geology of Chamouni. By John Ruskin, Esq. Communicated by Professor Forbes,	82
Professor Kelland's Address on delivering the Keith Medal to Professor Boole of Cork,	84
On the Average Value of Human Testimony. By Bishop Terrot,	87
On the Tides in the Sound of Harris. By Henry C. Otter, Esq., R.N., Captain H.M.S. "Porcupine." Communicated by Dr Stark,	89

Note on the Use of the Subacetate of Lead as a Means of Separating some of the Vegetable Alkaloids. By Thomas Anderson M.D., F.R.S.E.,	92
On the Colouring Matter of Persian Berries. By Mr J. Gellatly, Assistant to Dr Anderson, Glasgow,	93
Account of some Experiments in Radiant Heat. By B. Stewart, Esq. Communicated by Professor Forbes,	95
On the Facets and Corners of Flat-faced Solids. By Edward Sang, Esq., F.R.S.E.,	98
Biographical Notice of the late Professor Edward Forbes. By Professor George Wilson,	99
Notice respecting the Remains of a Seal in the Pleistocene of Fifeshire. By Dr Allman,	99
On Theories of the Constitution of Saturn's Rings. By Professor Clerk Maxwell,	99
On a peculiar Ligament connecting the opposite Ribs in certain Vertebrata. By Dr Cleland. Communicated by Professor Goodsir,	102
On some Properties of Ice near its Melting Point. By Professor Forbes,	103
Opening Address, Session 1858-59. By Professor Kelland,	110
Account of the Life and Labours of Dr William Gregory. By Dr Alison,	121
On the peculiar Appendage of Appendicularia named "Haus" by Mertens. By Professor Allman,	123
Additional Observations on the Morphology of the Reproductive Organs in the Hydroid Polypes. By Professor Allman,	123
On the First Properties of Matter—Inertia, Gravitation, Elasticity—referred to a Common Law. By John G. Macvicar, D.D. Communicated by Professor Fraser,	146
On the Structure and Functions of the Branchial Sac of the Simple Ascidia. By Andrew Murray, Esq.,	148
Note on certain Vibrations produced by Electricity. By Professor Forbes,	151
On the Temperature of the Sea around the Coasts of Scotland during the Years 1857 and 1858; and the Bearing of the Facts on the Gulf-stream Theory. By James Stark, M.D., F.R.S.E., &c.,	154
Notice of a Shower of "Sulphurous Substance" (so called) which fell in Inverness-shire in June 1858. By John Davy, M.D., F.R.S.S. Lond. and Edin.,	157
Some Remarks on the Roman Edition of the Vatican Manuscript. By the Rev. Robert Lee, D.D.,	160
On the Constitution of Flame. By Mr Swan,	162
Biographical Memoir of the late Dr D. Skene of Aberdeen. By Alex. Thomson, Esq., of Banchory,	164
On a New Arrow-Poison from China. By Dr Christison,	167
On the Connection between Temperature and Electrical Resistance in the Simple Metals. By Balfour Stewart, Esq.,	168
Remarks on the Behaviour of Mercury as an Electrode. By T. Strethill Wright, M.D., &c. Communicated by W. Swan, Esq. The Experiments were shown,	170

On the Natural History of the Herring. By J. M. Mitchell, Esq., Communicated by Dr Allman,	171
Some Inquiries concerning Terrestrial Temperature. By Professor J. D. Forbes,	173
On the Spermogones and Pycnides of Lichens. By W. Lauder Lindsay, M.D. Communicated by Professor J. H. Balfour,	174
On some First Principles of a Mental Science deduced from Corre- lations of the Primary Laws of Matter and Mind. By Dr Laycock,	183
Verbal Notice respecting the Remains of a Seal found at Porto- bello. By Dr Allman,	190
On the Composition of Old Scotch Glass. By Mr Thomas Bloxam, Assistant Chemist to the Industrial Museum. Communicated, with a Preliminary Note, by Professor George Wilson,	191
On the Gradual Production of Luminous Impressions in the Eye, Part II. By Professor Swan,	198
On the Destructive Effects of the Waves of the Sea on the North-East Shores of Shetland. By Thomas Stevenson, C.E., F.R.S.E.,	200
Notice of an Unusual Fall of Rain in the Lake District in January 1859. By John Davy, M.D., F.R.SS. Lond. and Edin.,	201
Researches on Radiant Heat, Part II. By Balfour Stewart, Esq. Communicated by the Secretary,	203
Some Observations on the Coagulation of the Blood. By John Davy, M.D., F.R.SS. London and Edinburgh,	205
On the Recent Vindication of the Priority of Cavendish as the Dis- coverer of the Composition of Water. By Professor George Wilson,	205
On the Preservation of Footprints on the Sea-Shore. By Alexander Bryson, Esq.,	208
Opening Address, Session 1859-60. By Lord Neaves,	212
Note on some Numerical Relations between the Specific Gravities of the Diamond, Graphite, and Charcoal forms of Carbon, and its Atomic Weight. By Dr Lyon Playfair, C.B., F.R.S.,	241
Some Miscellaneous Observations on the Tadpole, and on the Albumen of the Newly-laid Egg. By John Davy, M.D., F.R.SS. Lond. and Edin.,	249
On Acupressure, a New Method of Arresting Hæmorrhage. By Professor Simpson,	249
Some Miscellaneous Observations on the Growth of Birds, their Specific Gravity, and on the Stomach of Fishes in Relation to Digestion. By John Davy, M.D., F.R.SS. Lond. and Edin.,	253
Notes of certain Remarkable Laws connected with the Oscillations of Flexible Pendulums; with Illustrative Experiments, by Ed- ward Sang, Esq.,	255
Suggested Explanation of Messrs Carrington and Hodgson's re- cently observed Solar Phenomenon. By Professor C. Piazzi Smyth,	258
On the Fallacy of Estimating the present Mean Temperature in England. By James Stark, M.D.,	264

Description of the Plant which produces the Ordeal Bean of Calabar. By Professor Balfour,	265
On the Capture of Whales with the aid of Poison. By Dr Christison,	270
Notice regarding the Branchial Sac of the Simple Ascidiae. By Andrew Murray, Esq.,	271
On the Action of Uncrystallised Films upon Common and Polarised Light. By Sir David Brewster, K.H., F.R.SS. Lond. and Edin.,	273
On Mr Darwin's Theory of the Origin of Species. By Andrew Murray, Esq.,	274
On the utmost Horizontal Distance that can be Spanned by a Chain of a given material. By Edward Sang, Esq.,	275
On the Climate of Edinburgh for Fifty-six Years, from 1795 to 1850, deduced principally from Mr Adie's Observations; with an Account of other and Earlier Registers. On the Climate of Dunfermline, from the Registers of the late Rev. Henry Fergus. By Professor J. D. Forbes,	293
On the Mountain Limestone and Lower Carboniferous Rocks of the Fifeshire Coast. By the Rev. Thomas Brown. Communicated by Professor Allman,	298
On an apprehended Depreciation of Money arising from New Supplies of Gold. By Patrick James Stirling, F.R.S.E.,	301
On the Chronology of the Trap-Rocks of Scotland. By Archibald Geikie, Esq., F.G.S., of the Geological Survey of Great Britain. Communicated by Robert Chambers, Esq.,	309
Letter from the Rev. Dr Livingstone, F.R.S., to Dr Lyon Playfair, C.B.,	311
On the Solidification of Limes and Cements. By George Robertson, C.E.,	314
On Zinc-Methyl. By J. A. Wanklyn, Esq.,	315
Notes of the Dissection of a Female Beaver. By John Cleland, M.D., Demonstrator of Anatomy, University of Edinburgh. Communicated by Dr Douglas Maclagan,	318
On the Thyroid Gland in the Cetacea, with Observations on the Relations of the Thymus to the Thyroid in these and some other Mammals. By William Turner, M.B. Lond., Senior Demonstrator of Anatomy, University of Edinburgh. Communicated by Professor Goodsir,	319
Notice on the Boring of the Pholalidæ. By Alexander Bryson, Esq., President of the Royal Physical Society,	321
On the Birds of Linlithgowshire. By the Rev. John Duns, F.R.S.E., Torphichen,	323
On an Unusual Drought in the Lake District in 1859. By John Davy, M.D., F.R.SS. Lond. and Edin.,	324
On the Constitution of the Essential Oil of Cajeput. By Mr Maximilian Schmidl, Assistant to Dr T. Anderson, University of Glasgow,	326
On the Action of Chlorine on Citric Acid. Hexachlorinated Acetone. By John Galletly, Esq.,	327
Notice of a Panoramic Sketch of Kashmir, recently received from India. By Professor C. Piazzzi Smyth.	332

Account of the Asafoetida Plants (<i>Narthea Asafoetida</i> , Falconer) which have recently flowered and fruited in the Edinburgh Botanic Garden. By Professor Balfour,	337
On the Composition of the Glassy Surface of some Vitrified Forts. By Thomas Bloxam, F.C.S., Assistant Chemist to the Industrial Museum of Scotland,	338
On the Reduction of Observations of Underground Temperature, with Applications to Professor Forbes' Edinburgh Observations and the Continued Calton Hill Series. By Professor William Thomson, Glasgow.	342
On the Method of Reducing Observations of Underground Temperatures, with its Application to the Monthly Mean Temperatures, &c. By Professor Everett,	346
Opening Address, Session 1860-61. By his Grace the Duke of Argyll,	350
Contributions to the Natural History of Volcanic Phenomena and Products in Iceland. By W. Lauder Lindsay, M.D., F.L.S. Communicated by Professor Balfour,	387
On the Pediculi infecting the Different Races of Man. By Andrew Murray,	389
Note on Hydrated Sulphuric Acid. By Dr Lyon Playfair, C.B.,	390
Note respecting Ampère's Experiment for showing the Repulsion of a Rectilinear Electrical Current on itself. By Principal Forbes, LL.D., &c.,	391
Fragmentary Notes on the Generative Organs of some Cartilaginous Fishes. By John Davy, M.D., F.R.SS. Lond. and Edin.,	392
On a Method of taking Vapour Densities at Low Temperatures. By Dr Lyon Playfair, C.B., F.R.S., and J. A. Wanklyn, F.R.S.E.,	395
Memoir of Sir Thomas Makdougall Brisbane. By Alexander Bryson,	398
Notes on the Snow Crystals observed during the late Frost. By Professor Allman,	399
The Bifilar Magnetometer; its Errors and Corrections. By John Allan Broun, F.R.S., Director of the Trevandrum Observatory. Communicated by Professor Tait,	406
On the Horizontal Force of the Earth's Magnetism. By John Allan Broun, F.R.S., Director of the Observatory of the Rajah of Travancore. Communicated by Professor Tait,	407
Notice of an Instrument intended for the Measurement of Small Variations of Gravity. By John Allan Broun. Communicated by Professor Tait,	411
On the Law of Growth in Woody Circles of Exogenous Trees, as indicated by the examination of a single specimen. By Principal Forbes,	412
On the Embryology of <i>Asteracanthion violaceus</i> (Linn. sp.). By Wyville Thomson, M.R.I.A., F.G.S., &c., Professor of Natural History in Queen's College, Belfast,	413
Some Observations on the Albino. By John Davy, F.R.SS. L. & E., &c.,	416

Note on the Bisulphide of Iodine. By Frederick Guthrie,	417
Notice of an Expeditious Method (believed to be new) for Computing the Time of Descent in a Circular Arc. By Edward Sang, Esq.,	419
Note on a Modification of the Apparatus employed for one of Ampère's Fundamental Experiments in Electrodynamics. By Professor Tait,	421
Memoir of the late Rev. Dr John Fleming. By Alexander Bryson, Esq.,	423
On Zoological Classification, and the Parallelism of the Mammal, Marsupial, and Ornithic Classes. By Professor Macdonald,	423
On the Properties of the Secretion of the Human Pancreas. By William Turner, M.B. (Lond.), Senior Demonstrator of Anatomy, University of Edinburgh,	425
On the Acrid Fluid of the Toad (<i>Bufo vulgaris</i>). By John Davy, M.D., F.R.SS. Lond. and Edin.,	426
On Gyrolite occurring with Calcite in Apophyllite in the Trap of the Bay of Fundy. By Henry How, Professor of Chemistry and Natural History, King's College, Windsor, Nova Scotia,	426
On Natro-boro-calcite and another Borate occurring in the Gypsum of Nova Scotia. By Henry How, Professor of Chemistry and Natural History in King's College, Windsor, Nova Scotia,	428
On some Derivatives from the Olefines. By Frederick Guthrie, Professor of Chemistry and Physics in the Royal College, Mauritius,	433
On the Molecular Theory of Organisation. By Professor Bennett, M.D., F.R.S.E., &c.,	436
Notices of Early Scottish Planting. By Professor Cosmo Innes,	446
Additional Observations on the Chronology of the Trap Rocks of Scotland. By Archibald Geikie, Esq., F.G.S.,	453
Notes on Ancient Glaciers, made during a brief visit to Chamouni and its Neighbourhood in September 1860. By David Milne-Home, Esq. of Wedderburn,	454
On the Aqueous Origin of Granite. By Alexander Bryson, P.R.S.S.A.,	456
Notes of Excursions to the Higher Ranges of the Anamalai Hills, South India, in 1858 and 1859. By Hugh Cleghorn, M.D., F.L.S., Conservator of Forests, Madras Presidency,	460
On the Contractions suffered by Sulphuric Acid on being Mixed with Water. By Dr Lyon Playfair, C.B.,	463
On the Constitution of Anthracene or Paranaphthaline and some of its Products of Decomposition. By Professor Anderson,	463
Opening Address. Session 1860-61. By the Very Reverend Dean Ramsay,	468
On the Climate of Palestine in Modern compared to Ancient Times. By Principal Forbes,	511
Biographical Notice of Andrew Dalzel, Professor of Greek in the University of Edinburgh. By Professor Innes,	512
Note on the Phosphorescence of Berœe. By Professor Allman,	518

Contributions to our Knowledge of the Structure and Development of the Beroidæ. By Professor Allman,	519
On the Anatomy and Classification of the Heteropoda. By John Denis Macdonald, Esq., R.N., F.R.S., Surgeon of H.M.S. "Icarus." Communicated by Dr Douglas Maclagan,	524
On the Structure of <i>Chondracanthus Lophii</i> , with observations as to Larval Form. By William Turner, M.B., and H. S. Wilson, M.D., Demonstrators of Anatomy,	525
Investigation of an Expression for the Mean Temperature of a Stratum of Soil, in terms of the time of year. By J. D. Everett, M.A., Professor of Mathematics, &c. in King's College, Windsor, Nova Scotia. Communicated by Professor Tait,	528
Notice of the Catadioptric Altitude and Azimuth Circle. By Edward Sang, Esq.,	528
On the Nesting Birds of Linlithgowshire and Berwickshire. By the Rev. John Duns, F.R.S.E., Torphichen,	532
Note on Molecular Arrangement in Crystals. By Professor Tait,	535
On the Condition of the Salmon Fisheries of England and Wales in 1861; with a Notice of some of the Modes of Fishing, especially those practised in the Severn and Wye. By Sir William Jardine, Bart., F.R.S., &c.,	539
Cases of Poisoning by Goat's Milk. By Alexander E. Mackay, M.D., Surgeon H.M.S. "Marlborough,"	542
Note on the Electricity developed during Evaporation, and during Effervescence from Chemical Action. By Professor Tait and J. A. Wanklyn, Esq.,	544
On the Pressure Cavities in Topaz, Beryl, and Diamond, and their bearing on Geological Theories. By Sir David Brewster, K.H.,	548
On the Anatomical Relations of the Surfaces of the Tentorium to the Cerebrum and Cerebellum in Man and the Lower Mammals. By William Turner, M.B. (Lond.), Senior Demonstrator of Anatomy in the University of Edinburgh,	549
On the Connection between Organic Force and Crystalline Force. By H. F. Baxter, Esq.,	559
On a recent Landslip. By the Rev. John Duns, Torphichen,	560
On the Rainfall in the Lake District in 1861. With some Observations on the Composition of Rain-water. By John Davy, M.D., F.R.S.S. Lond. and Edin.,	563
Observations on the Absorbing Power of the Human Skin. By Murray Thomson, M.D., F.C.S., Lecturer on Chemistry, Edinburgh. Communicated by Dr Douglas Maclagan,	564
On the Constitution of Mannite. By J. A. Wanklyn, Esq., and Dr Erlenmeyer,	565
On the Structure of <i>Lerneopoda Dalmanni</i> , with Observations on its Larval Form. By Wm. Turner, M.B. (Lond.), and H. S. Wilson, M.D., Demonstrators of Anatomy,	569
Memoir of the Life and Writings of Robert Whytt, M.D., Professor of Medicine in the University of Edinburgh, from 1747 to 1766. By William Seller, M.D., F.R.S.E., F.R.C.P.E.,	570
On a Difficulty in the Theory of Rain. By James Dalmahoy, Esq.,	576

On the Structure of the Bark of <i>Araucaria imbricata</i> , with special reference to Palæontology. By John Hutton Balfour, A.M., M.D., F.R.S., Sec. R.S.E., Professor of Medicine and Botany,	577
On the Theory of Numbers. By H. Fox Talbot, Esq.,	582
On the Carboniferous Volcanic Rocks of the Basin of the Forth. By Archibald Geikie, Esq., F.R.S.,	582
On the Constitution of Society in this Country, with reference to the Proportion which Male Life bears relatively to Female Life, and the Effects of an Excess of Female Life. By W. T. Thomson, Esq.,	583
On the Danger of Hasty Generalisation in Geology. By Alexander Bryson, Esq.,	604
On the Deflection of the Plummet caused by the Sun's and Moon's Attraction. By Edward Sang,	604
Note on Gravity and Cohesion. By Professor William Thomson,	604
Experimental Inquiry into the Laws of the Conduction of Heat in Bars, and into the Conducting Power of Wrought Iron. By Principal Forbes,	607
On certain Vegetable Formations in Calcareous Spar. By Principal Sir David Brewster,	610
On the Existence of <i>Acari</i> between the Laminæ of Mica in Optical Contact. By Principal Sir David Brewster,	610
On the Secular Cooling of the Earth. By Professor William Thomson,	610
Notice of the Ravages of the <i>Limnoria Terebrans</i> on Creosoted Timber. By David Stevenson, Esq., F.R.S.E., M.I.C.E., &c.,	612
On some Thermic Properties of Water and Steam. By Professor W. J. Macquorn Rankine,	616
Formulæ connected with small continuous Displacements of the Particles of a Medium. By Professor Tait,	617