PROCEEDINGS

OF THE

ROYAL SOCIETY OF EDINBURGH.

PROCEEDINGS

OF

THE ROYAL SOCIETY

OF

EDINBURGH.

VOL. XXVII.

NOVEMBER 1906 to JULY 1907.

PRINTED BY NEILL AND COMPANY, LIMITED.

MDCCCCVII.

CONTENTS.

Office-Bearers, Session 1906–7,	PAGE]
The Influence of an Excessive Meat Diet on the Osseous System. By Chalmers Watson, M.D. (From the Physiological Laboratory of Edinburgh University.) Communicated by Professor Schäfer, F.R.S. (With Four Plates.) Issued separately February 11, 1907,	2
The Effect of a Meat Diet on Fertility and Lactation. By B. P. Watson, M.D., F.R.C.S.E. (From the Physiological Laboratory, University of Edinburgh.) Communicated by Professor Schäfer, F.R.S. (With a Plate.) Issued separately February 11, 1907,	6
The Effects of Diet on the Development and Structure of the Uterus. By Malcolm Campbell, M.B., Ch.B., F.R.C.S. Edin. (From the Physiological Department, University of Edinburgh. Communicated by Professor Schäfer, F.R.S. (With Four Plates.) Issued separately February 11, 1907,	11
The Temperature of the Fresh-water Lochs of Scotland, with special reference to Loch Ness. By E. M. Wedderburn, A.M. Communicated by Sir John Murray, K.C.B. Issued separately April 4, 1907,	14
Note on the Change produced in the Conductivity and Density of Lead Wires by Permanent Stretching. By James A. Donaldson and Robert Wilson, Natural Philosophy Laboratory, Edinburgh University. Communicated by Professor J. G. MacGregor. Issued separately April 4, 1907,	16
On the Discovery of a New Genus of Thread-Bacteria (Spirophyllum ferrugineum, Ellis). By David Ellis, D.Sc., Ph.D., F.R.S.E., Lecturer in Botany and Bacteriology, Glasgow and West of Scotland Technical College, Glasgow. (With a Plate.) Issued separately April 24, 1907,	21
Prymnothonus Hookeri, Poisson pélagique de l' "Erebus" et de la "Terror" retrouvé par l'Expédition Antarctique Nationale Ecossaise. Note préliminaire, par Louis Dollo, Conservateur au Musée royal d'Histoire naturelle, à Bruxelles. Présentée par M. R. H. Traquair, M.D., F.R.S., V.P.R.S.E. Issued separately April 5, 1907,	35
Craniometrical Observations on the Skull of Equus prjevalskii and other Horses. By O. Charnock Bradley, M.B., D.Sc., F.R.S.E. Issued separately April 29, 1907,	46
Notes on Aboriginals of the Northern Territory of South Australia. By W. Ramsay Smith, D.Sc., M.B., C.M., Permanent Head of the Health Department, South Australia. Communicated by Professor D. J. Cunningham, F.R.S. Issued	
separately April 29, 1907,	5]

vi

	PAGE
The Functions of the Rolandic Cortex in Monkeys. By W. A. Jolly, M.B., and Sutherland Simpson, M.D., D.Sc. (From the Physiological Laboratory, University of Edinburgh.) Communicated by Professor E. A. Schäfer, F.R.S. Issued separately May 6, 1907,	64
The Minors of a Product-Determinant. By Thomas Muir, LL.D. Issued separately May 29, 1907,	79
Heusler's Magnetic Alloy. By Alexander D. Ross, M.A., B.Sc., Houldsworth Research Scholar, University of Glasgow. <i>Communicated by Professor A. Gray</i> , F.R.S. Issued separately May 29, 1907,	88
The Relation between Normal Take-up or Contraction and Yarn Number for the same Degree of Twist in Twisted Threads. By Thomas Oliver, B.Sc. (London and Edinburgh), Carnegie Research Fellow. Communicated by Dr C. G. Knott. Issued separately May 30, 1907,	93
The Relation between Normal Take-up or Contraction and Degree of Twist in Twisted Threads when the Singles are of Unequal Sizes. By Thomas Oliver, B.Sc. (London and Edinburgh), Carnegie Research Fellow. Communicated by Dr C. G. Knott. Issued separately May 30, 1907,	107
On the Influence of Temperature on the Photo-Electric Discharge from Platinum. By W. Mansergh Varley, D.Sc. (Manchester and Leeds), Ph.D. (Strassburg), B.A. (Cantab.), Assistant Professor of Physics and Electrical Engineering, and Fred. Unwin, M.Sc. (Manchester), Assistant Lecturer in Physics, Heriot-Watt College, Edinburgh. <i>Communicated by</i> Professor F. G. Baily, M.A., M.I.E.E. Issued separately May 31, 1907,	117
The Theory of Axisymmetric Determinants in the Historical Order of its Development up to 1860. By Thomas Muir, LLD. Issued separately July 19, 1907,	135
The Composition of the Red Clay. By F. W. Clarke, D.Sc., LL.D., Chief Chemist, U.S. Geological Survey. Communicated by Sir John Murray, K.C.B., F.R.S., etc. Issued separately July 19, 1907,	167
The Physical Properties of Mixed Solutions of Independent Optically-Active Substances. By Clark Ranken, B.Sc., Carnegie Research Scholar, and W. W. Taylor, M.A., D.Sc., Communicated by Professor Crum Brown, F.R.S. Issued separately July 19, 1907,	172
On Vibrating Systems which are not subject to the Boltzmann-Maxwell Law. (Second Paper.) By Dr W. Peddie. Issued separately August 28, 1907,	181
On the Partition of Heat Energy in the Molecules of Gases. By Dr Paul Ehrenfest. Communicated by Dr W. Peddie. Issued separately August 28, 1907,	195
Preliminary Note on the Internal Structure of Sigillaria mamillaris, Brongniart, and Sigillaria scutellata, Brongniart. By R. Kidston, F.R.S. L. & E., F.G.S., Foreign Mem. Kaiserl. Mineral. Gesell. zu St Petersburg. Issued separately August 28, 1907,	203
Note on a New Species of Lepidodendron from Pettycur (Lepidodendron Pettycurense). By R. Kidston, F.R.S. L. & E., F.G.S., Foreign Mem. Kaiserl. Mineral. Gesell. zu St Petersburg. Issued separately September 9, 1907,	207
4	,

Contents. vii

On the Application of a Differential Densimeter to the Study of some Mediterranean	GE
Waters. By John J. Manley, M.A., Daubeny Curator, Magdalen College, Oxford. Communicated by Sir John Murray, K.C.B. With an Appendix. Issued separately September 11, 1907,	10
The Electric Conductivity and Refracting Power of Ninety Samples of Sea-Water, and a Comparison of these with the Salinity and Density. By E. G. Hill, B.A. Oxon., D.Sc. Dublin, Professor of Chemistry, Muir College, Allahabad. Communicated by Sir John Murray, K.C.B. Issued separately September 11, 1907, . 23	33
The Influence of Twist on the Strength of a Thread. By Thomas Oliver, B.Sc. (Lond. and Edin.), Carnegie Research Fellow. Communicated by Dr C. G. Knott. Issued separately October 2, 1907,	44
A New Method of determining the Degree of Twist in Single Threads. By Thomas Oliver, B.Sc. (Lond. and Edin.), Carnegie Research Fellow. Communicated by Dr C. G. Knott. Issued separately October 2, 1907,	64
The Composition of Terrigenous Deposits. By F. W. Clarke, D.Sc., LL.D., Chief Chemist, U.S. Geological Survey. <i>Communicated by</i> Sir John Murray, K.C.B., F.R.S., etc. Issued separately October 2, 1907,	69
A Preliminary Note on the Optical Rotations (throughout the Spectrum), the Electrical Conductivities, and the Densities of Mixtures of Sodium-Potassium-Tartarate and Ammonium-Molybdate in Aqueous Solution. By James Robert Milne, D.Sc., Carnegie Research Fellow in Physics. Issued separately October 3, 1907,	71
Degenerations following Experimental Lesions in the Motor Cortex of the Monkey. By Sutherland Simpson, M.D., D.Sc., and W. A. Jolly, M.B. (From the Physiological Laboratory, University of Edinburgh.) Communicated by Professor A. E. Schäfer, F.R.S. Issued separately October 3, 1907,	81
Hydrachnidæ collected by the Lake Survey. By Mr Wm. Williamson. Communicated by Sir John Murray, K.C.B. Issued separately October 3, 1907, 30	02
Precipitated Sulphur. By Alexander Smith and R. H. Brownlee. Issued separately October 3, 1907,	08
A specimen of <i>Helix pomatia</i> with Paired Male Organs. By J. H. Ashworth, D.Sc., Lecturer in Invertebrate Zoology in the University of Edinburgh. <i>Communicated by</i> Professor J. C. Ewart, M.D., F.R.S. (With Plate, and Two Figures in the Text.) Issued separately October 4, 1907,	12
A Sketch of Japanese National Development, more especially with reference to Education. By Baron Kikuchi, M.A., D.Sc., LL.D., Emeritus Professor of Mathematics in the Imperial University of Japan (ex-Minister of Education, and formerly President of the Imperial University). Issued separately October 5, 1907,	32
The Variation of Young's Modulus under an Electric Current. By Henry Walker, M.A., B.Sc. Communicated by Professor J. G. MacGregor, F.R.S. Issued separately October 7, 1907.	13

viii Contents.

	PAGE
On the Periods of the Elliptic Functions of Weierstrass. By R. T. A. Innes, Director of the Government Observatory, Johannesburg, F.R.A.S. Issued separately October 7, 1907,	357
00000011, 1001,	001
Preliminary Note on the action of Sodium Ethylate on Trichloromethyl-Sulphonic Chloride. By Professor A. Crum Brown and Thomas F. Cowie, B.Sc. Issued	
separately November 8, 1907,	36 9
Note on Quaternion Integral Theorems. By Heinrich Hermann, D.Sc. (Tübingen). Communicated by Professor C. G. Knott. Issued separately November 8, 1907, .	371
Meetings of the Society—Session 1906–1907,	373
Donations to the Library of the Society from 1905 to 1907,	386
List of Periodicals and Annual Publications added to the Library by Purchase,	414
Abstract of Accounts for Session 1906–1907,	418
Index,	429