

PROCEEDINGS
OF THE
ROYAL SOCIETY OF LONDON
SERIES B
CONTAINING PAPERS OF A BIOLOGICAL CHARACTER
VOL. LXXXIII.

LONDON:
PRINTED FOR THE ROYAL SOCIETY AND SOLD BY
HARRISON AND SONS, ST. MARTIN'S LANE,
PRINTERS IN ORDINARY TO HIS MAJESTY.

MAY, 1911.

LONDON :

HARRISON AND SONS, PRINTERS IN ORDINARY TO HIS MAJESTY,
ST. MARTIN'S LANE.

CONTENTS.



SERIES B. VOL. LXXXIII.

No. B 561.—November 26, 1910.

	PAGE
Trypanosome Diseases of Domestic Animals in Uganda. II.— <i>Trypanosoma brucei</i> (Plimmer and Bradford). By Colonel Sir David Bruce, C.B., F.R.S., A.M.S.; Captains A. E. Hamerton, D.S.O., and H. R. Bateman, R.A.M.C.; and Captain F. P. Mackie, I.M.S. (Sleeping Sickness Commission of the Royal Society, Uganda, 1908–10). (Plates 1 and 2)	1
Trypanosome Diseases of Domestic Animals in Uganda. III.— <i>Trypanosoma vivax</i> (Ziemann). By Colonel Sir David Bruce, C.B., F.R.S., A.M.S.; Captains A. E. Hamerton, D.S.O., and H. R. Bateman, R.A.M.C.; and Captain F. P. Mackie, I.M.S. (Sleeping Sickness Commission of the Royal Society, Uganda, 1908–10). (Plates 3–5)	15
On the Peculiar Morphology of a Trypanosome from a Case of Sleeping Sickness and the Possibility of its being a New Species (<i>T. rhodesiense</i>). By J. W. W. Stephens, M.D. Cantab., D.P.H., and H. B. Fantham, D.Sc. Lond., B.A. Cantab. Communicated by Prof. Major R. Ross, F.R.S. (Plate 6).....	28
The Influence of Bacterial Endotoxins on Phagocytosis, including a New Method for the Differentiation of Bacteria. (Second Report.) By Leonard S. Dudgeon, P. N. Panton, and H. A. F. Wilson. Communicated by Dr. F. W. Mott, F.R.S.	33
On the Determination of the Chief Correlations between Collaterals in the Case of a Simple Mendelian Population Mating at Random. By E. C. Snow, B.A., Biometric Laboratory, University College, London. Communicated by Prof. Karl Pearson, F.R.S.	37
The Origin of the Hydrochloric Acid in the Gastric Tubules. By Mabel Purefoy FitzGerald. Communicated by Prof. A. B. Macallum, F.R.S. (Plates 7–9)...	56

No. B 562.—December 19, 1910.

The Effect of Gravity upon the Movements and Aggregation of <i>Euglena viridis</i> , Ehrb., and other Micro-organisms. By Harold Wager, F.R.S. (Abstract).....	94
Some Investigations Dealing with the State of Aggregation of Matter. Parts I—III. By S. B. Schryver, D.Sc., Ph.D., Chemist to the Research Institute of the Cancer Hospital. Communicated by Prof. E. H. Starling, M.D., F.R.S.	96
On a Remarkable Pharetronid Sponge from Christmas Island. By R. Kirkpatrick. Communicated by S. F. Harmer, F.R.S. (Plates 10 and 11)	124

	PAGE
The Proteolytic Enzyme of Drosera. By Jean White, D.Sc., Victorian Government Research Scholar at Melbourne University. Communicated by D. H. Scott, F.R.S.	134
Further Results of the Experimental Treatment of Trypanosomiasis ; being a Progress Report to a Committee of the Royal Society. By H. G. Plimmer, F.R.S., W. B. Fry, Captain R.A.M.C., and H. S. Ranken, Lieutenant R.A.M.C.	140
The Oxidation of Phenol by Certain Bacteria in Pure Culture. By Gilbert J. Fowler, Edward Arden, and William T. Lockett. Communicated by Dr. A. Harden, F.R.S.	149
A Method for Isolating and Growing the Lepa Bacillus of Man. (Preliminary Note.) By F. W. Twort. Communicated by Leonard Hill, F.R.S.	156
Some Enumerative Studies on Malarial Fever. By Major Ronald Ross, F.R.S., and David Thomson, M.B., Ch.B., D.P.H.	159
On Hæmoglobin Metabolism in Malarial Fever. (Preliminary Note.) By G. C. E. Simpson, B.A., B.Sc., F.R.C.S. Communicated by Major R. Ross, F.R.S.	174

No. B 563.—January 24, 1911.

Trypanosome Diseases of Domestic Animals in Uganda. IV.— <i>Trypanosoma uniforme</i> , sp. nov. By Colonel Sir David Bruce, C.B., F.R.S., A.M.S. ; Captains A. E. Hamerton, D.S.O., and H. R. Bateman, R.A.M.C. ; and Captain F. P. Mackie, I.M.S. (Sleeping Sickness Commission of the Royal Society, Uganda, 1908–10). (Plate 12)	176
Trypanosome Diseases of Domestic Animals in Uganda. V.— <i>Trypanosoma nanum</i> (Laveran). By Colonel Sir David Bruce, C.B., F.R.S., A.M.S. ; Captains A. E. Hamerton, D.S.O., and H. R. Bateman, R.A.M.C. ; and Captain F. P. Mackie, I.M.S. (Sleeping Sickness Commission of the Royal Society, Uganda, 1908–10). (Plates 13 and 14)	180
A Case of Sleeping Sickness studied by Precise Enumerative Methods: Further Observations. By Major Ronald Ross, F.R.S., and David Thomson, M.B., Ch.B., D.P.H.	187
Enumerative Studies on <i>Trypanosoma gambiense</i> and <i>Trypanosoma rhodesiense</i> in Rats, Guinea-pigs, and Rabbits ; Periodic Variations disclosed. (Preliminary Note.) By H. B. Fantham, D.Sc., B.A., and J. G. Thomson, M.A., M.B., Ch.B. Communicated by Major R. Ross, C.B., F.R.S.	206
The Life-History of <i>Trypanosoma gambiense</i> and <i>Trypanosoma rhodesiense</i> as seen in Rats and Guinea-pigs. By H. B. Fantham, D.Sc. Lond., B.A. Cantab., A.R.C.S. Communicated by Prof. Major R. Ross, C.B., F.R.S. (Plate 15)	212
Experiments on the Treatment of Animals Infected with Trypanosomes, by means of Atoxyl, Vaccines, Cold, X-rays, and Leucocytic Extract ; Enumerative Methods Employed. (Preliminary Note.) By Prof. Major R. Ross, C.B., F.R.S., and J. G. Thomson, M.A., M.B., Ch.B.	227
Note upon the Examination, with Negative Results, of the Central Nervous System in a Case of Cured Human Trypanosomiasis. By Frederick W. Mott, M.D., F.R.S.	235

	PAGE
Auto-Agglutination of Red Blood Cells in Trypanosomiasis. By Warrington Yorke, M.D. Communicated by Major Ronald Ross, C.B., F.R.S.	238

No. B 564.—February 28, 1911.

Address of the President, Sir Archibald Geikie, K.C.B., at the Anniversary Meeting on November 30, 1910	259
The Action of <i>Bacillus lactis aërogenes</i> on Glucose and Mannitol. Part II.—The Investigation of the 2 : 3 Butanediol and the Acetylmethylcarbinol Formed ; the Effect of Free Oxygen on their Production ; the Action of <i>B. lactis aërogenes</i> on Fructose. By G. S. Walpole, B.Sc. (Melbourne). Communicated by Dr. A. Harden, F.R.S.	272
The Pharmacological Action of South African Boxwood (<i>Gonioma kamassi</i>). By W. E. Dixon. Communicated by Prof. J. N. Langley, F.R.S.	287
The Transformation of Proteins into Fats during the Ripening of Cheese. (Preliminary Communication.) By M. Nierenstein. Communicated by Dr. Leonard Hill, F.R.S.	301
The Action of X-Rays on the Developing Chick. By J. F. Gaskell, M.A., M.B. Cantab., M.R.C.P. Communicated by W. H. Gaskell, M.D., F.R.S.	305
Experiments to Ascertain if Antelope may Act as a Reservoir of the Virus of Sleeping Sickness (<i>Trypanosoma gambiense</i>). By Colonel Sir David Bruce, C.B., F.R.S., A.M.S. ; and Captains A. E. Hamerton, D.S.O., and H. R. Bateman, R.A.M.C. (Sleeping Sickness Commission of the Royal Society, Uganda, 1908-10)	311
Experiments to Ascertain if the Domestic Fowl of Uganda may Act as a Reservoir of the Virus of Sleeping Sickness (<i>Trypanosoma gambiense</i>). By Colonel Sir David Bruce, C.B., F.R.S., A.M.S. ; and Captains A. E. Hamerton, D.S.O., and H. R. Bateman, R.A.M.C. (Sleeping Sickness Commission of the Royal Society, Uganda, 1908-10)	328
A Summary of Further Experimental Researches on the Etiology of Endemic Goitre. (Second Series.) By Robert McCarrison, M.D., R.U.I., M.R.C.P. (Lond.), Captain I.M.S., Agency Surgeon, Gilgit. Communicated by Major Ronald Ross, C.B., F.R.S.....	335

No. B 565.—April 3, 1911.

Experiments to Investigate the Infectivity of <i>Glossina palpalis</i> Fed on Sleeping Sickness Patients under Treatment. By Colonel Sir David Bruce, C.B., F.R.S., A.M.S. ; Captains A. E. Hamerton, D.S.O., and H. R. Bateman, R.A.M.C. (Sleeping Sickness Commission of the Royal Society, Uganda, 1908-10) ; and Dr. R. van Someren, Uganda Medical Staff.....	338
Experiments to Ascertain if <i>Trypanosoma gambiense</i> during its Development within <i>Glossina palpalis</i> is Infective. By Colonel Sir David Bruce, C.B., F.R.S., A.M.S. ; Captains A. E. Hamerton, D.S.O., and H. R. Bateman, R.A.M.C. ; and Captain F. P. Mackie, I.M.S. (Sleeping Sickness Commission of the Royal Society, Uganda, 1908-10)	345

	PAGE
Experiments to Ascertain if Certain Tabanidæ Act as the Carriers of <i>Trypanosoma pecorum</i> . By Colonel Sir David Bruce, C.B., F.R.S., A.M.S., and Captains A. E. Hamerton, D.S.O., and H. R. Bateman, R.A.M.C. (Sleeping Sickness Commission of the Royal Society, 1908-10). (Plate 16)	349
Complement Deviation in Mouse Carcinoma. By J. O. Wakelin Barratt, M.D., D.Sc. Lond., Director of Cancer Research Laboratory, University of Liverpool (Mrs. Sutton Timmis Memorial). Communicated by Prof. C. S. Sherrington, F.R.S.	359
Experimental Researches on Vegetable Assimilation and Respiration. VIII.—A New Method for Estimating the Gaseous Exchanges of Submerged Plants. By F. Frost Blackman, D.Sc., F.R.S., Fellow of St. John's College, Cambridge, and Reader in Botany in the University; and A. M. Smith, M.A., formerly Senior Demonstrator in Botany in the University of Cambridge..	374
Experimental Researches on Vegetable Assimilation and Respiration. IX.—On Assimilation in Submerged Water-Plants, and its Relation to the Concentration of Carbon Dioxide and other Factors. By F. Frost Blackman, D.Sc., F.R.S., Fellow of St. John's College, Cambridge, and Reader in Botany in the University; and A. M. Smith, M.A., formerly Senior Demonstrator in Botany in the University of Cambridge	389
No. B 566.—May 8, 1911.	
Certain Physical and Physiological Properties of Stovaine and its Homologues. By V. H. Veley, F.R.S., and W. L. Symes	413
The Effect of some Local Anæsthetics on Nerve. By W. L. Symes and V. H. Veley, F.R.S.	421
Carbon Dioxide Output during Decerebrate Rigidity. (Preliminary Communication.) By H. E. Roaf, D.Sc., Liverpool, M.D. Toronto. Communicated by Prof. C. S. Sherrington, F.R.S.	433
Reversal of the Reflex Effect of an Afferent Nerve by Altering the Character of the Electrical Stimulus Applied. By C. S. Sherrington, F.R.S., and S. C. M. Sowton	435
Experimental Studies in Indian Cottons. By H. Martin Leake, M.A., Economic Botanist to the Government of the United Provinces of Agra and Oudh, India. Communicated by W. Bateson, F.R.S.	447
The Alcoholic Ferment of Yeast-juice. Part VI.—The Influence of Arsenates and Arsenites on the Fermentation of the Sugars by Yeast-juice. By Arthur Harden, F.R.S., and W. J. Young (Biochemical Laboratory, Lister Institute)... ..	451
Gametogenesis of the Gall-Fly, <i>Neuroterus lenticularis</i> .—Part II. By Leonard Doncaster, M.A., Fellow of King's College, Cambridge. Communicated by Prof. W. Bateson, F.R.S. (Plate 17).....	476
On the Leaves of Calamites (<i>Calamocladus</i> Section). By H. Hamshaw Thomas, M.A., Curator of the Botanical Museum, Cambridge. Communicated by A. C. Seward, F.R.S. (Abstract)	490

The Action of the Venom of <i>Echis carinatus</i> . By Sir Thomas R. Fraser, M.D., L.L.D., Sc.D., F.R.S., Professor of Materia Medica, University of Edinburgh ; and James A. Gunn, M.A., M.D., D.Sc., Assistant in the Materia Medica Department, University of Edinburgh. (Abstract)	491
---	-----

No. B 567.—May 31, 1911.

The Chemical Dynamics of Serum Reactions. By Captain A. G. McKendrick, I.M.S., Assistant Director, The Pasteur Institute of Southern India, Coonoor. Communicated by Sir James Dewar, F.R.S.	493
Further Researches on the Development of <i>Trypanosoma gambiense</i> in <i>Glossina palpalis</i> . By Colonel Sir David Bruce, C.B., F.R.S., A.M.S. ; Captains A. E. Hamerton, D.S.O., and H. R. Bateman, R.A.M.C. ; and Captain F. P. Mackie, I.M.S. (Sleeping Sickness Commission of the Royal Society, Uganda, 1908-10... ..	513
Preliminary Note on a Method of Measuring Colour-sensations by Intermittent Light, with Description of an Unfinished Apparatus for the Purpose. By George J. Burch, M.A., D.Sc. (Oxon), F.R.S.	528
Spontaneous Cancer in Mice. By M. Haaland, M.D., Imperial Cancer Research Fund. Communicated by Prof. J. Rose Bradford, Sec. R.S.	532
On Variation and Adaptation in Bacteria, Illustrated by Observations upon Streptococci, with Special Reference to the Value of Fermentation Tests as Applied to these Organisms. By E. W. Ainley Walker, M.A., D.M., Fellow and Tutor of University College, and Lecturer in Pathology in the University of Oxford. Communicated by Prof. Francis Gotch, F.R.S.	541

OBITUARY NOTICES OF FELLOWS DECEASED.

Harry Marshall Ward ; Harry Govier Seeley ; Robert Koch	i—xxiv
---	--------

Index	xxv
-------------	-----