

**BULLETIN**  
**OF**  
**ENTOMOLOGICAL RESEARCH**

**ISSUED BY THE IMPERIAL  
BUREAU OF ENTOMOLOGY.**

**EDITOR: THE DIRECTOR.**

---

**VOL. X.**

---

**LONDON**

**1919-1920.**

# IMPERIAL BUREAU OF ENTOMOLOGY.

## Honorary Committee of Management.

**VISCOUNT HARCOURT**, *Chairman.*

Lieutenant-Colonel A. W. ALCOCK, C.I.E., F.R.S., London School of Tropical Medicine.

Major E. E. AUSTEN, D.S.O., Entomological Department, British Museum (Natural History).

Dr. A. G. BAGSHAWE, C.M.G., Director, Tropical Diseases Bureau.

Major-General Sir J. ROSE BRADFORD, K.C.M.G., F.R.S., Secretary, Royal Society.

Major-General Sir DAVID BRUCE, K.C.B., F.R.S., Chairman, Governing Body, Lister Institute.

Mr. J. C. F. FRYER, Entomologist to the Ministry of Agriculture and Fisheries.

Sir SIDNEY F. HARMER, K.B.E., F.R.S., Director, British Museum (Natural History).

Professor H. MAXWELL LEFROY, Imperial College of Science and Technology.

Hon. E. LUCAS, Agent-General for South Australia.

Dr. R. STEWART MACDOUGALL, Lecturer on Agricultural Entomology, Edinburgh University.

Sir JOHN McFADYEAN, Principal, Royal Veterinary College, Camden Town.

Sir PATRICK MANSON, G.C.M.G., F.R.S., Late Medical Adviser to the Colonial Office.

Sir DANIEL MORRIS, K.C.M.G., Late Adviser to the Colonial Office in Tropical Agriculture.

Professor R. NEWSTEAD, F.R.S., Dutton Memorial Professor of Medical Entomology, Liverpool University.

Professor G. H. F. NUTTALL, F.R.S., Quick Professor of Protozoology, Cambridge.

Professor E. B. POULTON, F.R.S., Hope Professor of Zoology, Oxford.

Lieutenant-Colonel Sir DAVID PRAIN, C.M.G., C.I.E., F.R.S., Director, Royal Botanic Gardens, Kew.

Sir H. J. READ, K.C.M.G., C.B., Colonial Office.

The Honourable N. C. ROTHSCHILD.

Dr. HUGH SCOTT, Curator in Entomology, Museum of Zoology, Cambridge.

Sir ARTHUR E. SHIPLEY, G.B.E., F.R.S., Master of Christ's College, Cambridge.

Mr. R. A. C. SPERLING, C.M.G., Foreign Office.

Sir STEWART STOCKMAN, Chief Veterinary Officer, Ministry of Agriculture.

Mr. F. V. THEOBALD, Vice-Principal, South Eastern Agricultural College, Wye.

Mr. C. WARBURTON, Zoologist to the Royal Agricultural Society of England.  
The Chief Entomologist in each of the Self-governing Dominions is an *ex officio* member of the Committee.

**General Secretary.**

Mr. A. C. C. PARKINSON (Colonial Office).

**Director and Editor.**

Dr. GUY A. K. MARSHALL, C.M.G.

**Assistant Director.**

Dr. S. A. NEAVE.

*Head Office.*—British Museum (Natural History), Cromwell Road, London, S.W.7.

*Publication Office.*—88, Queen's Gate, London, S.W.7.

# CONTENTS.

## ORIGINAL ARTICLES.

	PAGE.
ADERS, W. MANSFIELD-	
Insects Injurious to Economic Plants in the Zanzibar Protectorate. . . .	145
Notes on the Identification of Anophelinae and their Larvae in the Zanzibar Protectorate. . . . .	329
AUSTEN, MAJOR E. E.	
A Contribution to Knowledge of the Tabanidae of Palestine. . . . .	277
BAKER, DR. A. C.	
<i>Neotoxoptera violae</i> , Theo., and its Allies. . . . .	45
BARRAUD, LIEUT. P. J.	
Notes on some Culicidae collected in Lower Mesopotamia. . . . .	323
BEZZI, PROF. M.	
A new Australian species of <i>Rioxa</i> with a remarkable Life-habit (Dipt. ; Trypaneidae). . . . .	1
Notes on the Ethiopian Fruit-flies of the Family Trypaneidae, other than <i>Dacus</i> —iii . . . . .	211
BRAIN, CHAS. K.	
The Coccidae of South Africa—iv. . . . .	95
CLEARE, L. D., JUNR.	
A useful Breeding Cage. . . . .	43
DISTANT, W. L.	
A new Lygaeid Bug found among Stored Rice in Java. . . . .	41
DUKE, DR. H. LYNDBURST.	
An Enquiry into the Relations of <i>Glossina morsitans</i> and Ungulate Game with special reference to Rinderpest. . . . .	7
EDWARDS, F. W.	
Mosquito Notes. . . . .	129
FISKE, W. F.	
Investigations into the Bionomics of <i>Glossina palpalis</i> . . . . .	347
INGRAM, DR. A.	
The Domestic-breeding Mosquitos of the Northern Territories of the Gold Coast. . . . .	47

(693) Wt.P2'154. 1,000. 9.20. B.&F.,Ltd. G11/14.

INGRAM, DR. A., & MACFIE, DR. J. W. S. The Early Stages of West African Mosquitos—iv.....	59
JACK, RUPERT W. Tsetse Fly in Southern Rhodesia, 1918.....	71
MACFIE, DR. J. W. S. The Chaetotaxy of the Pupa of <i>Stegomyia fasciata</i> .....	161
MACFIE, DR. J. W. S., & INGRAM, DR. A. The Early Stages of West African Mosquitos—iv.....	59
MACGREGOR, CAPT. M. E. On the Occurrence of <i>Stegomyia fasciata</i> in a Hole in a Beech Tree in Epping Forest.....	91
MARSHALL, DR. GUY A. K. Some injurious South African Weevils.....	273
MAULIK, S. A new Hispid Beetle injurious to the Oil Palm in the Gold Coast.....	171
MUIR, F. On some African Delphacidae (Homoptera).....	139
NEWSTEAD, ROBERT. Observations on Scale-Insects (Coccidae)—vi.....	175
STANTON, A. T. The Mosquitos of Far Eastern Ports with special reference to the Prevalence of <i>Stegomyia fasciata</i> , F. ....	333
TRÄGÅRDH, IVAR. On the Use of Experimental Plots when studying Forest Insects....	157
TURNER, R. E. On a New Mutillid Parasite of <i>Glossina morsitans</i> .....	327
VEITCH, ROBERT. Notes on the more important Insects in Sugar-cane Plantations in Fiji	21

---

### MISCELLANEOUS.

Collections received.....	93, 209, 345, 465
---------------------------	-------------------

## PLATES.

	PAGE.
I. Wings of <i>Neotoxoptera violae</i> and its allies.....	facing 46
II.—IV. Views of habitats of <i>Glossina morsitans</i> in S. Rhodesia ..	90
V.—XII. South African Coccidae.....	128
XIII.—XV. Views showing ravages of <i>Oryctes</i> in Coconut Palm..	156
XVI. Scale-Insects.....	208
XVII.—XVIII. Wings of Trypetidae.....	272
XIX. Injurious South African Curculionidae.....	276

## MAPS.

	PAGE.
Chart of Experiment on <i>Glossina</i> .....	to face 17
Charts showing density of <i>Glossina</i> in Uganda.....	372, 388, 411, 423, 458
Map showing increase of <i>G. morsitans</i> in Sebungwe District.....	to face 90
Map of Southern Rhodesia.....	90
The Suri-suri Fly Belt.....	90



**X.**

**ILLUSTRATIONS IN THE TEXT.**

Map of Northern Territories, Gold Coast	..	..	..	..	..	48
Map of experimental plot in pine forest, Sweden	..	..	..	..	..	158
Diagram showing distribution of pine pests	..	..	..	..	..	159
Cephalo-thorax of pupa of <i>Stegomyia fasciata</i>	..	..	..	..	..	163
Abdomen of pupa of <i>Stegomyia fasciata</i>	..	..	..	..	..	165, 168
<i>Coelaenomenodera elaeidis</i> , Maulik, sp. n., 172; larva	..	..	..	..	..	173, 174
<i>Aspidoproctus gowdeyi</i> , Newst., sp. n., ♂ genital armature	..	..	..	..	..	177
<i>Aspidiotus longispina</i> , Morgan, ♀ puparium	..	..	..	..	..	194
Head of :—						
<i>Chrysops punctifera</i> , Lw., ♀	..	..	..	..	..	279
<i>Haemalopota sewelli</i> , Austen, sp. n., ♂; wing of ♀	..	..	..	..	..	283
„ <i>minuscularia</i> , Aust., sp. n.	..	..	..	..	..	286
„ <i>minuscula</i> , Aust., sp. n.	..	..	..	..	..	286
„ <i>innominata</i> , Aust., sp. n.	..	..	..	..	..	286
<i>Tabanus alexandrinus</i> , Wied., ♀	..	..	..	..	..	298
„ <i>insecutor</i> , Aust., sp. n., ♀	..	..	..	..	..	298
„ <i>rupinae</i> , Aust., sp. n., ♂ ♀, 304; imago, ♀	..	..	..	..	..	303
„ <i>arenivagus</i> , Aust., sp. n., ♂ ♀, 308; imago, ♀	..	..	..	..	..	306
„ <i>accensus</i> , Aust., sp. n., ♂, 311; imago, ♀	..	..	..	..	..	310
„ <i>leleani</i> , Aust., sp. n., ♂ ♀, 315; imago, ♀	..	..	..	..	..	312
„ <i>pallidipes</i> , Aust., sp. n., ♀, and imago	..	..	..	..	..	318
„ <i>dalei</i> , Aust., sp. n., ♂, 319; wing	..	..	..	..	..	320
<i>Mutilla auxiliaris</i> , Turner, sp. n., ♀ ♂	..	..	..	..	..	327
<i>Anopheles funestus</i> , thorax of larva, plumose hair enlarged	..	..	..	..	..	330
Sketch-map of the Kome-Damba Group of the Sesse Islands	..	..	..	..	..	352
Charts re <i>Glossina</i> on islands and shores of Victoria Nyanza	370,	371,	429,	431,	445	

## ERRATA.

Page	20,	line	42,	for	Sleep	read	Sleeping
"	35,	"	8,	"	Ward	"	world
"	135,	fig.	1,	"	ame	"	same
"	140,	"	1,	"	<i>Dicranotropis</i>	"	<i>Delphacodes</i>
"	147,	line	34,	"	<i>Rhyncophorus</i>	"	<i>Rhynchophorus</i>
"	151,	"	12,	"	<i>Cylas</i>	"	<i>Cylas</i>
"	183,	"	5,	"	of facies	"	facies of
"	200,	"	11,	"	n	"	in
"	253,	"	35,	"	perpicillaris	"	perspicillaris
"	321,	"	5,	"	V	"	M
"	465,	"	42,	"	Jawaera	"	Goldberg
Page	64,	line	15,	for	" 6 mm."	read	" 0.6 mm."
"	66,	"	29,	Transpose	" 8-9 hairs" and " 5-7 hairs "		
"	69,	fig.	7,	The upper enlarged	pecten spine should		
					bear no secondary spines.		
"	161,	line	7,	For	" Circum-ocular "	read	" Post-ocular "
"	"	"	28,	"	"	"	"
"	"	"	29,	"	" Posterior "	"	" Median "
"	"	"	31,	"	" Anterior "	"	" Lower anterior "
"	"	"	32,	"	" Superior "	"	" Upper anterior "
"	"	"	33,	"	" Antero-inferior "	"	" Lower posterior "
"	"	"	34,	"	" Postero-inferior "	"	" Upper posterior "
"	164,	"	36,	After	" these setae " insert	"	" (previously referred
					to as the inner lateral row.—Bull. Ent. Res.		x, p. 59.) "
"	"	"	41,	After	" these setae " insert	"	" (previously referred
					to as the outer lateral row.—Bull. Ent. Res.		x, p. 59.) "
"	167,	"	19,	For	" seta single "	read	" seta ; single "
"	"	"	30,	"	" (P) "	"	" (P <sup>1</sup> ) "