

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

**VOL. 63**

**ISSUED BY THE COMMONWEALTH  
INSTITUTE OF ENTOMOLOGY**

**EDITOR: THE DIRECTOR**



**LONDON**

**COMMONWEALTH INSTITUTE OF ENTOMOLOGY  
56, QUEEN'S GATE, S.W.7**

**1974**

# Commonwealth Agricultural Bureaux

## EXECUTIVE COUNCIL

R. D. CROLL, <i>Chairman</i>	Australia
T. N. TANDON, <i>Vice-Chairman</i>	India
G. M. P. MYERS, M.Sc.	United Kingdom
J. W. GREENWOOD	Canada
V. ARMSTRONG, Ph.D.	New Zealand
P. M. D. FERNANDO	Sri Lanka
Mrs. A. Y. AGGREY-ORLEANS	Ghana
M. SANI	Malaysia
<i>To be nominated</i>	Nigeria
<i>To be nominated</i>	Cyprus
H.E. THE HIGH COMMISSIONER	Sierra Leone
<i>To be nominated</i>	Tanzania
THE DEPUTY HIGH COMMISSIONER	Jamaica
P. HEZEKIAH	Trinidad and Tobago
N. K. IRUMBA	Uganda
H.E. THE HIGH COMMISSIONER	Kenya
M. V. PHIRI	Malawi
<i>To be nominated</i>	Zambia
B. A. BALDEH	The Gambia
R. E. CHANDISINGH	Guyana
H.E. THE HIGH COMMISSIONER	Botswana
THE DEPUTY HIGH COMMISSIONER	Barbados
B. APPADOO	Mauritius
R. M. MOTSA	Swaziland
K. R. BAIN	Fiji
Q. A. M. A. RAHIM	Bangladesh
H.E. THE HIGH COMMISSIONER	Bahamas
D. M. KITCHING	Dependent Territories
D. G. THOMAS, Secretary, Commonwealth Scientific Committee ( <i>Observer</i> )	
E. A. RUNACRES, <i>Secretary</i>	} Farnham House, Farnham Royal, Slough SL2 3BN
N. G. JONES, D.F.C., <i>Assistant Secretary</i>	

## COMMONWEALTH INSTITUTE OF ENTOMOLOGY

### Director and Editor

R. G. FENNAH, M.A., Sc.D.

### Assistant Director

A. H. PARKER, M.Sc., Ph.D.

### Assistant Editor

J. R. METCALFE, M.A., Ph.D.

*Headquarters, Publication Office and Library*—56, Queen's Gate, London SW7 5JR

*Identification Service*—c/o British Museum (Natural History), Cromwell Road,  
London SW7 5BD

© Commonwealth Agricultural Bureaux, 1974

All rights reserved. No part of this publication may be reproduced, in any form or by any means, electronically, mechanically, by photocopying, recording or otherwise, without the prior permission of the copyright owner.

# CONTENTS

## PART 1 AUGUST 1973

	PAGE
CRITCHLEY, B. R. & ALMEIDA, A. A. Side effects of solvents, especially acetone, used for the application of juvenile hormone mimics and chemosterilants ..	1
GELBIČ, I. & SEHNAL, F. Effects of juvenile hormone mimics on the codling moth <i>Cydia pomonella</i> (L.) (Lep., Olethreutidae) .. .. .	7
KANGWAGYE, T. N. Diurnal and nocturnal biting activity of flies (Diptera) in western Uganda .. .. .	17
THOMPSON, R. T. Preliminary studies on the taxonomy and distribution of the melon weevil, <i>Acythopeus curvirostris</i> (Boheman) (including <i>Baris granulipennis</i> (Tournier)) (Coleoptera, Curculionidae) .. .. .	31
SWAN, D. I. Evaluation of biological control of the oak leaf-miner <i>Phyllonorycter messaniella</i> (Zell.) (Lep., Gracillariidae) in New Zealand .. .. .	49
BRADLEY, J. D., CARTER, D. J., SANKARAN, T. & NARAYANAN, E. A new species of <i>Mompha</i> Hübner (Lepidoptera, Momphidae) from Assam, N.E. India, a potential agent for biological control of <i>Ludwigia adscendens</i> .. .. .	57
WHITE, G. B. Comparative studies on sibling species of the <i>Anopheles gambiae</i> Giles complex (Dipt., Culicidae). III. The distribution, ecology, behaviour and vectorial importance of species D in Bwamba County, Uganda, with an analysis of biological, ecological, morphological and cytogenetical relationships of Ugandan species D .. .. .	65
ROXBURGH, N. A. & SHANAHAN, G. J. A method for the detection and measurement of insecticide resistance in larvae of <i>Lucilia cuprina</i> (Wied.) (Dipt., Calliphoridae) .. .. .	99
DAVIES, L. & ROBERTS, D. M. A net and a catch-segregating apparatus mounted in a motor vehicle for field studies on flight activity of Simuliidae and other insects .. .. .	103
BOWDEN, JOHN. The influence of moonlight on catches of insects in light-traps in Africa. Part I. The moon and moonlight .. .. .	113
BOWDEN, J. & CHURCH, B. M. The influence of moonlight on catches of insects in light-traps in Africa. Part II. The effect of moon phase on light-trap catches .. .. .	129
HOLLIS, DAVID. African gall bugs of the genus <i>Phytolyma</i> (Hemiptera, Psylloidea)	143
BRANAGAN, DENIS. The developmental periods of the Ixodid tick <i>Rhipicephalus appendiculatus</i> Neum. under laboratory conditions .. .. .	155

## PART 2 DECEMBER 1973

NIXON, G. E. J. A revision of the north-western European species of the <i>vitripennis</i> , <i>pallipes</i> , <i>octonarius</i> , <i>triangulator</i> , <i>fraternus</i> , <i>formosus</i> , <i>parasitellae</i> , <i>metacarpalis</i> and <i>circumscriptus</i> -groups of <i>Apanteles</i> Förster (Hymenoptera, Braconidae) .. .. .	169
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----

CONTENTS

	PAGE
MOLOO, S. K. A new trap for <i>Glossina pallidipes</i> Aust. and <i>G. fuscipes</i> Newst. (Dipt., Glossinidae) .. .. .	231
PLAUT, H. N. On the biology of <i>Paropta paradoxus</i> (H.-S.) (Lep., Cossidae) on grapevine in Israel .. .. .	237
BRADY, J. Changes in the probing responsiveness of starving tsetse flies ( <i>Glossina morsitans</i> Westw.) (Diptera, Glossinidae) .. .. .	247
SAKAI, R. K., IQBAL, M. P., BAKER, R. H. & TAHIR, M. K. An alcohol dehydrogenase in the mosquito <i>Culex tritaeniorhynchus</i> Giles (Dipt., Culicidae)	257
LEWIS, T. & PHILLIPS, F. T. Aerial baiting to control leaf-cutting ants (Formicidae, Attini) in Trinidad. I. The bait, its production, and the effects of weathering on attractiveness and persistence of toxicants .. .. .	263
LEWIS, T. Aerial baiting to control leaf-cutting ants (Formicidae, Attini) in Trinidad. II. Field application, nest mortality and the effect on other animals .. .. .	275
LEWIS, T. & NORTON, G. A. Aerial baiting to control leaf-cutting ants (Formicidae, Attini) in Trinidad. III. Economic implications .. .. .	289
HARRIS, K. M. Aphidophagous Cecidomyiidae (Diptera): taxonomy, biology and assessments of field populations .. .. .	305
DE KRUIJFF, H. A. M., WOODALL, J. P. & TANG, A. T. The influence of accumulated rainfall and its pattern on mosquito (Diptera) populations in Brazil ..	327
BELLAMY, R. E. & CORBET, P. S. Combined autogenous and anautogenous ovarian development in individual <i>Culex tarsalis</i> Coq. (Dipt., Culicidae) .. ..	335
SERVICE, M. W. The biology of <i>Anopheles claviger</i> (Mg.) (Dipt., Culicidae) in southern England .. .. .	347

PART 3 MARCH 1974

**Review article**

JORDAN, A. M. Recent developments in the ecology and methods of control of tsetse flies ( <i>Glossina</i> spp.) (Dipt., Glossinidae)—a review .. .. .	361
-------------------------------------------------------------------------------------------------------------------------------------------------------	-----

**Original articles**

DEAN, G. J. Effect of temperature on the cereal aphids <i>Metopolophium dirhodum</i> (Wlk.), <i>Rhopalosiphum padi</i> (L.) and <i>Macrosiphum avenae</i> (F.) (Hem., Aphididae) .. .. .	401
DEAN, G. J. Effects of parasites and predators on the cereal aphids <i>Metopolophium dirhodum</i> (Wlk.) and <i>Macrosiphum avenae</i> (F.) (Hem., Aphididae)	411
BONIN, W. & HILGNER, W. A new procedure and counting instrument for acaricide tests .. .. .	423
GHAURI, M. S. K. The <i>solana</i> -group of <i>Empoasca</i> Walsh (Homoptera, Cicadelloidea): its generic status and a new species from pawpaw .. .. .	425
BENJAMIN, D. M. & DEMBA, W. M. The bionomics of <i>Entypotrachelus meyeri meyeri</i> Kolbe and <i>E. m. micans</i> Hust. (Col., Curculionidae) on tea in East Africa .. .. .	431
BRADY, J. The pattern of spontaneous activity in the tsetse fly <i>Glossina morsitans</i> Westw. (Dipt., Glossinidae) at low temperatures .. .. .	441

CONTENTS

PAGE

BEDFORD, G. O. Descriptions of the larvae of some rhinoceros beetles (Col., Scarabaeidae, Dynastinae) associated with coconut palms in New Guinea	445
STERNLICHT, M. Field and laboratory studies on sexual attractiveness of females of <i>Prays citri</i> (Mill.) (Lep., Yponomeutidae) .. .. .	473
FOSTER, W. A. Surgical inhibition of ovulation and gestation in the tsetse fly <i>Glossina austeni</i> Newst. (Dipt., Glossinidae) .. .. .	483
BAKER, C. R. B. & MILLER, G. W. Some effects of temperature and larval food on the development of <i>Spodoptera littoralis</i> (Boisd.) (Lep., Noctuidae) ..	495
USUA, E. J. Observations on the physiology of diapause and non-diapause larvae of <i>Busseola fusca</i> (Fuller) (Lep., Noctuidae) .. .. .	513
ROBINSON, S. W. & CHERRETT, J. M. Laboratory investigations to evaluate the possible use of brood pheromones of the leaf-cutting ant <i>Atta cephalotes</i> (L.) (Formicidae, Attini) as a component in an attractive bait .. ..	519
GHAURI, M. S. K. Two new species of <i>Exitianus</i> Ball (Homoptera, Cicadelloidea, Euscelidae) related to <i>E. turneri</i> Ross, one infesting rice in Ghana ..	531

PART 4 JUNE 1974

KANGWAGYE, T. N. The seasonal incidence of biting flies (Diptera) in Rwenzori National Park and Kigezi Game Reserve, Uganda .. .. .	535
GHAURI, M. S. K. New genera and species of Cicadelloidea (Homoptera, Auchenorrhyncha) from economic plants in India .. .. .	551
STERNLICHT, M. & GRIFFITHS, D. A. The emission and form of spermatophores and the fine structure of adult <i>Eriophyes sheldoni</i> Ewing (Acarina, Eriophyoidea) .. .. .	561
SHANAHAN, G. J. & ROXBURGH, N. A. Effect of diazinon selection upon two organophosphorus-resistant field strains of <i>Lucilia cuprina</i> (Wied.) (Diptera, Calliphoridae) .. .. .	567
GILLIES, M. T. & WILKES, T. J. The range of attraction of birds as baits for some West African mosquitoes (Diptera, Culicidae) .. .. .	573
TAYLOR, L. R. & FRENCH, R. A. Effects of light-trap design and illumination on samples of moths in an English woodland .. .. .	583
BLACKMAN, R. L. Life-cycle variation of <i>Myzus persicae</i> (Sulz.) (Hom., Aphididae) in different parts of the world, in relation to genotype and environment	595
PEREGRINE, D. J. & CHERRETT, J. M. A field comparison of the modes of action of aldrin and mirex for controlling colonies of the leaf-cutting ants <i>Atta cephalotes</i> (L.) and <i>Acromyrmex octospinosus</i> (Reich) (Formicidae, Attini) .. .. .	609
NORTON, G. A. & EVANS, D. E. The economics of controlling froghopper ( <i>Aeneolamia varia saccharina</i> (Dist.) Hom., Cercopidae) on sugar-cane in Trinidad .. .. .	619
KERRICH, G. J. Systematic studies on Eulophidae of economic significance (Hymenoptera, Chalcidoidea) .. .. .	629
WYLIE, F. R. Descriptions of the stages of <i>Milionia isodoxa</i> Prout (Lepidoptera, Geometridae), a defoliator of hoop pine in Papua New Guinea .. ..	641

CONTENTS

	PAGE
WYLIE, F. R. The distribution and life-history of <i>Milionia isodoxa</i> Prout (Lepidoptera, Geometridae), a pest of planted hoop pine in Papua New Guinea	649
FINCH, S. Feeding and associated behaviour of the adult cabbage root fly <i>Erioeschia brassicae</i> (Bch.) (Dipt., Anthomyiidae) under laboratory conditions	661
FENNAH, R. G. A new Tropicuchid (Homoptera, Fulgoroidea) infesting <i>Chamaedorea</i> (Palmaceae)	673
INDEX OF AUTHORS	677
INDEX OF GENERA AND SPECIES	681

DATES OF PUBLICATION IN PARTS

PART 1, pp. 1-168	14 September 1973
PART 2, pp. 169-360	31 December 1973
PART 3, pp. 361-534	4 March 1974
PART 4, pp. 535-698	10 June 1974