

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

VOL. 60

ISSUED BY THE COMMONWEALTH  
INSTITUTE OF ENTOMOLOGY

EDITOR : THE DIRECTOR



LONDON

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

1971

# Commonwealth Agricultural Bureaux

## EXECUTIVE COUNCIL

V. ARMSTRONG, Ph.D., <i>Chairman</i>	New Zealand
E. S. KAPOTWE, <i>Vice-Chairman</i>	Zambia
D. J. PARKINSON, O.B.E.	United Kingdom
J. L. ORR	Canada
E. J. HALLSWORTH, D.Sc.	Australia
A. J. KIDWAI	India
T. A. KHAN	Pakistan
A. NESARATNAM	Ceylon
J. A. BROBBEY	Ghana
Mrs. A. Z. ABIDIN	Malaysia
U. K. BELLO	Nigeria
<i>To be appointed</i>	Cyprus
H.E. THE HIGH COMMISSIONER	Sierra Leone
<i>To be appointed</i>	Tanzania
THE DEPUTY HIGH COMMISSIONER	Jamaica
Mrs. L. S. DORSET	Trinidad and Tobago
<i>To be appointed</i>	Uganda
H.E. THE HIGH COMMISSIONER	Kenya
W. D. SIMFUKWE	Malawi
O. A. SALLAH	The Gambia
R. E. CHANDISINGH	Guyana
H.E. THE HIGH COMMISSIONER	Botswana
THE DEPUTY HIGH COMMISSIONER	Barbados
I. D. RAMTOHUL	Mauritius
E. E. KUNENE	Swaziland
D. M. KITCHING	Dependent Territories
Dr. R. GLEN, Secretary, Commonwealth Scientific Committee ( <i>Observer</i> )	
Sir THOMAS SCRIVENOR, C.M.G., <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, Sc.D., M.A.

### 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

# CONTENTS

## PART 1 AUGUST 1970

	PAGE
WILSON, F. A proposal for the development of a world-wide biological control organisation .. .. .	1
AHMAD, R. Studies in West Pakistan on the biology of one Nitidulid species and two Coccinellid species (Coleoptera) that attack scale insects (Hom., Coccoidea) .. .. .	5
HADAWAY, A. B., BARLOW, F. & TURNER, C. R. The effect of particle size on the contact toxicity of insecticides to adult mosquitoes, <i>Anopheles stephensi</i> List. .. .. .	17
TOYE, S. A. Studies on the humidity and temperature reactions of <i>Dermestes maculatus</i> Deg. (Col., Dermestidae), with reference to infestation in dried fish in Nigeria .. .. .	23
GREATHEAD, D. J. A study of the host relations of <i>Halictophagus pontifex</i> Fox (Strepsiptera), a parasite of Cercopidae (Hem., Aphrophorinae), in Uganda	33
SNOW, W. F. The effect of a reduction in expired carbon dioxide on the attractiveness of human subjects to mosquitoes .. .. .	43
STELZER, M. J. Preliminary studies on the control of the coconut stick insect, <i>Graeffea crouanii</i> (Le Guillou), with systemic insecticides .. .. .	49
COAKER, T. H. & SMITH, J. L. Sterilisation of the cabbage root fly ( <i>Erioischia brassicae</i> (Bch.)) (Dipt., Anthomyiidae) with tepa: laboratory and field cage tests .. .. .	53
WILLIAMS, J. R. Studies on the biology, ecology and economic importance of the sugar-cane scale insect, <i>Aulacaspis tegalensis</i> (Zhnt.) (Diaspididae), in Mauritius .. .. .	61
HILL, D. S. A new species of <i>Hispaniella</i> Mercet (Hym., Aphelinidae) from Diaspid scales in Uganda .. .. .	97
GHAURI, M. S. K. Two new species of <i>Cyrtorhinus</i> Fieber (Hem.-Het., Miridae) from East Africa and Madagascar .. .. .	101
SERVICE, M. W. Ecological notes on species A and B of the <i>Anopheles gambiae</i> complex in the Kisumu area of Kenya .. .. .	105
WILLIAMS, D. J. The mealybugs (Homoptera, Coccoidea, Pseudococcidae) of sugar-cane, rice and sorghum .. .. .	109

## PART 2 DECEMBER 1970

BOORMAN, J. & GODDARD, P. Observations on the biology of <i>Culicoides impunctatus</i> Goetgh. (Dipt., Ceratopogonidae) in southern England ..	189
JONES, M. G. Observations on feeding and egg development of the wheat bulb fly <i>Leptohylemyia coarctata</i> (Fall.) .. .. .	199

CONTENTS

	PAGE
LEWIS, D. J., LAINSON, R. & SHAW, J. J. Determination of parous rates in Phlebotomine sandflies with special reference to Amazonian species ..	209
TARIMO, C. S., LEE, C. W., PARKER, J. D. & MATECHI, H. T. Aircraft applications of insecticides in East Africa. XIX. A comparison of two sampling techniques for assessing the effectiveness of pyrethrum applications on <i>Glossina pallidipes</i> Aust. .. .. .	221
GILLIES, M. T. & WILKES, T. J. The range of attraction of single baits for some West African mosquitoes .. .. .	225
ANNECKE, D. P. & INSLEY, H. P. New and little known species of <i>Azotus</i> Howard, <i>Ablerus</i> Howard and <i>Physcus</i> Howard (Hym., Aphelinidae) from Africa and Mauritius .. .. .	237
MACLEOD, J. Tick infestation patterns in the southern province of Zambia ..	253
SURTEES, G. Studies on water movement and dispersion of mosquito larvae, with special reference to control in rice fields .. .. .	275
LESTON, D. The identity and pest potential of <i>Oxycarenus</i> spp. (Hem., Lygaeidae) in Ghana .. .. .	285
WALKER, T. F. Studies on effects of sublethal doses of p,p'DDT on oogenesis in the house-fly ( <i>Musca domestica</i> L.) and on possible causes of abnormal oogenesis .. .. .	291
WHITE, E. G. A self-checking coding technique for mark-recapture studies ..	303
METCALFE, J. R. Studies on the effect of the nutrient status of sugar-cane on the fecundity of <i>Saccharosydne saccharivora</i> (Westw.) (Hom., Delphacidae)	309
KERRICH, G. J. On the taxonomy of some African Eulophidae (Hym., Chalcidoidea) associated with oil palm, coffee and mango .. .. .	327
JORDAN, A. M., NASH, T. A. M. & TREWERN, M. A. The performance of crosses between wild and laboratory-bred <i>Glossina morsitans orientalis</i> Vanderplank .. .. .	333
REYNOLDS, D. G. Laboratory studies of the microsporidian <i>Plistophora culicis</i> (Weiser) infecting <i>Culex pipiens fatigans</i> Wied. .. .. .	339

PART 3 FEBRUARY 1971

LANGLEY, P. A. The respiratory metabolism of tsetse fly puparia in relation to fat consumption .. .. .	351
SELMAN, I. W. & KANDIAH, U. Influence of gibberellic acid and nitrogen sprays on transmission of cabbage black ringspot virus by <i>Myzus persicae</i> (Sulz.) .. .. .	359
HODJAT, S. H. Effects of sublethal doses of insecticides and of diet and crowding on <i>Dysdercus fasciatus</i> Sign. (Hem., Pyrrhocoridae) .. .. .	367
HARRIS, K. M. X-ray detection of <i>Contarinia sorghicola</i> (Coq.) larvae and pupae in sorghum spikelets .. .. .	379
HOGAN, T. W. An evaluation of a genetic method for population suppression of <i>Teleogryllus commodus</i> (Wlk.) (Orth., Gryllidae) in Victoria .. .. .	383

CONTENTS

	PAGE
<b>STERNLICHT, M. &amp; GOLDENBERG, S.</b> Fertilisation, sex ratio and postembryonic stages of the citrus bud mite <i>Aceria sheldoni</i> (Ewing) (Acarina, Eriophyidae) .. .. .	391
<b>DAVIES, J. B.</b> Laboratory and field trials to determine the modes of action of malathion and diesel oil against <i>Culicoides furens</i> (Poey) (Dipt., Ceratopogonidae) .. .. .	399
<b>SOUTHGATE, B. J.</b> On the identity of <i>Caryedon pallidus</i> (Olivier) (Col., Bruchidae), and the description of two new <i>Caryedon</i> spp. .. .. .	409
<b>ATKINSON, P. R.</b> A study of the breeding distribution of <i>Glossina morsitans</i> Westw. in northern Botswana .. .. .	415
<b>LINLEY, J. R. &amp; ADAMS, G. M.</b> Form and function of the spermatophore in <i>Culicoides melleus</i> (Coq.) (Dipt., Ceratopogonidae) .. .. .	427
<b>SAUNDERS, D. S.</b> Reproductive abnormalities in the tsetse fly, <i>Glossina morsitans orientalis</i> Vanderplank, caused by a maternally acting toxicant in rabbit food .. .. .	431
<b>KOK, M. L.</b> Laboratory studies on the life-history of <i>Valangra nigricornis nigricornis</i> (Burm.) (Orth., Acrididae) .. .. .	439
<b>WILLIAMS, D. J.</b> On the taxonomy of two Diaspididae (Homoptera, Coccoidea) from Hong Kong .. .. .	447
<b>WILLIAMS, D. J.</b> A new species of <i>Abgrallaspis</i> Balachowsky (Homoptera, Coccoidea, Diaspididae) from a nursery in England causing leaf-spotting on orchids .. .. .	453
<b>KANDIAH, U. &amp; SELMAN, I. W.</b> Conditions for the experimental transmission of cabbage black ringspot virus by <i>Myzus persicae</i> (Sulz.) to turnip ( <i>Brassica rapa</i> ) .. .. .	457
<b>GREATHEAD, D. J.</b> A new species of <i>Melanagromyza</i> Hendel (Dipt., Agromyziidae) from pods of the bonavist bean ( <i>Dolichos lablab</i> ) in Uganda .. .. .	463
<b>MADDEN, J. L.</b> Some treatments which render Monterey pine ( <i>Pinus radiata</i> ) attractive to the wood wasp <i>Sirex noctilio</i> F. .. .. .	467
<b>NJOGU, A. R. &amp; KINOTI, G. K.</b> Observations on the breeding sites of mosquitoes in Lake Manyara, a saline lake in the East African Rift Valley .. .. .	473
<b>GHAURI, M. S. K.</b> Revision of the genus <i>Nephotettix</i> Matsumura (Homoptera: Cicadelloidea: Euscelidae) based on the type material .. .. .	481
<b>LAMBRECHT, F. L.</b> Notes on the ecology of Seychelles mosquitoes .. .. .	513

PART 4 JUNE 1971

<b>BLACKMAN, R. L.</b> Variation in the photoperiodic response within natural populations of <i>Myzus persicae</i> (Sulz.) .. .. .	533
<b>MOUND, L. A.</b> The feeding apparatus of thrips .. .. .	547
<b>KHAMALA, C. P. M.</b> Ecological distribution of East African <i>Culicoides</i> Latreille (Dipt., Ceratopogonidae) as shown by light-traps .. .. .	549

CONTENTS

	PAGE
BROUGHTON, W. B. & HARRIS, K. M. First recording of the sound produced by the black citrus aphid, <i>Toxoptera aurantii</i> (Boy.) .. .. .	559
METCALFE, J. R. Observations on the ecology of <i>Saccharosydne saccharivora</i> (Westw.) (Hom., Delphacidae) in Jamaican sugar-cane fields .. .. .	565
LOWE, H. J. B. Relationship of the movements of aphids over the host-plant to their spatial distribution .. .. .	599
TYNDALE-BISCOE, M. Protein-feeding by the males of the Australian bushfly <i>Musca vetustissima</i> Wlk. in relation to mating performance .. .. .	607
HUDSON, J. E. Assessment of methoxy-DDT as a residual spray against mosquitoes in verandah-trap huts at Magugu, Tanzania .. .. .	615
GHAURI, M. S. K. A remarkable new species of <i>Cicadulina</i> China (Hom., Cicadelloidea) from East Africa .. .. .	631
GHAURI, M. S. K. Two new species of the genus <i>Ketumala</i> Distant (Hom., Flatidae), one attacking tea in South India .. .. .	635
SERVICE, M. W. Flight periodicities and vertical distribution of <i>Aedes cantans</i> (Mg.), <i>Ae. geniculatus</i> (Ol.), <i>Anopheles plumbeus</i> Steph. and <i>Culex pipiens</i> L. (Dipt., Culicidae) in southern England .. .. .	639
SERVICE, M. W. Feeding behaviour and host preferences of British mosquitoes ..	653
POLLOCK, J. N. Sterility and the mated status test in tepa-treated male sheep blowflies, <i>Lucilia sericata</i> (Mg.) (Dipt., Calliphoridae) .. .. .	663
POLLOCK, J. N. An experimentally tested model of the cumulative mating frequency curve for <i>Lucilia sericata</i> (Mg.) (Dipt., Calliphoridae) .. .. .	671
SNOW, W. F. The spectral sensitivity of <i>Aedes aegypti</i> (L.) at oviposition .. .. .	683
INDEX OF AUTHORS .. .. .	697
INDEX OF GENERA AND SPECIES .. .. .	701

DATES OF PUBLICATION IN PARTS

PART 1, pp. 1-188 .. .. .	31 August 1970
PART 2, pp. 189-349 .. .. .	7 December 1970
PART 3, pp. 351-532 .. .. .	19 February 1971
PART 4, pp. 533-714 .. .. .	30 June 1971