

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

ISSUED BY THE COMMONWEALTH  
INSTITUTE OF ENTOMOLOGY

EDITOR : THE DIRECTOR

---

VOL. 54  
(1963)

---

LONDON :  
COMMONWEALTH INSTITUTE OF ENTOMOLOGY,  
56, QUEEN'S GATE, S.W.7  
1964

# Commonwealth Agricultural Bureaux

---

## EXECUTIVE COUNCIL

---

W. G. ALEXANDER, C.B.E., *Chairman*, United Kingdom

J. B. MARSHALL, Ph.D., *Vice-Chairman*, Canada

W. HARTLEY, Australia

V. ARMSTRONG, Ph.D., New Zealand

A. M. D'ROZARIO, Ph.D., India

C. KEMAL REHEEM, Pakistan

H. E. SENEVIRATNE, Ceylon

J. A. AFARI, Ghana

TOH CHOR KEAT, Malaysia

G. A. FALASE, Federation of Nigeria

H.E. THE HIGH COMMISSIONER, Sierra Leone

G. M. NHIGULA, Tanganyika

C. S. McMORRIS, Jamaica

E. MURRAY, Trinidad and Tobago

M. KAGGWA, Uganda

J. E. C. COVENTRY, Southern Rhodesia

W. A. C. MATHIESON, C.M.G., M.B.E., Dependent Territories

SIR THOMAS SCRIVENOR, C.M.G., *Secretary*, Farnham House, Farnham Royal,  
Slough, Bucks

E. L. HAY, O.B.E., *Assistant Secretary*

---

## COMMONWEALTH INSTITUTE OF ENTOMOLOGY

---

### Director and Editor

E. O. PEARSON, M.A.

### Assistant Director

R. G. FENNAH, M.A.

### Assistant Editor

W. RUTTLEDGE, M.A.

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

*Publication Office and Library*—56, Queen's Gate, London, S.W.7

# CONTENTS

---

	PAGE
AITCHISON, P. J. (see MACLENNAN, K. J. R.)	
AITKEN, A. D.	
A key to the larvae of some species of Phycitinae (Lepidoptera, Pyralidae) associated with stored products, and of some related species	175
BALDRY, D. A. T.	
An evaluation by bioassay of the persistence of DDT deposits on riverine vegetation in the Northern Guinea Savannah vegetation zone of Nigeria and observations on the factors influencing the availability of deposits to <i>Glossina palpalis</i> (R.-D.)	497
BARLOW, F. (see HADAWAY, A. B.)	
BELL, J. D. (see BUSVINE, J. R.)	
BRAITHWAITE, B. M. & JANE, A.	
Problems in assessing insecticidal control of <i>Amnemus</i> species (Coleoptera, Curculionidae) in clover pastures of north coastal New South Wales	523
BRIGGS, J. B. & TEW, R. P.	
Control of ground beetles (Col., Carabidae) attacking strawberry fruits	83
BROWN, A. W. A. (see LIPSITZ, E. Y.)	
BROWNE, F. G.	
Notes on the habits and distribution of some Ghanaian bark beetles and ambrosia beetles (Coleoptera: Scolytidae and Platypodidae)	229
BURGES, H. D.	
Studies on the Dermestid beetle <i>Trogoderma granarium</i> Everts. VI.—Factors inducing diapause	571
BUSVINE, J. R., BELL, J. D. & GUNEIDY, A. M.	
Toxicology and genetics of two types of insecticide resistance in <i>Chrysomyia putoria</i> (Wied.)	589
COCKBILL, G. F., LOVEMORE, D. F. & PHELPS, R. J.	
The control of tsetse flies ( <i>Glossina</i> : Diptera, Muscidae) in a heavily infested area of Southern Rhodesia by means of insecticide discharged from aircraft, followed by settlement of indigenous people	93
COOMBS, C. W.	
A method of assessing the physical condition of insect-damaged grain and its application to a faunistic survey	23

## CONTENTS.

	PAGE
CORBET, P. S. Observations on <i>Toxorhynchites brevipalpis conradti</i> Grünb. (Diptera, Culicidae) in Uganda ... ... ... ...	9
CORBET, P. S. Seasonal patterns of age-composition of sylvan mosquito populations in Uganda (Diptera, Culicidae) ... ... ...	213
CURRIE, J. E. (see LEFKOVITCH, L. P.)	
DAS, G. M. Preliminary studies on the biology of <i>Orasema assectator</i> Kerrich (Hym., Eucharitidae), parasitic on <i>Pheidole</i> and causing damage to leaves of tea in Assam ... ... ...	373
DAVIES, J. C. Observations on the effect of DDT formulations on the yellow tea mite, <i>Hemitarsonemus latus</i> (Banks), in Uganda ...	425
DEAN, G. J. W. Field trials with a persistent stomach insecticide against populations of the red locust, <i>Nomadacris septemfasciata</i> (Serv.), in an outbreak area ... ... ...	349
DEAN, G. J. W. (see also under SYMMONS, P. M.)	
ENTWISTLE, P. F. A note on <i>Eulophonotus myrmeleon</i> Fldr. (Lepidoptera, Cossidae), a stem borer of cocoa in West Africa ... ...	1
ENTWISTLE, P. F. Observations on the biology of some members of the genus <i>Tragocephala</i> (Coleoptera, Lamiidae) associated with <i>Theobroma</i> <i>cacao</i> in West Africa ... ...	383
FENNAH, R. G. The Delphacid species-complex known as <i>Sogata furcifera</i> (Horváth) (Homoptera: Fulgoroidea) ... ...	45
FOSTER, R. Contributions to the epidemiology of human sleeping sickness in Liberia: bionomics of the vector <i>Glossina palpalis</i> (R.-D.) in a forest habitat ... ...	727
GRATWICK, M. A technique for exposing insects to insecticidal deposits on detached foliage ... ...	81
GREGORY, J. L. Observations on yams attacked by the yam beetle <i>Heteroligus</i> <i>meles</i> (Billb.) (Col., Dynastidae) ... ...	433
GUNEIDY, A. M. (see BUSVINE, J. R.)	
HADAWAY, A. B. & BARLOW, F. The influence of environmental conditions on the contact toxicity of some insecticide deposits to adult mosquitos, <i>Anopheles</i> <i>stephensi</i> List. ... ...	329

## CONTENTS.

	PAGE
HAFEZ, M. & ZEIN-EL-DINE, K. Culturing <i>Phlebotomus papatasii</i> (Scopoli) in the laboratory ...	657
HALSTEAD, D. G. H. External sex differences in stored-products Coleoptera ...	119
HARRIS, C. R. & SVEC, H. J. Mass rearing of the common field cricket, <i>Gryllus pennsylvanicus</i> Burmeister (Orthoptera, Gryllidae), for use as a test insect in toxicological studies ... ... ... ...	805
HARRIS, K. M. Annual variations of dry-season populations of larvae of <i>Busseola fusca</i> (Fuller) in Northern Nigeria ... ... ...	643
HART, R. J. The inheritance of diazinon resistance in an Australian strain of <i>Musca domestica</i> L. ... ... ...	461
HINCKLEY, A. D. Ecology and control of rice planthoppers in Fiji ... ...	467
HOOGSTRAAL, H. (see KARRAR, G.)	
HOWE, R. W. The random sampling of cultures of grain weevils ... ...	135
HUSSAIN, A. A. Notes on borers of date palms in Iraq ... ...	345
JANE, A. (see BRAITHWAITE, B. M.)	
JORDAN, A. M. The distribution of the <i>fusca</i> group of tsetse flies ( <i>Glossina</i> ) in Nigeria and West Cameroun ... ...	307
KAISER, M. N. (see KARRAR, G.)	
KARRAR, G., KAISER, M. N. & HOOGSTRAAL, H. Ecology and host-relationships of ticks (Ixodoidea) infesting domestic animals in Kassala Province, Sudan, with special reference to <i>Amblyomma lepidum</i> Dönitz ...	509
KERRICH, G. J. A new Eulophid egg-parasite associated with <i>Tragocephala</i> spp. on cacao, with comparative notes on other species (Hym., Chalcidoidea) ... ...	361
KERRICH, G. J. Descriptions of two species of Eucharitidae damaging tea, with comparative notes on other species (Hym., Chalcidoidea) ...	365
KNIGHT, R. H. & SOUTHON, H. A. W. A simple method for marking haematophagous insects during the act of feeding ... ...	379
LAUGHLIN, R. Biology and ecology of the garden chafer, <i>Phyllopertha horticola</i> (L.). VIII.—Temperature and larval growth ...	745

## CONTENTS.

	PAGE
<b>LEFKOVITCH, L. P.</b>	
The biology of <i>Cryptolestes pusilloides</i> (Steel & Howe) (Coleoptera, Cucujidae), a pest of stored cereals in the Southern Hemisphere	649
<b>LEFKOVITCH, L. P. &amp; CURRIE, J. E.</b>	
The effects of food shortage upon larvae of <i>Lasioderma serricorne</i> (F.) (Coleoptera, Anobiidae)	535
<b>LEFKOVITCH, L. P. &amp; MILNES, R. H.</b>	
Interaction of two species of <i>Cryptolestes</i> (Coleoptera, Cucujidae)	107
<b>LIPSITZ, E. Y. &amp; BROWN, A. W. A.</b>	
Studies on the responses of the female <i>Aedes</i> mosquito. IX. —The mode of attractiveness of lysine and other amino acids	675
<b>LORD, K. A., MOLLOY, F. M. &amp; POTTER, C.</b>	
Penetration of diazoxon and acetyl choline into the thoracic ganglia in susceptible and resistant house-flies and the effects of fixatives	189
<b>LOVEMORE, D. F. (see COCKBILL, G. F.)</b>	
<b>McGREGOR, D. D.</b>	
Mouth-brush dimorphism in larvae of <i>Opifex fuscus</i> Hutton (Diptera, Culicidae)	325
<b>MACLENNAN, K. J. R. &amp; AITCHISON, P. J.</b>	
Simultaneous control of three species of <i>Glossina</i> by the selective application of insecticide	199
<b>MACLEOD, J.</b>	
Further records of distribution of blowflies in Great Britain	113
<b>MILNE, A.</b>	
Biology and ecology of the garden chafer, <i>Phyllopertha horticola</i> (L.). IX.—Spatial distribution	761
<b>MILNES, R. H. (see LEFKOVITCH, L. P.)</b>	
<b>MINTER, D. M.</b>	
Three new sandflies (Diptera, Psychodidae) from East Africa, with notes on other species	483
<b>MOLLOY, F. M. (see LORD, K. A.)</b>	
<b>PHELPS, R. J. (see COCKBILL, G. F.)</b>	
<b>POTTER, C. (see LORD, K. A.)</b>	
<b>PREVETT, P. F.</b>	
<i>Stathmopoda auriferella</i> (Wlk.) (Lepidoptera, Heliodinidae) infesting sorghum stored on the head in Northern Nigeria	5
<b>PREVETT, P. F.</b>	
The distribution of insects in stacks of bagged groundnuts in Northern Nigeria	689
<b>RIBBANDS, C. R.</b>	
The spread of apterae of <i>Myzus persicae</i> (Sulz.) and of yellows viruses within a sugar-beet crop	267

## CONTENTS.

	PAGE
RIBBANDS, C. R.	
The control of the sources of virus yellows of sugar beet ...	661
RIVNAY, E. & ZIV, M.	
A contribution to the biology of <i>Gryllus bimaculatus</i> Deg. in Israel ... ... ... ...	37
SERVICE, M. W.	
The ecology of the mosquitos of the Northern Guinea Savannah of Nigeria ... ... ... ...	601
SOUTHON, H. A. W. (see KNIGHT, R. H.)	
STORTENBEKER, C. W. (see SYMONDS, P. M.)	
STRONG, L.	
A simple apparatus for use in removing corpora allata from locusts ... ... ... ...	19
SURTEES, G.	
Laboratory studies on dispersion behaviour of adult beetles in grain. I.—The grain weevil, <i>Sitophilus granarius</i> (L.) (Coleo- ptera, Curculionidae) ... ... ... ...	147
SURTEES, G.	
Laboratory studies on dispersion behaviour of adult beetles in grain. II.—The saw-toothed grain beetle, <i>Oryzaephilus surin-     amensis</i> (L.) (Coleoptera, Silvanidae) ... ... ...	285
SURTEES, G.	
Laboratory studies on dispersion behaviour of adult beetles in grain. III.— <i>Tribolium castaneum</i> (Hbst.) (Coleoptera, Tene- brionidae) and <i>Cryptolestes ferrugineus</i> (Steph.) (Coleoptera, Cucujidae) ... ... ... ...	297
SURTEES, G.	
Laboratory studies on dispersion behaviour of adult beetles in grain. IV.—The lesser grainborer, <i>Rhyzopertha dominica</i> (F.) (Coleoptera, Bostrichidae) ... ... ...	715
SURTEES, G.	
Laboratory studies on dispersion behaviour of adult beetles in grain. V.—Technique for three-dimensional analysis of disper- sion patterns within small bulks ... ... ...	723
SVEC, J. J. (see HARRIS, C. R.)	
SYMONDS, P. M., DEAN, G. J. W. & STORTENBEKER, C. W.	
The assessment of the size of populations of adults of the red locust, <i>Nomadaecris septemfasciata</i> (Serville), in an outbreak area	549
TAYLOR, J. M.	
Studies on <i>Theocolax formiciformis</i> Westw. (Hym., Pteromalidae), a parasite of <i>Anobium punctatum</i> (Deg.) (Col., Anobiidae) ...	797
TEW, R. P. (see BRIGGS, J. B.)	
THORPE, R. J. & WALKER, P.	
Cattle-tick control in Northern Nigeria: a field study of BHC, Sevin, toxaphene and ronnel used as sprays ... ...	633
WALKER, P. (see THORPE, R. J.)	

## CONTENTS.

	PAGE
<b>WHEATLEY, P. E.</b>	
Laboratory studies of insecticides against the coffee leaf-miner <i>Leucoptera meyricki</i> Ghesq. (Lepidoptera, Lyonetiidae) ...	167
<b>WILLIAMS, M. C.</b>	
Studies on mosquitos (Diptera, Culicidae) biting birds, using twenty-four-hour catches, in the Entebbe area, Uganda ...	407
<b>ZACHARUK, R. Y.</b>	
Comparative food preferences of soil-, sand- and wood-inhabiting wireworms (Coleoptera, Elateridae) ... ... ...	161
<b>ZEIN-EL-DINE, K. (see HAFIZ, M.)</b>	
<b>ZIV, M. (see RIVNAY, E.)</b>	

## DATES OF PUBLICATION IN PARTS

Part I pp. 1-159	...	29 May 1963
Part II pp. 161-360	...	27 August 1963
Part III pp. 361-632	...	29 November 1963
Part IV pp. 633-810	...	31 January 1964

## ERRATA

## Vol. 53

- Page 634, Table VII, under "distribution of eggs" line 4, for "11 9 —" read "— 11 9"; line 7, for "151 170 10" read "140 172 19"  
 Page 635, line 4, for "45·6" read "42·3"  
 Page 753, footnote 2, for "7,4-methano" read "1,4-methano"  
 Page 771, line 19, for "1·5" read "1:5"

## Vol. 54

- Page 17, line 8, (third reference), for "(A) 37" read "(A) 38"  
 Page 43, line 5, for "130 days" read "136 days"  
 Page 65, line 15, for "*S. insularis*" read "*S.k. insularis*"  
 Page 72, after line 31, at end of description of *Sogatodes* gen.n., insert "Type species, *Sogatodes molinus* sp.n."  
 Page 93, paragraph 2, line 8, for "*Tragelephus*" read "*Tragelaphus*"  
 Page 211, paragraph 5, line 5, for "£3,000" read "£2,000"  
 Page 225, 11 lines from end, for "nulliparous" read "parous"  
 Page 315, fig. 5. The limited area of Kumba Division to the north-west of Cameroun Mountain, in which *G. fusca* occurs (p. 315, lines 6-7) was inadvertently omitted from the distribution shown in this figure.  
 Page 413, 5 lines from end, for "*A. africana*" read "*M. africana*"  
 Page 423, paragraph 5, line 1, for "indicate" read "indicates"  
 Page 430, third line of Summary, for "*Hemitarsonemus latus* Banks" read "*Hemitarsonemus latus* (Banks)"  
 Page 622, Table IV, for "*A. theileri*" read "*A. theileri* Edw." and for "*A. mouchei* sens. lat." read "*A. mouchei* Evans sens. lat."