

BULLETIN
OF
ENTOMOLOGICAL RESEARCH

ISSUED BY THE COMMONWEALTH
INSTITUTE OF ENTOMOLOGY

EDITOR : THE DIRECTOR

VOL. 56
(1965)

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

1966

Commonwealth Agricultural Bureaux

EXECUTIVE COUNCIL

H. WILLIAMSON, O.B.E., *Chairman*, Canada
A. J. KIDWAI, *Vice-Chairman*, India
W. G. ALEXANDER, C.B.E., United Kingdom
J. I. PLATT, Australia
V. ARMSTRONG, Ph.D., New Zealand
M. M. R. CHOWDHURY, Pakistan
C. A. R. ANKETELL, Ceylon
M. K. A. AGYEMAN, Ghana
A. S. TALALLA, Malaysia
G. C. ORANIKA, Nigeria
S. PHYLAKTIS, Cyprus
H.E. THE HIGH COMMISSIONER, Sierra Leone
O. ZAHKAN, Tanzania
D. C. BRICE, Jamaica
J. A. V. HARPER, Trinidad and Tobago
L. MWANGA, Uganda
H.E. THE HIGH COMMISSIONER, Kenya
E. D. PHAKAMEA, Malawi
H.E. THE HIGH COMMISSIONER, Malta
W. K. SIKALUMBI, Zambia
E. C. SOWE, The Gambia
—, 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, O.B.E., M.A.

Assistant Director

R. G. FENNAH, M.A.

Assistant Editors

W. RUTLEDGE, M.A. and E. F. WHITESIDE, M.Sc.

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
BARLOW, F. (see HADAWAY, A. B.)	
BEESELEY, J. S. S. (see HOCKING, K. S.)	
BIGGER, M. The biology and control of termites damaging field crops in Tanganyika 417	417
BOWDEN, J. Sorghum midge, <i>Contarinia sorghicola</i> (Coq.), and other causes of grain-sorghum loss in Ghana 169	169
BRADLEY, J. D. A new species belonging to the genus <i>Anonaepestis</i> Ragonot (Lepi- doptera, Phycitinae) attacking black pepper (<i>Piper nigrum</i>) in West Africa 299	299
BRADLEY, J. D. A comparative study of the coconut flat moth (<i>Agonoxena argaula</i> Meyr.) and its allies, including a new species (Lepidoptera, Agonoxenidae) 453	453
BRADLEY, J. D. & POVOLNÝ, D. The identity of the pepper flower-bud moth 57	57
BRIGGS, J. B. Biology of some ground beetles (Col., Carabidae) injurious to strawberries 79	79
BROWN, E. S. & SWAINE, G. Virus disease of the African armyworm, <i>Spodoptera exempta</i> (Wlk.) 95	95
BROWN, E. S. & SWAINE, G. New evidence on the migration of moths of the African armyworm, <i>Spodoptera exempta</i> (Wlk.) (Lepidoptera, Noctuidae) 671	671
BURNETT, G. F., LEE, C. W. & PARK, P. O. Aircraft applications of insecticides in East Africa. XV.—Very-low- volume treatment of a seed-bean crop with DDT in oil solution ... 701	701
BURSELL, E. (see RAJAGOPAL, P. K.)	
CARNEGIE, A. J. M. Some aspects of insecticidal and biological control of the woolly apple aphid, <i>Eriosoma lanigerum</i> (Hsm.), in Rhodesia 269	269

CONTENTS

	PAGE
CARTER, C. I. The inexpensive cabinet for temperature and humidity control ...	263
CRANHAM, J. E. Shot-hole borer (<i>Xyleborus fornicatus</i> Eichh.) of tea in Ceylon. I.— Chemical control and population dynamics	481
DAME, D. A. & FORD, H. R. Effect of the chemosterilant tepa on <i>Glossina morsitans</i> Westw. ...	649
DAVEY, P. M. The susceptibility of sorghum to attack by the weevil <i>Sitophilus</i> <i>oryzae</i> (L.)	287
DAVID, W. A. L. & GARDINER, B. O. C. Rearing <i>Pieris brassicae</i> (L.) on semi-synthetic diets with and without cabbage	581
DAVIS, B. N. K. The immediate and long-term effects of the herbicide MCPA on soil arthropods	357
DISNEY, R. H. L. A trap for Phlebotomine sandflies attracted to rats	445
EVANS, D. E. The distribution of <i>Empoasca lybica</i> (de Berg.) (Hemiptera, Cicadellidae) on cotton in the Sudan	635
FENNAH, R. G. <i>Sogatodes brasiliensis</i> (Muir), a new synonym of <i>S. orizicola</i> (Muir) (Fulgoroidea, Delphacidae)	215
FENNAH, R. G. The influence of environmental stress on the cacao tree in prede- termining the feeding sites of cacao thrips, <i>Selenothrips rubro-</i> <i>cinctus</i> (Giard), on leaves and pods	333
FORD, H. R. (see DAME, D. A.)	
GARDINER, B. O. C. (see DAVID, W. A. L.)	
GILLIES, M. T. & WILKES, T. J. A study of the age-composition of populations of <i>Anopheles gambiae</i> Giles and <i>A. funestus</i> Giles in north-eastern Tanzania	237
GOMA, L. K. H. The flight activity of some East African mosquitos (Diptera, Culicidae). I.—Studies on high steel tower in Zika Forest, Uganda	17
GRATWICK, M., SILLIBOURNE, J. M. & TEW, R. P. The toxicity of insecticides to larvae of the codling moth, <i>Cydia</i> <i>pomonella</i> (L.). I.—Intrinsic toxicity and persistence	367

CONTENTS

	PAGE
GRATWICK, M., SILLIBOURNE, J. M. & TEW, R. P. The toxicity of insecticides to larvae of the codling moth, <i>Cydia pomonella</i> (L.). II.—Maintenance of a toxic deposit in the field ...	377
GREATHEAD, D. J. A taxonomic study of the species of <i>Antestiopsis</i> (Hemiptera, Pentatomidae) associated with <i>Coffea arabica</i> in Africa ...	515
HADAWAY, A. B. & BARLOW, F. Relationships between some physical properties of insecticides and their intrinsic and contact toxicities to adult mosquitos (<i>Anopheles stephensi</i> List.) ...	569
HARLEY, J. M. B. Activity cycles of <i>Glossina pallidipes</i> Aust., <i>G. palpalis fuscipes</i> Newst. and <i>G. brevipalpis</i> Newst. ...	141
HARLEY, J. M. B. Seasonal abundance and diurnal variations in activity of some <i>Stomoxys</i> and Tabanidae in Uganda ...	319
HARLEY, J. M. B. Seasonal and diurnal variations in physiological age and trypanosome infection rate of females of <i>Glossina pallidipes</i> Aust., <i>G. palpalis fuscipes</i> Newst. and <i>G. brevipalpis</i> Newst. ...	595
HASKELL, P. T. (see HUNTER-JONES, P.)	
HEATHCOTE, G. D. The time of flight and the relative importance of <i>Myzus persicae</i> (Sulz.) and <i>Aphis fabae</i> Scop. in relation to the incidence of beet yellows as shown by trap catches at Rothamsted and Broom's Barn ...	473
HILL, B. G. Insects of cultivated and wild plants, Harar Province, Ethiopia, 1960–1964 ...	659
HOCKING, K. S., LEE, C. W., BEESLEY, J. S. S. & MATECHI, H. T. Aircraft applications of insecticides in East Africa. XVI.—Airspray experiment with endosulfan against <i>Glossina morsitans</i> Westw., <i>G. swynnertoni</i> Aust. and <i>G. pallidipes</i> Aust. ...	737
HODGSON, C. J. (see ROSE, D. J. W.)	
HUNTER-JONES, P. & HASKELL, P. T. Observations on the effects of γ -radiation on eggs of the desert locust, <i>Schistocerca gregaria</i> (Forsk.) ...	725
JORDAN, A. M. Observations on the ecology of <i>Glossina morsitans submorsitans</i> Newst. in the Northern Guinea Savannah of Northern Nigeria	1
KERNAGHAN, R. J. (see NASH, T. A. M.)	

CONTENTS

	PAGE
LEE, C. W. (see BURNETT, G. F., and HOCKING, K. S.)	
LEFKOVITCH, L. P. Differences between six species of <i>Cryptolestes</i> (Coleoptera: Cucujidae) in susceptibility to methyl bromide vapour	197
LINLEY, J. R. The ovarian cycle and egg stage in <i>Leptoconops</i> (<i>Holoconops</i>) <i>beckwaerti</i> (Kieff.) (Diptera, Ceratopogonidae)	37
MCKINLAY, K. S. Insect damage, crop formation and the yield of coconuts	67
MATECHI, H. T. (see HOCKING, K. S.)	
MEISNER, J. (see RIVNAY, E.)	
MELAMED-MADJAR, V. Observations on four species of <i>Sitona</i> (Coleoptera, Curculionidae) occurring in Israel	505
NASH, T. A. M. & KERNAGHAN, R. J. A high proportion of early deaths among uninseminated females of <i>Glossina austeni</i> Newst.	65
PARK, P. O. (see BURNETT, G. F.)	
POVOLNÝ, D. (see BRADLEY, J. D.)	
PRINS, G. Contact toxicities of 22 insecticides to the cocoa Mirid <i>Distantiella theobroma</i> (Dist.) (Hemiptera, Miridae)	231
RAJAGOPAL, P. K. & BURSELL, E. The effect of temperature on the oxygen consumption of tsetse pupae	219
READSHAW, J. L. The ecology of the swede midge, <i>Contarinia nasturtii</i> (Kieff.) (Diptera, Cecidomyiidae). I.—Life-history and influence of temperature and moisture on development	685
REED, W. <i>Heliothis armigera</i> (Hb.) (Noctuidae) in Western Tanganyika. I.—Biology, with special reference to the pupal stage	117
REED, W. <i>Heliothis armigera</i> (Hb.) (Noctuidae) in Western Tanganyika. II.—Ecology and natural and chemical control	127
RIORDAN, K. Relative persistence on vegetation in northern Nigeria of DDT deposits from two formulations	615
RIVNAY, E. & MEISNER, J. The effects of rearing conditions on the immature stages and adults of <i>Spodoptera littoralis</i> (Boisd.)	623

CONTENTS

	PAGE
ROBINSON, G. G. A note on nocturnal resting sites of <i>Glossina morsitans</i> Westw. in the Republic of Zambia	351
ROSE, D. J. W. & HODGSON, C. J. <i>Systates exaptus</i> Mshl. (Col., Curculionidae) and related species as soil pests of maize in Rhodesia	303
RUSSELL, G. E. Some effects of resistance to organophosphorus insecticides in <i>Myzus persicae</i> (Sulz.) on the transmission of beet yellowing viruses	191
SERVICE, M. W. The replacement of <i>Culex nebulosus</i> Theo. by <i>Culex pipiens fatigans</i> Wied. (Diptera, Culicidae) in towns in Nigeria	407
SHANAHAN, G. J. Mutations in the sheep blowfly <i>Lucilia cuprina</i> (Wied.). II.—Studies on genes for black pupa and dieldrin-resistance	283
SHAW, R. D. Culture of an organophosphorus-resistant strain of <i>Boophilus microplus</i> (Can.) and an assessment of its resistance spectrum	389
SILLIBOURNE, J. M. (see GRATWICK, M.)	
SMITH, A. A verandah-trap hut for studying the house-frequenting habits of mosquitos and for assessing insecticides. I.—A description of the verandah-trap hut and of studies on the egress of <i>Anopheles gambiae</i> Giles and of <i>Mansonia uniformis</i> (Theo.) from an untreated hut	161
SMITH, A. A verandah-trap hut for studying the house-frequenting habits of mosquitos and for assessing insecticides. II.—The effect of dichlorvos (DDVP) on egress and mortality of <i>Anopheles gambiae</i> Giles and <i>Mansonia uniformis</i> (Theo.) entering naturally	275
SOO HOO, C. F. A light-sensitive apparatus for the rapid measurement of experimental feeding by insects	227
SPILLER, D. Effects of DDT on oxygen consumption of <i>Rhodnius prolixus</i> Stål	555
SURTEES, G. Ecological significance and practical implications of behaviour patterns determining the spatial structure of insect populations in stored grain	201
SWAINE, G. (see BROWN, E. S.)	

CONTENTS

	PAGE
SYMMONS, P. M.	
Assessing the size of populations of adults of the red locust, <i>Nomadacris septemfasciata</i> (Serv.), in their outbreak areas by means of a helicopter	715
TEW, R. P. (see GRATWICK, M.)	
WILKES, T. J. (see GILLIES, M. T.)	

DATES OF PUBLICATION IN PARTS

Part I pp. 1–213	14 October 1965
Part II pp. 215–388	17 December 1965
Part III pp. 389–594	20 June 1966
Part IV pp. 595–744	31 August 1966

ERRATA

Vol. 55

Page 667, the reference numbers of the treatments under “*Trial D*, 1963” should be reversed in order, *i.e.*, should run 4, 3, 2, 1

Vol. 56

Page 124, paragraph 6, line 3, for “0.23 mg.” read “0.23 g.”

Page 139, paragraph 3, line 3, for “500 lb.” read “800 lb.”

Page 210, paragraph 2, line 7, for “*S. oryzae*” read “*S. oryzae* (L.)”

Page 253, footnote, for “1.788” read “ $\bar{1}.788$ ”

Page 312, Table V, third and fourth treatments, for “isodrin” read “isobenzan”

Page 527, paragraph 8, line 2, for “western Congo” read “eastern Congo”